Running an Intelligent Jail:

A Guide to the Use and Development of a Jail Information System

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CHAPTER 1: INTRODUCTION

This document focuses on the design and use of management information systems to Run an Intelligent Jail. A management information system (MIS), in a jail context, should provide information needed to manage the jail effectively. An MIS may be regarded as a component of the internal control procedures of a jail that supports management in understanding and solving business problems. MISs are distinct from regular information systems in that they are used to analyze other information sources such as visual and verbal data that are applied in operational activities within the jail. Management information systems perform information storage, retrieval, and analysis to support human decision-making.

A precondition of effective management support is that the jail must have access to the right kinds and quality of data in appropriate formats. For most jails, this requires an adequate jail management information system (JMS) that supports all traditional, routine inmate processing activities. Even when a jail has an adequate MIS, we often see inadequacies in the design of performance measures and inmate monitoring indices and more generally in quantitative analytical capacities that make use of this information. This document first provides readers an understanding of the strategic importance of using MISs as used to measure a jail’s performance (Chapter 2), particularly in today’s critical fiscal environment. With an increasing focus on cost efficiency and the avoidance of wasteful spending, local criminal justice systems, with the jail at their hubs, must carefully adopt data-driven, informed decision-making and strive for performance-based outcomes. It has become clear that virtually all criminal justice organizations, including jails, are or should be driven by reliable and relevant information. From initial intake,
to classification, housing decisions, subsequent processing of inmates, to final release, virtually all key decisions depend on the availability, quality, and careful use of data to support the variety of decisions made by jail personnel. This dependence highlights the need for well-designed MIS systems and the more effective use of the information collected and stored by these systems.

Chapter 3 provides an overview of the kinds of data and information required to inform the jail and its various stakeholders of routine inmate processing, unit operations workloads, and breakdowns of the kind of inmates that are served by the jail. This chapter also addresses the efficiency and effectiveness of the jail operation, whether or not the jail’s policy goals are being achieved, and management awareness of various trends. The challenge here is that the jail and local criminal justice system often cannot clearly specify their information needs nor how to formulate policy-relevant queries.

In Chapter 4 we discuss how a jail becomes information driven and how a jail’s business practices can change when it uses data effectively at its various organizational levels. We discuss specific uses of data for jail problem-solving and policy analysis challenges. A policy analysis framework is presented as a seven-stage problem-solving process with specific data inputs required at sequential stages that use data in different ways and for different policy-relevant purposes, for example, from the initial detection of a problem, to clarification of the nature and causes of the problem, to solution development, and finally to the evaluation and “what if” simulation scenarios of the impacts of a potential solution.
Chapter 5 covers the basics of several analytical skills necessary to interpret the data. Many jails can specify what information is needed to monitor its procedures and have an MIS system to collect the needed information in a usable format but still may lack the analytical capacity or skills to understand the information and compile it into useful and informative reports. We describe several analytical skill levels that are often required of staff at different organizational levels of a jail. For many tasks, it appears that fairly simple data analysis techniques may be sufficient for jail managers to address the issues with insight. Most of the statistical and graphical tools that jail managers find most useful do not require complex statistical tests of significance or difficult analyses. Many newer jail databases and MIS systems incorporate easy-to-use management report generators that are capable of producing most of the rosters, charts, and tables needed for routine use. Additional staff skills may include simple Excel spreadsheet proficiencies, and PowerPoint skills for presentations to policymakers. More advanced statistical methods can play important roles in analytics for jail policy issues (e.g., complex systems dynamics to understand jail crowding, nonlinear forecasting models, multivariate analyses) that may best be provided with expert help from a local college, university, or consultant. This chapter also supplies some of the more useful presentations of data that can support management and staff responsibilities in jails.

Chapter 6 focuses specifically on the planning, development and implementation of jail management information systems, including the difficult task of designing Requests for Proposals that jails may have to develop. This chapter addresses all of the important steps involved in planning and developing a JMS for both large, comprehensive jail systems and smaller, specialized systems. This chapter also discusses the development of an information
system strategic plan, including assembling the right team, identifying the business processes and problems to be addressed, describing and assessing the current systems environment, consensus-building among stakeholders (both within and outside the jail), documenting the system’s business requirements, identifying an information-sharing strategy and external system interface requirements, and a review of common deficiencies of jail information systems to aid in RFP development and review of prospective systems.

Chapter 7 provides a comprehensive discussion of the implementation of new technologies. The selection or construction of a good MIS does not guarantee implementation success. Implementation processes may fail if there is no vision established by administrators, no sense of purpose or goals, no buy-in, commitment, or adequate training. The system must also be carefully aligned to support the workflows and information needs of its users. The authors’ experience with jails during implementation of new or modified systems has consistently demonstrated the difficulty of technology change management and has shown that successful implementation is as important as the technical design of the new system. Implementation problems can emerge at all phases of technology change and can often sabotage the effort. This chapter presents the four critical phases of implementation involved in the introduction of any new complex technology into an organization: (1) Pre-implementation: establishing political support, buy-in, and commitment to the proposed new technology; (2) Design and Pilot Testing: assessment of user acceptance, system performance testing, training strategies, identification of glitches and design flaws, and resolution of any system problems; (3) Implementation or the “go live” phase: introduction of the system into routine use; set up and management of expectations and implementation of policy and procedural changes; and (4) Post-implementation:
development of feedback loops, establishment of an ongoing processes to identify and resolve system problems, management of system enhancements, and development of ongoing training strategies.

Chapter 8 guides the reader through the process of developing a jail management system Request for Proposal (RFP). This RFP process is the key mechanism used by jails to acquire and implement a JMS. This is the process in which a jurisdiction prepares a formal solicitation that is released to the vendor community to obtain proposals for a jail system. This chapter illuminates the steps involved in the RFP development, the contents of an RFP, the vendor-selection process, and several important prerequisites. The focus is on best practices to ensure that the jail obtains a cost-effective system solution that meets the agency’s processing and information needs. This chapter includes management of the RFP process, prerequisites to RFP preparation, components of the RFP, evaluation of proposals and vendor selection, and RFP best practices.

This document concludes with appendices, including a “JMS Self-Assessment Guide” developed by the authors to assist in the evaluation of the comprehensiveness, functionality, and usability of a jail’s current JMS components and of any JMS system that is being designed or considered for purchase and to identify areas of needed improvement to support the “running an intelligent jail.”

This is followed by two case examples that briefly describe the Contra Costa, California, and Kent County, Michigan, jails’ experiences in the planning, acquisition, and utilization of their JMS systems. This provides the reader with details of the process at these jails, the extent to
which they followed the suggestions in this document, and the ultimate relative success of their selected systems in supporting the jails’ information needs.

The final appendix offers an example of a comprehensive annual report produced by the Kent County Jail that provides monitoring indices for various jail operations, offender characteristics, and trends.

We hope readers will find this document useful in the development of an understanding of the ever-increasing and critical importance of using data in support of management of an efficient, cost-effective operation and establishment of an intelligent jail. We also hope that this text provides readers with useful examples for the kinds of monitoring indices that may best inform a jail’s stakeholders, both internal and external, in the development of effective, data-driven arguments for the use of existing resources, securing additional resources, and engaging in budget battles. The document also aims to help jail management to identify key information needs in the evaluation and improvement of their current MIS and in the development of an RFP in support of these goals and to select the best MIS solutions.
Significant improvements have occurred in data content, collection, storage, and retrieval procedures in the newer generation of jail management information systems (JMSs). Databases, data dictionaries, graphing, and statistical analysis procedures have all improved in recent years in response to innovations in computer hardware and software. Consequently, there are fewer excuses for allowing these valuable data resources to remain underutilized.

Even with a well-designed jail MIS, missing data, unreliable data, ambiguous definitions of data elements (configurable coding frames), and inefficient data retrieval capacity will all weaken the attempt to monitor jail performance and goal achievement. In addition, a lack of operationally defined performance measures, inmate monitoring indices, and adequate quantitative evaluation can undermine the usefulness of the MIS. It is still very common today to find that relevant data are routinely collected in the Jail MIS but remain buried in the database and are only used minimally to guide and inform policymakers, administrators, mid-management, line staff, and other system stakeholders. Public concern about the efficiency and cost effectiveness of the jail and other local criminal justice agencies; the increasing legislative demands for data-driven, informed decision-making; and emerging concerns for performance-driven outcomes should prompt decision-makers to demand rapid improvements in the implementation of well-designed MIS systems and the more effective use of the information collected and stored by these systems.
New policy development and efficient and cost-effective operations must be linked to actionable performance and outcomes goals, and such goals should not be left vague and ambiguous. Performance and outcomes monitoring provides critical input for policy discussions, planning, budgeting, and the forecasting of future trends and resource needs. The courts or other legislative bodies may also impose legal standards that will be partly based on the realities of current levels of the jail’s goal achievements and trends. A well-designed, implemented, and utilized MIS will provide the necessary hard data and documentation needed to inform this process.

**Performance Criteria for a Jail**

In today’s correctional and budgetary environment, the public demands increased performance and accountability from correctional agencies and reduced costs. A term that may best describe this initiative is *performance-oriented government*. The goal of performance-oriented government is to spend scarce resources on services and practices that provide the best results in the most cost-effective way. This cannot be done effectively simply by cutting staff or services but only by implementing systems that increase accountability while focusing on quality, cost savings, and outcomes. Within the jail, the most effective means to achieve this is with a data-driven, informed policy and planning process and implementation and utilization of a well-designed MIS. With use and understanding of the data collected, planners and elected officials can better understand the jail’s operations and make the adjustments necessary to meet funding constraints and become a more efficient, cost-effective, outcomes-based organization.
Leaders in the field and our professional associations—American Correctional Association, American Jail Association, National Sheriff’s Association, National Institute of Corrections, etc.—have endorsed a move to “standardized performance criteria” for jails. With various monitoring indices outlined in this document, jails can measure their performance across all levels of the organization and appropriately assess the achievement of the agency’s goals. The establishment of measurable, outcome-based standards also allows for the comparison of performance measures across agencies.

It is impossible to specify the entire range of data needed to support informed performance and outcomes-based planning and policy development. A common sense start comes from the questions raised by the managers responsible for making the hard choices in jails and selecting solutions. The responsibility of policy decision-makers to generate insightful questions cannot be overestimated. Policymakers should obtain perspectives on past trends, present levels, and likely future trends of any practice or problem in the jail and local criminal justice system. It is also important to distinguish between causes, correlates, and consequences of any jail procedure, problem, or trend. The MIS supports this process for each stakeholder in the system. The following section describes several of the performance criteria of a jail and the various goals it should establish. This leads to the identification of monitoring indices that would be most useful in measuring their achievement. Specific monitoring indices are described in Chapter 3.
Overall/Global Jail Performance Criteria

Staff and inmate safety. A first and central role of a jail is to provide valid identification of dangerous offenders. This identification relies on carefully collected, individual inmate background and risk factor data (e.g., criminal history, past convictions, arrests, past behavior problems) coupled with appropriate classification and housing procedures. Both inmate and staff safety rely on valid identification, classification, separation, and supervision of dangerous inmates. If a jail neglects to obtain the appropriate background data, there will be an increased risk of false negative classification errors in which the truly dangerous offender is seen as a low risk. The courts have also ruled that classification is a primary guarantor of inmates’ rights to be reasonably protected from violent assault or the fear of violence - thus reducing risk of litigation. This reduction of fear and anxiety relies on the ability of classification to achieve valid assignments and correctly guide staff supervision strategies. Good classification policy has a critical role in the reduction of anxiety by creating an orderly, predictable, and controlled environment—despite the presence of dangerous persons—for both staff and inmates. Effective policies for monitoring and reducing contraband also promote a safer jail.

Public safety. A second role of the jail is to provide public safety. This requires effective classification, housing, supervision, and inmate management strategies that may reduce the risk of escapes, walkaways from work assignments, new crimes committed while on work release, recidivism, erroneous community placement, and so on. A new generation of data-driven offender risk assessment tools has significantly increased the ability for jails, courts, probation,
and parole to determine an offender’s risk of recidivism or flight after being placed in the community pre- or post-sentence.

**Protection against liability and protection of inmates’ rights.** A third role of the jail is to minimize liability and avoid costly lawsuits and monetary awards. In addition to the provision of a safe environment, jails must provide a quality of life that ensures access to and meets the needs of inmates’ medical, dental, mental health, nutrition, and clothing needs. Often a confounding factor in minimizing litigation is the inadequacy of the physical plant. To monitor performance criteria under this category, it is important also to collect data specific to the limitations of the facility that may result in litigation, such as inadequate space (crowding, poor cell design), poorly maintained or damaged locks, doors, surveillance cameras, in adequate lighting, access to recreation, and so on. The jail may have good policy and procedure in place for inmate safety and access to services, but the limitations of the facility may hinder access and thus increase risk.

**Rehabilitation programs and work assignments.** Successful jails recognize that an inmate’s incarceration is an opportunity to address that person’s criminogenic needs (e.g., substance abuse, criminal thinking, employment, education, housing). Thus access to rehabilitation programs is gaining importance in the field.

With the implementation of reentry initiatives beginning to take hold in local corrections plans, programming is often initiated in the jail and then transitioned with the inmate into the community at release. This practice is an important component of good correctional policy that
may reduce recidivism and save taxpayer dollars. Access by the lower-risk inmate to work assignments also supports effective correctional policy as it keeps inmates busy, allows for extra goodtime, and gives the participants some additional work experience.

**Recruitment and retention of staff.** Another role of a successful jail is the recruitment and retention of well-trained and stable staff. High turnover can be an indication of low staff morale. Competent and motivated staff create a more professional, responsive environment and help ensure a fair, equitable, and efficient jail. Identification of staff training needs and the provision of that training is critical. Staff must also respond effectively to inmate grievances to address legitimate concerns of the population. When jails face fiscal constraints and budget cuts, often hiring freezes and staff layoffs are among the first responses. Reduction of staff levels, however, can cost local government more money in increased lawsuits and may jeopardize public safety. It is most important that jail administrators are armed with the information necessary to defend their need for these staff positions by monitoring staff efficiency indices (e.g., job responsibilities, workloads, sick time, personal leave, administrative leave, overtime).

**Unit-Specific Performance Criteria**

Each unit of the jail has its own information needs. To understand what monitoring indices are needed by the unit and its manager, ask the question, “For what functions/procedures is the unit responsible?” Follow this question with, “What performance objectives are we trying to achieve?”
The reception/intake unit of the jail may need to know intake volume, admission reasons, work flows, special management tasks, numbers of pretrial releases, and the volume of incident-related information. The medical unit may need to focus on frequencies of pre-existing medical/mental health conditions, pregnancies, frequency of sick calls, suicide risks, medications, number of times a doctor was summoned to the jail, and so on. The classification unit would want to know how many classifications are performed per day, average length of time in jail before an inmate is classified, percent overrides, percent classified maximum, medium, minimum, and so on.

Each unit needs to stay informed of its workload and work quality indices, including error rates and late processing, aggregate breakdowns of work performed, pertinent characteristics of the inmate population, staffing levels, and so on. By collecting, analyzing and disseminating this information to unit workers and other stakeholders, each unit can manage using an informed process, gain insights from the data, and make adjustments as necessary.

Data and IT Needs of Stakeholders at Different Organizational Levels: The Challenge of Using Data in Support of Your Job

**High-level administrators.** Administrators who run today’s jails must be much more knowledgeable about the use of data to manage, plan, and budget their operations. The industry has seen a change in the backgrounds of jail administrators from a more traditional law enforcement background to more of a public administration background. This has led to a greater appreciation and skill set for data use. Our MIS are now starting to catch up with this new appreciation for data. These needs of these high-level administrators include:
• Meeting global performance requirements (monitoring trends and impacts);

• Monitoring workload demands and trends (e.g., changes in automated data processing (ADP);

• Monitoring work done and services provided;

• Identifying gaps between workload demands and the capacity to meet them;

• Budgeting and resource acquisition; and

• Contributing to miscellaneous policy problems and so on.

**Planners and policy analysis issues.** It is impossible to specify the exact range of data needed for policy problems in jails and criminal justice. The responsibility of policy decision-makers to generate insightful questions cannot be overestimated. Policymakers should obtain perspectives on past development, present levels, and likely future trends of problems such as population growth, increased workloads, and decreasing resources. Historical trends (e.g., levels of jail crowding over the past 3-5 years) are useful to clarify the emergence and development of the problem. Forecasts of the projected growth of the inmate population and expected jail utilization levels help to provide lead time during which planning and preventative actions may be taken. It is important to distinguish between causes, correlates, and consequences of a problem. This process concludes when a sufficiently complete description of the problem is available to policymakers.

Additional questions are becoming relevant for jails. These include: How are we currently spending our money and resources? How are the jail’s resources being used? What functions,
policies, and programs are still being supported? What are our resource acquisition needs for the future? In the context of the local criminal justice system—including the jail—where should our local criminal justice dollars be spent? Where can we obtain the best bang for the buck? A well-designed and utilized jail MIS (with interfaces to other Criminal Justice Management Information Systems) should support the queries necessary to answer these questions.

**Middle managers.** A major challenge for middle managers (sergeants, shift supervisors, lieutenants, etc.) is to develop monitoring indices that are sufficiently unthreatening and nonintrusive to monitor staff activities, workflows, and inmate management decisions at the individual unit or shift level of a jail’s operations. These data-driven monitoring indices should be used to assess whether line-level operational goals and compliance with policies and procedures are being achieved. Staff performance and compliance monitoring should routinely be assessed and fed back to line staff via shift or unit meetings, reports, and graphical charts.

This process of managing by the numbers requires objective measurement of line and unit level performance indicators that can reflect various aspects of performance and goal achievement. These indicators of policy and performance achievement must be reliably collected and stored in the jail’s MIS and must be accessible via ad hoc reporting tools, canned reports, and data export capabilities to other statistical and reporting software. If such monitoring indices are not identified and routinely collected, or if they remain unanalyzed (which is common), managers can only guess at the degree to which the desired line level, units, and the overall jail’s policy and performance goals are being achieved.
**Line staff.** Line staff are critical to an effective jail MIS as they are the primary collectors and recorders of the data. This is often done as a requirement of their job without emphasis, planning, or training on how to maximize the use of the data. Although simple rosters and reports are commonly used, it is less common to find jails that have provided line staff with the skills and data access needed for them to build their own ad hoc reports or even to identify adequately the optimum information needs of line staff. Line staff often do their work in a vacuum such that they are aware of what goes on in their unit but not what is going on system wide (e.g., workloads across units, compliance with policy and procedures, changes in offender characteristics, trends). We have generally found that line staff appreciate information about the inmate population they are managing, changes in workloads, policy compliance, goals achievement, performance measures, etc. Providing line staff with this information also promotes professionalism, commitment, and buy-in to the goals of the jail.

Information sharing with line staff can be accomplished in several ways. Production of various charts and graphs of important indices and posting them in staff break or locker rooms is an effective way to communicate information. Another effective way to communicate rosters and aggregate data is with the use of so-called dashboards that are found in the newest MIS technologies, often on the user’s software home page. These dashboards focus on lists and charts of current workloads, to-do lists, and profiles of the inmate population (e.g., current security breakdowns, number identified as special management with reason, alerts, e-messages from management). Some of these software solutions let each user develop or select from a preconfigured list of specific monitoring indices that are most informative to them and facilitate their specific job.
The latest jail MIS software solutions also offer a workload driver feature. As specific inmate processing or related work events are entered into the MIS as they occur, this process triggers another to-do process. For example, when a new inmate is booked into the software, this automatically triggers a to-do posting to the classification department that a classification needs to be performed for that inmate. When a next court date is posted in an inmate’s record, a court transport list is automatically generated and posted to the transport officer’s dashboard the day before the scheduled court date with time and location. Similarly, by accessing the projected release date field in the software, a list of inmates due for release on any given day (as configured by the user) can be posted to the releasing officer’s dashboard to create a workload to-do list specific to the immediate task. This approach can be applied to any number of...
sequential processing functions that trigger auto-generated, specific to-do lists that are directed to
the staff responsible for that work activity. As the work is completed, the to-do list is
automatically purged. This often triggers yet another to-do list for another unit of the jail, thus
supporting the inmate processing continuum. Workload drivers provide an effective way to
promote efficiency and minimize the risk of work falling through the cracks and being
unnecessarily delayed. Management can also monitor the various workload driver to-do lists in
real time to monitor processing bottlenecks and workloads and also to run analytics that describe
average times between processes, average time to do a process, percent done on time or late,
workload distributions across a unit or the facility, and so on. This is a very effective tool for
managers to monitor and understand performance, policy, and attainment of efficiency goals.

Lastly, line staff should be able and encouraged to perform various database queries that may
inform them about personal or unit job performance, workloads, pending work, and so on.

**Interagency stakeholders (total local system perspective).** Jails are often seen as the
hub of local criminal justice systems because such they play a critical role in the promotion of
public safety and offer an important resource to law enforcement, the courts, and community
corrections. All of these stakeholders should be concerned about how the jail’s limited resources
are used. It is now widely recognized that it is primarily policy factors, rather than crime rates
and local socioeconomic conditions that dictate the size and makeup (utilization) of a jail’s
population, which can be affected by several factors, including:

- Crime rates,
• Arrest rates,
• Court pretrial (bond) and sentencing policies,
• Law enforcement arrest policies,
• Early release and good-time policies,
• Community corrections and alternative to incarceration policies,
• Prosecutor charge policies,
• DOC state transfer policies and practice,
• Local immigration and customs enforcement detention policies,
• Probation and parole technical violation policies,
• Court and inmate processing delays,
• Media and public perceptions, and
• State and local politics/legislation.

To understand how the local jail is being utilized, members of the local criminal justice system must understand the policies and practice of the above factors. As can readily be seen, numerous critical stakeholders affect jail operations. Good court, criminal justice, and law enforcement MIS systems that collect the appropriate data in useful formats allow for sharing and easy extraction of this information can more readily, inexpensively, and effectively help participants understand the policies that drive the jail’s utilization and its role in the local criminal justice
system. New software, protocols, and technologies (e.g., Web services, NEIM, XML) have made interfaces among these traditionally disparate MIS systems easier and more affordable.

It is becoming common for counties to establish a local criminal justice advisory committee of key stakeholders along with county leaders to understand and develop policies or plans for the utilization of limited jail resources. The work of these advisory groups must be guided by an informed, data-driven process (See *Jail Capacity Planning Guide: A Systems Approach*, D. Bennett and D. Latin, NIC 11/2009).

**Linkage with Courts**

A well-designed and implemented jail MIS system that includes a valid inmate classification system gives jail administrators and others opportunities to coordinate and align their activities with those of the courts. Inmate classification and other data, for example, can be used to produce routine reports or queries to the courts or to individual judges that identify the unsentenced/pretrial population in the jail by the number of days incarcerated. Such reports can expedite the arraignment, pretrial release, adjudication, and community corrections process. As a second example, the prosecutor and the courts can use these jail reports with other MIS system data links to fast-track felons who, because of their current offense or criminal histories, are most likely to receive prison sentences. This can minimize the time a prison-bound offender is incarcerated at the local jail and thus contributes to the reduction of the jail’s average daily population, which may make a bed available for other purposes.
Another example of how jail MIS systems may be used to coordinate with the courts occurs when judges must issue early release orders to meet court-imposed caps. Jail administrators can supply the courts with a list of inmates who are most appropriate for early release ranked in order of their security classification, length of time incarcerated, and crime class. With a coordinated, local criminal justice policy, this may make more sense than a simple sentence reduction order across the whole sentenced population.

To implement such data-driven decision processes that affect the jail, criminal justice practitioners, treatment providers, county commissioners, planners, and other key players must work together in a collaborative manner. This coordination has several potential benefits, including coordination of law enforcement, correctional, and treatment policy across agencies; efficient early release of targeted offenders from jail into community corrections programs; reinforcement of a coordinated system of behavior incentives for offenders; and improved coordination of sanctions and treatment programs with the assessed risk and needs of the offender population.

The use of well-designed information systems can also inform all stakeholders in the local criminal justice system to achieve the most efficient and cost effective use of the jail’s limited resources and to alleviate jail crowding. Data-driven policy and practice should support the development of an integrated system of informed case processing, sentencing, and community corrections to match the various subpopulations of offenders that enter the local criminal justice system to the most appropriate agency or status. This benefits not only those who work in the criminal justice system but also the offender and the community.
CHAPTER 3: DETAILED SPECIFICATION OF THE KINDS OF DATA REQUIRED IN MOST JAILS

Short- and Long-Term Data-Driven Vision

Identification and planning for the ongoing information needs of the agency is critical. The various information stakeholders mentioned in the previous chapter have both short- and long-term information needs. Jail MIS systems must provide the ability to organize and provide the relevant data to support both of these types of need. This typically begins with a consensus on the data-driven vision of the agency. Short-term data needs tend to focus on rosters and statistical tabulations, whereas long-term data needs may focus more on trend charts, comparisons of aggregate data, and projections from a baseline forward over time. These stakeholders must develop a vision of the kinds of information needs and policy goals their jail and other system stakeholders require to monitor over both the short and longer terms. These stakeholders must ask general questions that should lead to the identification of many specific data requirements, such as:

- Who are we serving?
- Who should we be serving?
- How efficient and effective are we?
- What performance objectives are we trying to achieve?
- What were the actual outcomes or impacts of our efforts?
• What are the trends of the jail and its population?

• What are our objectives for the future?

• What will be our future needs?

Note: While the questions posed above are relevant for any jail - some of the indices examples provided in this and the next chapter may or may not be useful for all size jails.

The challenge of developing a short- and long-term data-driven vision for the jail and other system stakeholders can often gain from an understanding of how data are currently used or ignored for basic inmate tracking, day-to-day operational decisions, and for planning and policy support. Thus, stakeholders may also ask the following questions: What data are coming into the jail? What segments of that data are entered into the MIS system or collected by other means (manual or automated) and are these data in a useable format? What data are going out (both in reports and exports to other MIS systems)? The achievement of consensus among the critical stakeholders also is important for the development of a data-driven vision, which should be a collective vision that is sustainable across time. Stakeholder consensus on short- and long-term information needs also reinforces ongoing use of the data by the various stakeholders.

All of the indices described in this section are candidates for time-based sequential monitoring in jails. Managers and policymakers should be aided by regular status reports that present time charts and tables that indicate trends or emerging problems in the jail.

What data elements are needed? A critical task for any jail IT and MIS is to select data elements to measure key correctional policies and organizational operations that managers or
policymakers wish to monitor. The sections below are often included in the MIS of jails and other correctional agencies:

What Drives Information Needs?

The many information needs of jails and local criminal justice systems can be broken down into three broad areas. Below are examples of both short- and long-term informational needs and queries.

Level 1: Basic Inmate Tracking Information Needs

This category of information focuses on the day-to-day processing of specific inmates and their movements. This individualized information may be most useful for the line staff who do the work. Broader statistics on workflow status alerts and aggregate reports based on this information also are of interest to correctional supervisors. These are as follows:

**Arrest and identification data (including prior jail stays, holds, etc.).**

- Can a positive identification be made to confirm the identity of this case and eliminate duplicate records in the system for the same inmate?

- Is all of the critical arrest information available and collected to support acceptance of this inmate into the facility and to make an initial intake housing/supervision decision?
• Recent attention has focused on the adequacy of collecting pre-existing medical and mental health information. Has the inmate been previously identified with medical or mental health problems from prior state or local incarcerations?

• Are we collecting all of the critical information necessary to make initial intake and housing decisions (e.g., enemies/co-defendants, warrants/holds, victimization issues, contagious diseases) that will minimize the jail’s liability?

**Location and movement data.**

• Can we track and document an inmate’s location at any time, for example by incorporating radio frequency identification (RFID) or bar coding to monitor compliance with inmate movement restrictions based on their security classification, housing, and work authorization.

• Are data collected to track inmate movements by time, date, location, reason, and so on? These data may facilitate monitoring of workflows, staff, and resource efficiencies.

• Do inmate movement patterns result in bottlenecks or safety concerns as a result of physical plant limitations? Where? When?

**Inmate property tracking.**
• What is the inmate’s property bag/bin number?

• What property was collected?

• What property was released, to whom, and when?

• What specific property was collected and stored (e.g., number of bags/bins in the past month/year)?

• What is the aggregate percentage of total storage capacity used?

• How much checked property was lost?

• How much property is collected and released to a third-party prior to release?

• How many property release complaints arise from inmates?

**Trust accounting/commissary.**

• What percentage of the population has a zero balance in their personal accounts (by inmate demographic)?

• What is the average weekly/monthly/discharge balance?

• On what are inmates spending their account funds?

• How much is spent for commissary per week/month versus how much is allowed by policy?

• What are the net jail trust accounting revenues (commissary, phone, etc.) per month/year?
• What would these previous figures be if spending policies were modified?

• How are inmate trust funds utilized by the department?

• What was the total amount of inmate processing fees collected in the past year (e.g., booking fee, room and board fee, medical fee)?

**Special needs and handling.**

• What are the aggregate medical needs of the inmate population?

• What are the special dietary needs?

• What are the special condition needs/frequency of the population (e.g., protective custody, gang leaders, high risk, mental illness, contagious/infectious conditions, handicaps, suicide risks)?

**Court/legal issues.**

• Which inmates are awaiting court dates and for what type of hearing (e.g., rosters of who is due in court by date, time, court, judge, appearance reason, housing location, security classification, keep separates for transportation purposes)?

• How many court hearings for arraignments were conducted in the past year?

• How many of the above required transport to court?
• How many hearings were conducted by video link that did not require transport?

• How many court transports are done per week/month/year?

• How many inmates on average per trip?

• How many staff are required for each trip?

• What is the average amount of staff time required per trip?

• How many miles are traveled per week/month/year?

• How many department vehicles are used?

• Which inmates are under court order?

• What court-ordered conditions affect inmates’ incarcerations? From what court/judge?

**Release data.**

• What are the aggregate release reasons for the population?

• What are the projected release dates of the inmate population?

• Who is scheduled for release and transfer to another authority and why?

• Who is detained past scheduled release dates and why?

• What percentage of the population is detained past their authorized release dates? By how many days?
• What were the reasons for the delay in release (e.g., delay in processing as a result of staffing or paperwork issues, miscalculated good time or credit for time served, not all discretionary good time applied to case, delay in transportation to prison or other release authority)?

• What percentage of the population had delayed releases as a result of confiscation of good time? For what reason?

• What percentage of the population was released prior to scheduled release times? For what reason (e.g., mandatory crowding release, released to an alternative to incarceration programs, pretrial release)?

Level 2: Day-to-Day Operational Decision-Making Information Needs

This category of information focuses on the day-to-day operations of the facility, status of the inmate population, policy compliance, efficiencies, staff utilization, and system alerts. Too often, the detainee population of a correctional organization is simply aggregated into one broad and often misleading and uninformative total number. However, information about various subpopulations, specific breakdowns, and special classifications are now used routinely. Managers invariably need a deeper understanding and more accurate picture of the diversity of the inmate population in the jail. Such breakdowns and percentages maintained over time may identify changes in the structure and characteristics of the inmate population. This information may be most useful for mid-managers, shift supervisors, and jail administrators.

Staffing.
• Are all staff scheduled for the shift on duty? If not, why?

• What is the frequency of missing staff by shift (week/month/year)?

• What are the aggregated reasons for absenteeism by shift?

• What are the rates and reasons for staff turnover (staff morale indicators)?

General characteristics.

• Percentages of overall jail population by ethnicity, sex, age, social histories, etc.;

• Percentages by prior offense histories (violent felonies, prior incarcerations);

• Proportions of sentenced vs. unsentenced prisoners; and

• Percentages by current offence categories (e.g., assaultive, property, drugs, alcohol, probation violators).

Classification.

• What are the security breakdowns of the jail (today, last month, last year)?

• What is the security profile by gender? Are there any significant changes in the percentages of maximum, medium, and minimum?

• What is the variation of the population by each security level (+ or – what percent)?
• How many inmates were identified by Prison Rape Elimination Act as needing special housing/management? Note: the PREA Act will require a considerable amount of detailed reporting e.g. incident tracking, cross gender supervision tracking, training compliance, internal investigations, etc.

• What is the override rate and reasons?

Housing assignments.

• How many housing assignments on average are made each week, month, and year?

• How many inmates are mis-housed (i.e., housed outside of their security classification assignment)?

• How many inmates are mis-housed at each security level?

• How long have inmates been mis-housed?

• How many inmates are housed with keep-separates?

• How many inmates are in administrative segregation, what are the aggregated reasons, and for how long?

• How many inmates are in disciplinary segregation and for how long?

• How many inmates are housed in medical cells/units?

• How many inmates are boarded out?

• How many inmates are boarded in and for whom?
Disciplinary problems and staff and inmate safety.

- What is the breakdown by type of disciplinary infractions (e.g., major/minor, antisocial behavior, destructive behavior, noncompliance behavior, security related behavior, violent behavior)?

- What is the rate of inmate on inmate disciplinary infractions per 50 or 100 or 1000 inmates?

- What percentage of these infractions were sexual assaults?

- What are the trends in disciplinary infractions (charting quarterly)?

- What are the security classifications of inmates who initiate fights?

- Is there any correlation between the inmates’ fighting and housing assignments, gang affiliation, and race?

- What is the rate of inmate assaults on staff disciplinary infractions per 50 or 100 or 1000 inmates?

- What is the trend (charting quarterly)? What is the security classification of inmates assaulting staff?

- In the past year, how many times did staff use force to manage an inmate situation?

- How many acts of vandalism per 100 inmates by month?

- How many incidents of contraband per 100 inmates by month?
Public services.

These data elements monitor the requirements for services to public, access to basic inmate information, waits for to visit Web registration for inmate visits, inmate fund deposits, and so on.

- How many inmate visitor request transactions were processed by quarter?
- How many visits were conducted (total and average per week)?
- How long is the average wait time for visits?
- How many victim notifications were sent prior to an inmate’s release?

Internal operational problems.

- How many cells are off line today, last week, month, year?
- How long has a cell been off line and for what reason?
- What is on the maintenance list and for how long?
- Aggregate list of property by type damaged or destroyed last week, month, year.
- How much (list/count) missing equipment by week, month, year by type and location?
- How many (list/count) staff were assigned to light duty by shift? Why and for how long?
• How many (list/count) staff were on temporary leave of absence by reason and length of time?

• How many inmate grievances with staff by week, month, year by type of grievance?

• How many staff grievances by week, month, year by type by shift?

• How many security cameras were off line per day, week, month, year, by location, by average time off line?

**Treatment programs and inmate needs (e.g., vocational, educational, work release).**

• How many inmates are homeless and how many are successfully referred to housing assistance upon release?

• What are the aggregate assessed program needs of the inmate population (e.g., substance abuse, GED/high school completion, employment skills, cognitive behavioral, vocational training)?

• What programs are offered in the jail?

• What is the capacity of each program?

• What is the utilization (percentage of capacity) of each program by day, week, month, year?

• What are the successful completion rates of each program?

• What is the failure rate and aggregate reasons for failures?
• What are inmates’ average lengths of time in each program?

• What is the ideal curriculum length for each program to match participants’ average length of stay?

• What percent of the population is idle e.g. no programs or work assignments?

• What percentage of the population had a job prior to incarceration?

• Of these, how many were granted work release?

• What percentage of the previously employed population was classified minimum security?

• Of these, how many were granted work release?

Medical and liability issues.

• What is the average length of time from intake to the inmate’s initial medical/mental health screening?

• What is the average length of time for the inmate’s first screening by a medical professional?

• How many inmates are identified at intake with pre-existing medical or mental health conditions?

• What are the aggregate pre-existing conditions (e.g., percentages with high blood pressure, diabetes, breathing problems, heart problems)?

• What percentage had no medications on their person for these conditions?
• What was the average length of time before their medications arrived at the jail?

• How many inmates missed their scheduled medication dispensing and why (last week, month, year)?

• What is the average length of time for an inmate identified at booking as having a medical or mental health problem before the inmate is seen by a medical or mental health professional?

• How many inmates are housed in a detoxification cell on average per day, week, month, because of severe inebriation, drugs, or alcohol?

• What is the average cell check time?

• What was the Blood Alcohol Content/Preliminary Breathalyzer Test for each inmate placed in a detoxification cell for alcohol and what was the average time until the level was rechecked?

• What percentage exceeded the first reading?

• How many EMS transfers per week, month, year and for what reasons?

• What costs and resources are associated with the management of special inmates?

Incidents and disciplinary actions.

• How many incidents were reported last week, month, year?
• What were the aggregate incident reasons?

• Who reported the incidents and on what shift?

• What were the total number of incidents reported by each individual officer?

• How many disciplinary infractions by week, month, year by infraction and major/minor?

• What was the average time from ticket issuance to hearing?

• What was the breakdown of hearing dispositions?

• What is the average amount of ordered segregation time?

• What is the average amount of good time confiscated?

• How many disciplinary hearings result in further administrative action (e.g., formal grievance, lawsuit)?

• What is the aggregate number/percentage of officers who issue disciplinary tickets?

• What is the aggregate number/percentage of disciplinaries issued by facility location, by security classification level, shift?

**Lost and stolen inmate property (issued).**

• What were the reported missing or stolen issued or personal property items of inmates by week, month, and year?
• What is the aggregate number of missing items?

• How many missing or stolen issued or personal property items by location, security level, and shift?

Management of inmate funds and commissary.

• What was the total amount of funds deposited in inmate accounts and by whom?

• What was the total amount of funds debited from account, by reason, by whom?

• What was the fund balance by week, month, year?

Identification of inmates.

• How many inmates were booked into the facility prior to positive identification that resulted in the need to modify or merge with a previous, existing booking record by week, month, year?

• How many incidents of incorrect wrist bands or inmate ID cards were reported by week, month, year?

• What was the nature of the incorrect information (e.g., wrong inmate, wrong security classification, wrong inmate photo, other incorrect bar code information)?
Officer safety issues.

- What is the rate of disciplinary infractions for inmate on staff assaults per 50 or 100 or 1000 inmates?
- How many of these incidents were perpetrated by inmates with previous histories of inmate or staff assaults from current/prior incarcerations?
- Were the inmate perpetrators identified by the classification unit as high risk assaultive, prior serious behavior problems, mentally ill or unstable, and so on prior to the staff assault?
- Were there any cases in which this known information was not provided to floor/unit staff prior to the assault?
- Were there any cases in which this prior incarceration information existed but was not identified and documented by classification staff?

Compliance tracking (recreation time, showers, clothing, other basic inmate rights).

- What are the recreation requirements/privileges for the inmate population by security classification?
- Using data from manual or automated inmate tracking systems (e.g., RFID, scanable wristbands/ID cards, inmate movement logs), how many inmates did not receive their minimum recreation privileges per week, month, year, by block/pod, security level, gender?
• Using data from manual or automated inmate tracking systems (e.g., RFID, scan able wristbands/ID cards, inmate movement logs), how many inmates did not obtain their minimum access to showers per week, month, year, by block/pod, security level, gender?

• Using data from property logs, how many inmates did not receive their minimum clothing or property allotment by week, month, year, by clothing/property type, gender?

• How many inmates were unable to place their mandatory phone call at booking by week, month, year, by reason?

• How frequently was the inmate phone system off-line or out of order?

• How many inmates were unable to receive basic hygiene items after transfer to general population by week, month, and year, by reason?

Reentry status upon release to the community. These data elements are collected to avoid warehousing, a common correctional goal of jails. This policy requires the use of indicators that focus on the provision of specific needed services, preparation for re-entry, ratio of time in activities versus time doing nothing, average hours/day in idleness, and so on.

• What were the assessed needs of individual inmates and the overall inmate population (e.g., substance abuse, housing, employment)?

• What treatment or self-help programs were offered in the jail?

• How many inmates participated in each of these programs by month, year?
• What percentage of the targeted population were released from jail with a case/transition plan to address their assessed needs?

• What percentage of the targeted population were referred to treatment/support in a community agencies?

• To what specific agencies were inmates referred and for what need?

• What percentage of the population was released under probation or parole supervision?

• What percentage of the prior released population were subsequently booked into the jail for a new arrest or conviction in the past year, two years?

**Level 3: Planning and Policy Analysis Information Needs**

This level of information focuses on queries and information needed to support a multiplicity of planning, policy analysis, forecasting, and budgeting questions. This information analyses at this level are typically faced by administrators and policymakers. Such data allow administrators to raise many queries if they see major changes in various populations or offender categories from either entry or release from the jail. Queries about these trends from jail managers and policymakers provide guidance for the type of follow-up statistical analyses that is applied to the data. Examples of queries and monitoring indices include the following.
Trend and forecasting data to plan jail bed requirements.

- What were the total bookings and releases by month, year for the past five years?
- What was the average length of stay by year for the past five years?
- What was the average length of stay by release type?
- What were the total bookings for the past year broken down by age group?
- What were the total bookings for the past year broken down by arresting agency?
- What was the average daily population (ADP) by month, year for the past five years?
- What was the peak/highest daily population count for each of the past 12 months? What was the lowest ADP?
- What was the ADP of the population by security level, by month, by year for the past five years?
- What was the average daily population of inmates booked and released within 72 hours? What was their average length of stay?
- What was the average daily population and average length of stay for inmates classified maximum security? Medium security? Minimum security?
- What was the average daily population and average length of stay for the sentenced population? The unsentenced population?
• What was the average daily population for those housed more than 72 hours?

• What are the general population census forecasts by age group for the next 10 years (to support jail population forecasts)?

Patterns of utilization of available cells.

• How many cells were off line in the past year?

• How long were these cells off-line on average? For what reasons?

• How many cells/pods/units housed more inmates than their rated capacities?

• Which security levels were overcrowded?

• On average, how many inmates per day were housed in cells/pods/units over their rated capacity?

• Was the overcrowding a result in part of boarding inmates from other jurisdictions? How much?

• How many inmates were housed outside their assigned security classification level by month during the past year by security level?

• On average, how long were inmates mis-housed?
Crowding management: Need to identify low-risk candidates for early release.

- What are the numbers of inmates in each of the inmate target populations that could be candidates for early release, home detention, or other jail diversion (e.g., pretrial, minimum security, low recidivism risk)?

- What is the primary offense and crime class of these inmates?

- What was the aggregate length of stay of these inmates?

- What would be the average daily jail bed days saved if a given percentage of these target populations were diverted to other correctional options?

Recidivism as a result of lack of community transition support.

- What are the recidivism rates of the inmate population?

- What were their assessed criminogenic needs?

- Which inmates received treatment for their assessed needs prior to release from jail?

- Which inmates received treatment upon release?

- In what programs did these inmates participate?

- How many inmates successfully completed treatments?

- What was the course of treatment?

- What were the treatment gaps in the jail, in the community and why?
Court order/mandate to reduce intake processing times and mandatory release triggers.

- How many times did the jail’s population exceed court-mandated minimums?
- How many times were early release mechanisms triggered because of overcrowding?

Impact of the three-strikes law.

- How many inmates were incarcerated in the jail with a three-strike rule or habitual-offender charge added to their current offense in the past year?
- What was the average length of stay from booking to conviction?
- What was the average length of stay from conviction to sentencing?
- What was the average length of stay from sentencing to prison transfer?
- How much did these lengths of stay at each processing stage differ from those of the rest of the felon population?

Impact of new legislation/sentencing laws/court orders.

- Were there any incarcerated inmates who were affected by new legislation or new local arrest, bond, or sentencing policy (e.g., for drunk drivers, mandatory sex offender registration, technical probation/parole violations)?
- How many of the above cases and what law or new policy?
- What was their average length of stay, unsentenced and sentenced?
• What was the average length of stay for similar inmates prior to the change?

Impact of Immigration & Naturalization Service policy (Immigration & Naturalization Service holds, reasons, average length of stay).

• How many inmates were incarcerated for INS holds in the past year?

• For how long and for what reason (e.g., new arrest, boarding for a fee)?

• What is the country of origin of these inmates?

• What is the gender of these inmates?

• For what percentage of the average daily population did they account?

Class action law suits (including external groups such as the ACLU).

• How many lawsuits were brought by inmates or inmate advocates in the past year?

• What was the reason for the lawsuit?

• How many of these lawsuits went to court?

• In how many of these cases were the jail, department, or county found liable?

• What was the disposition of the court (e.g., monetary payment, change in staffing levels, change in practice, changes to the physical plant)?

Work and processing flows and efficiencies.
The results of monitoring inmate processing workflows of staff can be very informative in determining operational efficiencies. A good example of this is the use of staff resources to make security classification decisions. Most states allow inmates to be held in the holding or pre-classification area of the jail for up to 48 or 72 hours. In most full service jails, approximately 70% of the new intakes are released within 72 hours. However, many jails fully process, interview, and classify all inmates at intake only to turn around and process them out of the jail within a short period of time. If, for example, the classification staff waited to classify newly admitted inmates (excluding those not entering the jail sentenced or those with violent crimes with likely high bonds being set) for 48 or 72 hours, this simple act would reduce the classification workload by 50% or more. Note: Adequate holding space would be clearly required to delay the processing of these inmates.

Other informative indices that may assist in monitoring processing efficiencies for both jail staff and other agencies (e.g., courts) include:

- What is the time from arrest to a bond hearing?
- What is the time from arrest to arraignment, from arraignment to conviction, from conviction to sentencing (length of time to generate a Pre-Sentence Investigation), from sentence to release?
- What is the percentage released for time served?
- What is the average number of classifications performed per week, month, and year by each classification officer?
• What is the average number of classifications and reclassifications done per week, month, and year, by reason, by each classification officer?
CHAPTER 4: DATA USES IN POLICY ANALYSIS AND ORGANIZATIONAL MANAGEMENT

This chapter addresses the use of data for problem-solving and policy analysis problems in a jail context. A well-established policy analysis framework is presented as a series of steps or stages that characterize virtually all jail policy problems. Each policy stage uses data in different ways for different subsidiary purposes, for example, from the initial detection of a problem to clarification of the nature and causes of the problem, to solution development, and finally to the evaluation of impacts of the chosen solution. Data are intrinsically involved at each stage. Thus, we take a careful look at the challenge of data driving policy and clarify its diverse stages.

An additional theme of this chapter, which we examine first, is the rising importance of data and analytic procedures for jails when they are viewed as information-based organizations. It has become very clear that virtually all criminal justice organizations, including jails, are driven by information. From initial intake to final release, virtually all key decisions are largely driven by the availability, quality, and careful analytic use of data to support the variety of sequential decisions made by jail personnel. Thus, in the first section of this chapter we briefly comment on some of the main themes that emerge when jails are considered information processing organizations and active users of information technologies.

Empowerment and the Politics of Data

Power, in a jail organizational context, is the capacity to mobilize organizational energy, resources; information, and staff to support particular goals and outcomes. Most jail managers
are aware of the link between knowledge and power. Leadership power grows to the extent that the particular leader has both access to data and the skill to transform it into usable and defensible knowledge. The goal of any use of power is to achieve some desired objective or policy, for example, to influence the behavior or attitudes of staff or inmates, to achieve needed resources, to increase access to information, to change the assignments and procedures of staff, or to propose specific performance improvements.

**Knowledge is Power**

The power of knowledge—and its foundation in data—is increasingly central to jail organizational processes that involve leadership, planning, directing, controlling as well to achieve performance improvement. In witnessing such interactions, jail staff at all levels often observe power use (legitimate or otherwise) and become aware of its importance for both personal and organizational success. Those jail managers, administrators, and line staff with more access to data and greater skills to analyze and synthesize them into actionable knowledge will gain influence, irrespective of their bureaucratic power position, while others with less skills will lose influence.

When managers’ influence stems from superior analysis linked to supportive data, they will typically gather more influence and control. The power of knowledge upgrades that manager’s ability to build consensus, set goals, propose actions, and direct organizational energies toward the selected goals. Knowledge thus can be used to organize and rationalize most jail procedural and policy decisions and the subsequent implementation efforts and behavior of staff. Potential
loss of power of senior managers is also a possibility with the ever-increasing importance of information technology and analytic procedures. In some instances, senior staff, even though they may occupy powerful bureaucratic positions, may become highly dependent on specific lower-level employees who may have more direct access and skills to organize and analyze the data and information needed by the senior manager. To the degree that these senior managers lack the necessary skills or are data averse, their power position may erode.

**Politics, Power, and Jail Data**

Knowledge and supporting data become particularly potent in political decision situations in which stakeholders must make highly contested choices, often regarding policy orientation or resource allocation. Stakeholders use power in these situations to justify desired results or to ensure the acceptance of their preferred policy options to reach these results. In most jails, a constant dynamic among senior managers and departmental units involves competition for various resources including access to information or status positions or to prioritize specific programs or procedures. Influence and power in these situations is increasingly based on knowledge claims and are key factors by which issues are resolved. Thus, as noted earlier, power and influence flow to those managers or departmental units in the jail who have the best ability to establish and control the information resources particularly in a jail environment in which data-driven decision-making (DDDM) is incorporated.
Becoming an Information-Driven Jail: What is DDDM in a Jail Context?

DDDM in corrections rests on practices (e.g., total quality management, organizational learning, and continuous improvement) that have originated mainly in industry and are designed to support both decision-making and planning. These approaches all involve the goal of organizational improvement by systematic collection and use of categories of data that broadly reflect the function of the overall organization as well as those of specific departments. DDDM has several main steps.

Step 1: Collect Appropriate Data

As noted in Chapter 3, it is critical to realize that the types of data collected will vary across different units or departments of a jail as well as for the specific functional unit under consideration (e.g., security, treatment and programming, staff resources).

Common data categories include:

- Input data such as equipment and labor costs, facility costs, program costs, etc.
- Outputs or work done, such as treatments provided, classifications completed, number of supervision tasks completed, number of admissions completed, number of criminal history searches. These will vary according to the specific work of different units or departments and may even include follow-up data
such as community services provided, number of inmates given housing help, and so forth;

- Results or outcomes data such as escape rates, disciplinary rates, rates of inmate injuries, staff morale levels;

- Work quality, such as error rates in data collection, percentage of tasks completed on time, numbers of inmates mis-housed in wrong custody levels, and compliance rates with various correctional standards.

**Step 2: Make Sense of the Data**

In this step, raw data are turned into policy-relevant information or actionable knowledge. Clearly, raw data must be analyzed and interpreted to clarify jail processes and gain insights to explain the data. The analysis process transforms raw data into meaningful trends and insights that yield actionable knowledge so that planners and managers may compare the merits of different solutions. Two resource issues are critical:

Data Quality: A first critical issue for many jails is the quality of their data. Clearly, the accuracy and accessibility of data will vary across jails. Some jails have excellent and well-managed data collection processes, and others clearly do not value data, may place staff into work overload situations, or tend to be more casual about data collection and verification functions.

Analytical capacity and skills: This second task of making sense of raw data and transforming it into useful knowledge clearly requires some technical skills and training. Jails vary enormously
in their ability to turn data into valuable information and actionable knowledge. Thus, in the absence of high-quality data or of the needed technical skills for analysis, it is likely that low quality data or inadequate analysis can produce misinformation and invalid inferences by administrators or managers.

**Step 3: Apply of This Knowledge to Jail Decisions:**

Decision-makers must then rely on actionable knowledge that is combined with their judgment and background knowledge of the jail to select actions to resolve a specific jail problem. These actions may include: development of revised goals, assessment of inmate needs to guide programming, design of responses for non-compliance, evaluation of the effectiveness of various programs, reallocation of resources, and so on. Two broad themes reflect how data are used at this stage:

Analysis for clarification and understanding: Data analysis is used to inform, identify, or clarify critical jail issues or problems (e.g., why have disciplinary incidents doubled in the last six months? Why are staff members using up so many more sick days?)

Actions are formulated and taken: Data analysis is then used to justify some specific action, policy, or procedural change (e.g., revision of security procedures, revised allocation of resources, and abandonment of an ineffective program). These actions may lead to new policy goals, performance, or efficiency objectives based on these statistics. Administrators and managers may use the data findings to revise staff procedures or incentives to achieve improved
performance levels or to reach new quality standards (e.g., timeliness, correctness, efficiency). Any specific changes in policy or procedure can thus be justified by data analysis findings.

Factors That Support Transition to an Information-Driven Jail

Not every jail is successful in transforming its decision-making culture into that of a smart, information-driven jail. Several key resources and cultural changes are needed. The most important are as follows:

Leadership Motivation

A sufficient threshold of key supportive supervisors and jail administrators must typically be present to ensure success. These must be highly motivated by the advantages of raising the bar on data utilization, intelligent data analyses, and decision-making excellence. Such managers must themselves become role models for the rest of the staff to reflect these attitudes and practices of using data to guide and bolster their policy decisions and monitor work performance. These managers must also demand data-informed decisions from other levels of the jail as IT resources and capacities are introduced and implemented. These practices will serve to ratchet up the value, accuracy, and quality of data collected by the jail.

Leadership Political Skills

Political skills are needed by senior managers to address several issues.
(1) *Resistance and sabotage within the jail:* Any major technological shifts that require new modes of practice or skills or that produce power shifts between managers may meet resistance at many staff levels. “Business as usual” is often linked to inertia and stubbornness among staff. This must be addressed mostly by education, added incentives for good practice, and ultimately with the use of sanctions for intractable resistance.

(2) *Interagency information sharing:* Informational silos and boundaries have plagued jail operations, so jail managers must be skilled at setting up and achieving coordination across complex criminal justice systems. Information-sharing agreements with courts, law enforcement, state prisons, probation departments, and so on require considerable political skills among jail managers as well as IT skills to ensure effective data transmission and coding.

(3) *Resource acquisition for DDDM:* A successful IT function is based on a foundation of a multifaceted information infrastructure, a well-designed MIS, and adequate staffing. This inevitably means financial resources must be acquired to support this infrastructure. Managers must have the vision, understanding, and political skills to successfully acquire these resources.

(4) *Inculcating a supportive cultural shift in the jail:* Not all jails successfully achieve this cultural shift toward valuing and using their databases to drive decision-making. Top managers must lead the way by consistently emphasizing the value of data,
implementing quality control procedures, and setting an appropriate example for other managers across the jail. The culture of the jail must be sufficiently malleable to allow change to occur in decision-making supports. The new culture must value data and its application to decision-making. Leaders must act as role models in using and valuing data. Thus, problem-solving, creativity, and knowledge management must be valued, prioritized, and supported by leaders. These attitudes should be promulgated across all levels of the jail. Staff at all levels must learn to appreciate the value of data as a basis for actionable knowledge. In such a culture, data are vigilantly used to support key decisions. Managers and staff should thus view knowledge and data as critical assets to be used as a critical problem-solving resource. The idea of an information-rich department is promulgated across all units and their middle managers.

(5) Support for data-sharing and communication channels: Senior administrators must also support the sharing of information across communication channels both within their jail and with external agencies. Jail staff in various departments must make every effort to share relevant criminal history, classification, risk/needs assessment, and demographic data with other agencies that critically need this data for their own decision-making. Relevant work-performance data must be available to staff at all levels of the jail. This is particularly critical for data relative to the key goals of the jail (e.g., inmate safety, staff safety, security breakdowns, efficiency).
(6) **Use of data-driven planning and policy decisions:** Senior administrators and planners also must be open to careful data analysis as a basis for policy decisions and should support and use such tools as analytic forecasting tools for jail trends and projections. More broadly, criminal justice jurisdictions must embrace a culture of DDDM as a prerequisite of organizational intelligence and performance with sustained data input to inform planning and monitoring performance goals.

**Building an Information Infrastructure: Databases, Data Quality, Data-Sharing, and Communication Channels**

Because relevant and accurate data are the foundation of DDDM, successful jails must deeply appreciate the need to gather and accumulate sufficient coverage of key data elements. This requires managers to attend to data coverage, to data quality and proactively adopt data-sharing agreements with all CJS stakeholders (e.g., courts, probation, law enforcement) and community agencies (e.g., mental health, treatment providers). To build a fully integrated jail MIS can be a complex task that requires the aggregation of data in multiple formats from multiple sources. Some major issues are as follows:

Data collection capacities and staffing: Most jails implicitly reflect the importance of data in the volume of staff resources that are engaged in data collection tasks (intake and booking, records staff, classification staff, etc.). However, a critical failure in some jails is the understaffing and work overload of these key departments, which may result in poor quality or incomplete data.
gathering. This tendency to overload the staff who perform these functions may sabotage DDDM and encourage resistance to the effective use of IT and data analytic procedures. Thus, the major information departments (e.g., booking/intake, classification, medical and treatment staff) can become so understaffed so that the quality of their data erodes and the scope or coverage of data narrows to a bare minimum. In such cases, any subsequent policy analysis work can be undermined by the lack of adequate data.

Building electronic records from paper records: A first infrastructure task occurs when electronic data are developed from the older practice of paper records. When this transition occurs, the data tend to be more readily organized, accessible, and analyzed. Electronic networks for data sharing and coordination have rapidly replaced paper transmission of information. This transformation requires significant changes in the way offender data and jail-processing data are gathered and stored. This transformation, with its quicker access to more organized data, can impact the way correctional professionals in all relevant agencies view and execute their daily work.

Building appropriate information channels: A key function of a jail information network is to share information across all levels and departments of the jail and with other agencies. When such information channels are functioning well, this situation should enhance trust between sender and user of the information and increase staff awareness of interdependency between units. Information silos and boundaries, both within the jail and between external agencies, must be bridged using mutually helpful data-sharing agreements.
Within-jail networks: Within any jail, different departments and middle managers require timely and relevant management reports and often need real-time access to information about individual offenders. Security, for example, requires timely and relevant classification data to guide custody, supervision, security, and keep-separate decisions. Jail planners and policy staff require targeted data to support decisions on staff scheduling, offender tracking, quality assurance of data categories, and broad performance measures for all jail departments. Networked jail information systems cannot be seen as primarily supporting administrative needs but are increasingly viewed as a strategic function to help jails deal with multifaceted correctional goals at administrative, middle manager, as well as line levels.

Interagency networks: Jails are also intrinsically dependent on the overall network of criminal justice agencies. Relevant information must be shared with these agencies. LANs and WANs can connect criminal justice agencies across a total jurisdiction. Political care must be taken in the development of this network of information channels to courts, probation, pretrial services, treatment providers, and so on. Political issues are inevitably involved in building trust and support so that jail programs and policies are all well aligned with those of the other agencies rather than working at cross-purposes.

Recognition of the interdependencies with a jail’s business partners is a critical component in planning interagency networks. In some cases, information sharing with the courts, law enforcement, DA, state corrections, and other agencies is not appropriately envisioned or designed so that inevitably systems planning must address this exchange of data. To ensure that the underlying technical architecture supports cross-agency interfaces is an important
consideration for a strategic IT plan. New jail systems should not be developed without critical access by other justice agencies or with ineffective interfaces.

Building competence and data literacy: A high degree of competence and understanding of DDDM must be achieved among both upper administrators and middle managers. Training, mentoring, and external support in running an information-based jail are often required. Analytical capacity and the ability to query databases and to understand data tables and graphs must be developed. Managers must be supported in how to formulate database queries for IT staff.

How Business Practices May Change When A Jail Adopts DDDM

The emergence of DDDM in a jail can prompt many organizational and cultural changes. These can be important for upgrading data-gathering, data quality, storage, and analysis processes and for interagency coordination and trust. All of these are required for successful implementation of an effective MIS. The following changes are particularly noted in jails:

(1) Impact on decision-making at line levels: A difficult adjustment for many jail staff, particularly classification and security staff, involves the shift to data-driven decisions. Frequently, the subjective judgments of staff may differ, for example, from an objective risk-assessment system. Staff may lack trust in the accuracy of the objective system or the data and see it as simplistic or wrong. They may choose to override the data-based system and replace it with their discretionary override.
However, a substantial body of research has demonstrated that the data-based risk models consistently outperform staff judgments (Quinsey et al., 1996; Garb, 1998). Thus, steps must often be taken to systematically review staff overrides. As the confidence of staff rises in regard to the objective system, they may use less overrides and begin to appreciate thoroughly the value of accurate, high quality data and practice data collection in ways that assure better quality. Thus, there can be a dynamic interaction in which staff reliance on and trust in data-driven decisions rises in conjunction with improved data verification and quality.

(2) *Impact on decision-making at policy and managerial levels:* Data will become progressively more valued as it is analyzed, used, and presented to bolster or support various policy or planning decisions. The adage “knowledge is power” is more strongly reflected in those managers who can most accurately and persuasively organize background data to support specific policy positions. This requires skills in converting raw data into actionable policy recommendations. Section C of this chapter deals with the specific analytical steps of policy analysis.

(3) *Impact of performance monitoring on work style and morale:* Walton (1989) indicated that the availability and use of performance and results monitoring by managers may dramatically change how line workers conduct their work and that it may also create morale problems if used coercively. (Schoech 1982) Data and performance-monitoring systems also can be used to document and describe management performance. This should enhance management skills with improved
feedback on their decision-making. However, in some cases, managers and administrators may become defensive when they face such objective scrutiny and may suppress or sabotage the performance-monitoring systems. They, as well as line staff, in some cases may adopt the political tactic of discrediting and then dismantling or sabotaging the monitoring procedures.

(4) Impact on competencies, data literacy, and staff skills: Higher levels of data literacy are a requirement in a data-driven jail. Data literacy implies that jail staff (from line to administrators) possess a basic understanding of how jail data and the MIS can be used to monitor ongoing jail functions, assess performance and results, and detect and analyze emerging or existing quality control issues and errors. Managers must have skills to raise data queries, break down and analyze competency problems, select among appropriate solutions, and evaluate the success of chosen solutions.

Why is data literacy so important among jail managers and administrators?: Jail administrators and personnel at other staff levels must understand what kind of data elements are needed to address trends in their specific units, including: work demands, work done, work quality, and performance outcomes. Such data are critical for ongoing planning, implementation, modifications of jail policies and procedures, and educational and training programs. Data literacy is a foundation on which jail administrators and managers must evaluate and interpret data trends in their jail.
(5) Impact of highly skilled staff and higher technical competencies: Traditional jails do not require the degree of skills needed in jails that are dominated by data, software, and information. The information-driven jail, in contrast, will require new, diverse, and progressively improving analytical skills. Several jail jobs (e.g., classification, administrative policy analysts, planners) will become much more technical. There may, initially, be few staff with the needed numerical skills and competencies to match the new skill requirements. Thus, ongoing training becomes critical, and this may result in the outsourcing of many of the more technical functions (as noted earlier).

The emergence of movements such as evidence-based practice (EBP), theory-driven assessment, reentry programming, and theory-guided treatment planning also require substantially more training among the staff and management of certain departments’ (e.g., treatment staff and treatment directors).

(6) Impact on jail hierarchy and leadership: Several factors may impact the traditional hierarchical chain of command structure of jails, as follows:

- As jails become knowledge-driven organizations, several staff levels of the jail will become professional and more knowledgeable. Such staff as a result may be less easily managed in the traditional military manner. For example, a widely reported finding from the U.S. military was that as lower level troops become more knowledgeable with greater access to data, they become less
willing to follow their leaders blindly. Thus, information-based organizations such as jails may need new relationships between leaders and subordinates as leaders in these situations must both nurture and depend on subordinates’ knowledge rather than demand blind obedience. Critical judgments may increasingly depend on these highly knowledgeable subordinates.

- Stronger vertical communication channels will emerge. As information access increases vertically as well as horizontally across information-based jails and their networks, these faster communication capacities tend to produce many so-called end runs across hierarchy levels and subvert or even collapse the hierarchy. For example, line-level or middle managers with increased access to information may have direct and very broad access to most key information regarding all jail issues and thus may assist with projects or decisions that formerly were conducted at higher chain-of-command levels.

- Faster decision-making: Another factor that impacts the traditional jail hierarchy is the ability to handle large amounts of information more efficiently and at higher speeds. This allows correctional organizations to streamline their operations. With increased opportunities for defensible and rapid decision-making, hierarchical bureaucratic structures again are more easily bypassed or become less relevant. Thus, large bureaucratic government agencies may become less hierarchical.

- Many jail staff levels will be seen as so-called knowledge workers. In the information-based jail, a rising number of job slots may require higher skill
levels and more knowledge content than in the past. As these jail jobs become more knowledge and skill-based, these staff members will be more valuable, less interchangeable (just as knowledge workers in other industries are becoming less and less replaceable) and more costly to replace. This is partly because of higher educational costs and OJT training costs. We can expect that, not too far in the future, an increasing number of jail job descriptions will incorporate specialized technical knowledge (e.g., numeracy skills, computer-based skills, data manipulation skills) as well as verbal abilities to provide effective communication of complex data manipulations and policy implications (e.g., presentation and logical inference skills).

- Rising contrasts between information directors and IT directors: Although most current IT directors have backgrounds in hardware and computer programming, they may have minimal skills for analytic or statistical procedures. Thus, an emerging need in jails will be for a new kind of correctional knowledge manager with strong data analytic and policy analysis skills and a deeper understanding of correctional psychology and rehabilitation to transform jail data into meaningful action knowledge to support data-driven policy. This new category of manager must have the skills to manage, organize, effectively use raw data to produce actionable knowledge and clearly communicate these findings to guide the jail in key policy and procedural decisions. Such analytic and communication skills will
be particularly important for planning, forecasting, and monitoring early problem detection and problem analysis as well as communication skills.

Outsourcing will be seen as a beneficial option for jails: Currently, most jails retain an in-house IT unit with a strong vertical integration of command. However, the rapid evolution of IT into overall knowledge management suggests a further shift of certain functions toward outsourcing. Correctional agencies, including jails, may begin to take advantage of highly expert external consultancy companies that offer specific expert analytic competencies. Thus, jails can avoid the expense of continual staff training, retention of expert staff, and the related costs of maintaining highly skilled analytic staff. Instead, jails may outsource much of their analytic work that requires high competencies (e.g., dynamic systems modeling, complex forecasting). Another reason for such outsourcing is that in-house production often becomes inefficient and beset with procedural rigidity. This can result from IT staff forming an internal monopoly that can force other jail departments to experience long delays and pay higher prices as the IT unit becomes overworked. It is worth noting that with increasing data flows, large private companies (e.g., GM, Ford) have substantially increased outsourcing to deal with complex problems. This shift may partly explain the explosion in IT services offered by the private sector. Public organizations, such as jails, may focus on their core competencies that are central to their mission while obtaining significant analytical expertise from decentralized outsourcing to specialized firms. Mounting budget pressures and demands for efficiency may progressively force government agencies to seek potential efficiencies and cost reductions of outsourcing.
The Uses of Data in the Seven Stages of Policy Decision-Making

Although the above description of organizational change and politics of data hinted at the ways in which jail data could be incorporated into and used to explore jail policy issues, the preceding does not clarify a roadmap of the specific steps involved in effective management and policy analysis in jails. The following sections, therefore present a well-established model of the policy circle in which several major steps are involved in approaching virtually any policy issue.
Figure 4.1

- Stage 1: Monitor jail populations, performance indicators, and emerging jail problems,
- Stage 2: Analyze and describe the problem,
- Stage 3: Understand and frame the problem,
- Stage 4: Develop solutions that may fix or address the problem,
- Stage 5: Evaluate solutions and achieve consensus on a selected solution (i.e., achieve stakeholder agreements on a specific intervention or new policy),
- Stage 6: Implement the solution, and
• Stage 7: Monitor impact and outcomes (cycle back to Stage 1).

Many criminal justice planners and administrators are familiar with these stages as this policy circle (often using slightly different nomenclature) is included in many college policy analysis courses. The particular approach below fits these seven steps to the particular problems of managing a jail using a data-driven approach.

**Stage 1: Routine Monitoring and Early Detection of Problems: Emerging Trends and Early Detection?**

Monitoring a range of key data indicators to detect emerging problems is the first key strategy and is critical for monitoring the overall performance and work challenges of a jail and for the early detection of any emerging problems.

Part of the MIS information infrastructure of a smart jail is careful and systematic monitoring across time (daily, weekly, monthly) of all of the jail’s so-called vital statistics. This is performed for the jail as a whole and for each functional area or department (e.g., booking/intake, security, treatment, medical). Many of these statistics (e.g., admissions) are monitored in both aggregate and disaggregated forms (broken down by gender, type of crime, major offender needs, etc.). Thus, jail managers use the monitoring system to obtain and review routine data on major goals of the jail, policy achievement and functioning status of the jail. If any indicator starts to deviate from the correctional goals of the facility, the manager may obtain early warning of an emerging problem, locate organizational trouble spots, and gain time to think about what actions to take.
Specific departments, such as a treatment or security, will have their own monitoring processes for specific performance and work measures. The treatment division, for example, may monitor treatments provided, treatment impacts, offender performance, attendance and success/failures in programs, and job assignments. Clearly, measures of program attendance, motivation, task completion, skills gained, and so forth may be important in the evaluation of effectiveness and the impact of programs and to inform program planning.

Monitoring is critical for problem identification in order to place issues on the policy/management agenda. In the absence of clear monitoring data, jail managers may be unaware of, or may deny or fail to recognize the scope and implications of emerging problems. The availability of critical data (e.g., increasing disciplinary problems) will often determine whether a problem is taken seriously, casually ignored, or placed on the policy agenda. Critical monitoring data and trend forecasts can powerfully counteract the tendency of some jail managers to avoid problems until they reach critical proportions. When confronted with hard statistical data, managers will have fewer opportunities to avoid emerging problems.

**Early warning and lead time: Managing by exception.** Policy or performance monitoring in a jail are more likely to be proactively addressed if sufficient early detection is possible. Thus, a critical challenge is to provide jail managers early warning of the emergence of a policy problem and lead time to consider options and select actions. Thus, problems can be tackled early before they get out of hand. Jail managers and decision-makers in criminal justice generally dislike being blind-sided by organizational problems. However, blind-siding will occur if managers do not pay attention to or fail to obtain monitoring data that can provide early
warning of emerging jail problems (e.g., an unusual increase in numbers of pretrial inmates, increases in prisoner violence). The failure of jail monitoring procedures to assess organizational status and performance features routinely is a common deficiency.
Incidence and prevalence of key problem indicators.

Inmate Assaults
Staff Assaults

What are the major assaultive disciplinary trends of the jail?

Figure 4.2

In probability and statistics, base rate refers to the (base) class probabilities of some event (e.g., suicide attempts per 100 inmate days) in the population. For example, if 1% of the inmate population attempted suicide and 99% did not, then the base rate would be 1%. Jail managers and unit chiefs should be aware of the base rates for key policy indicators relevant for their units (e.g., inmate suicide, drug contraband incidents, inmate on inmate or inmate on staff assaults, etc.) Such base rates are critical in goal-setting and monitoring. Base rates give managers and policymakers an indication of the organization’s performance levels. Changes in base rates across time can be used to evaluate changes or results of a new jail policy or procedure.
Crisis-mode responses. In the absence of proactive data that may provide early warnings, many jail managers may be complacent or ignorance of emerging problems. These managers may fail to identify problems at the early stages partly because they may have no access to monitoring indictors or because they lack the skills to use the available data. Action is not taken to prevent small problems from developing into larger, more damaging ones. Managerial complacency and passivity often result in failure to take action until a problem reaches crisis proportions. Lead time evaporates, as the time and effort to gather the needed data is lost, and in this crisis state, immediate action is often needed.

Thus, the jail can only react in crisis mode, constantly putting out fires, making snap decisions without the benefit of critical data; and functioning under extreme time pressure. Such snap judgments are typically made in an information vacuum. This style of decision-making, often called “muddling through,” is clearly not the best way to generate new policy.

A “walking-around” approach to problem detection and objective indicators: The best mix. Many correctional managers and administrators prefer to monitor by direct observations, talking to staff and taking a hands-on approach. This provides an immediate intuitive feel for jail function. In another approach to problem detection, top administrators use selected line officers as their eyes and ears in the cell blocks and across diverse departments. These senior managers may complement these strategies with their own personal tours of the jail. This hands-on approach has much merit and can provide some useful information. However, the hands-on approach should be balanced with a comprehensive set of objective, data-based indicators of system performance.
The tendency to rely on informal observations and subjective judgments has several limitations and too easily becomes embroiled in turf agendas and staff protection and bias and also is often unreliable. Much of this type of subjective information emerges from specific cellblocks or specific units where there are many filters and self-censoring barriers to the accurate upward flow of information. Staff members do not want to be the bearers of bad tidings. Thus, objective indicators collected in a standardized manner should effectively complement the eyes-and-ears approach. This will ensure that managers are in a position to monitor achievement of all major correctional goals and operations.

**Time graphs for rates of key behaviors and goals.** Graphs of such base rates for a variety of behaviors and events over time are easier to interpret than numerical tables for specific time units (e.g., separate weekly or monthly data). A time series graph may alert jail managers to gains/losses in policy achievement or changes in the indicator over time (monthly, weekly, seasonally). Before/after graphs may help illustrate the impact of new programs or policies.

**Stage 2. Problem Clarification and Information-Gathering**

The monitoring indices examples listed in Chapter 3, although useful for problem recognition, are generally insufficient to produce the needed data to flesh out a problem. Thus, in the second stage of policy development, managers typically make many query requests for additional data to clarify the emerging problem or issue at hand. This helps to produce insights into the issue and to avoid premature decisions made before the problem is fully understood. A reliance on inadequate
Data for a policy issue may simply lead to wrong conclusions, inappropriate solutions, and wrong actions. Thus, several tasks should occur in this second phase.

**Exploring hunches and generating new questions.** Jail managers must explore hunches, make queries, request additional data to verify their questions and hunches, and develop a better understanding of the issue. Clearly, IT staff may advise the jail manager about the generation of questions and to explore hunches and intuitions. Often, however, IT staff is not helpful in this stage, particularly when their training is limited to software and hardware issues. Thus the jail manager has a primary responsibility to reach an accurate, complete description of the nature of the problem (e.g., sources of overcrowding, staff morale problems).

These queries will determine what new data are needed to guide the selection of offender samples and data elements to inform appropriate statistical analyses of the data. Elias (1982) noted that it is counterproductive to start formal collection of new data without such preliminary queries. Without managerial guidance, it is unlikely that IT staff will have the knowledge to select the exact data needed to illuminate jail policy issues. Another danger is that the data available to policymakers will be limited, irrelevant, or too unreliable to support the decision and analysis process. The goal is to identify the key factors that caused the problem and gain insight into its nature. Correctional managers often fail at this stage by exhibiting little insight into the causal structure of jail problems and failing to ask incisive questions or to demand needed data.

**Turning policymakers’ questions into data and analyses.** When IT staff is given well-defined queries, they can usually identify the needed data elements and design appropriate...
statistical procedures. However, formulation of good queries and a problem statement for jail issues can be difficult. Many jail managers express their queries in vague, nonoperational terms, which may require guesswork by data processing staff about what is really wanted. Thus, a good problem statement will indicate both needed data elements and also imply the required statistical procedure.

**Statistical methods to clarify jail policy issues.** Fortunately, only a few basic statistical procedures are usually needed to answer the majority of policymakers’ queries relative to jails (Hall, 1985). These include univariate frequency distributions, bivariate cross-tabulations, three-way cross-tabulations, regression analyses, and time series graphs. Typically, the selection of these statistical methods is preceded by the selection of variables and offender samples. The basic sequence is to transform the often vague managerial queries into specific data elements from the jail’s database and then select a statistical analysis design.

**Are needed data available or must new data collection procedures be designed?** Often the required data are available in the jail MIS or in the databases of other criminal justice agencies. A vast range of data elements is typically collected across the CJS agencies. IT staff may have to do some digging to locate the needed data elements and assess their availability. Access to needed data is critical for most policy problems. It is important to find out who controls access to the data. Senior administrators may have to use some political power to ensure that needed data are made available to jail IT staff. Interagency data sharing is a politically sensitive issue between criminal justice agencies. These political matters are usually resolvable if senior policymakers have sufficiently high political influence or if they form a broad coalition
with sufficient power to gain access to needed data. If the needed data have not been collected, then new and special data collection efforts may be instituted on a temporary basis. Collection of any new data must be carefully estimated for costs in regard to time (weeks or days) and manpower requirements. Costs can be minimized by using current staff, often with an overtime arrangement, to collect the needed data. However, sensitivity to staff workload is required. Staff must understand the importance of the data and be given incentives to collect the needed data.

**Ensuring that the appropriate range of data is collected.** The best guides to the selection of appropriate data are the questions raised by the jail managers who deal with the problem, may have important insights into the issue and are usually aware of provisional solutions. The responsibility to generate insightful questions cannot be overestimated. Policymakers should examine the past development, present situation, and likely future trends of any problem (e.g., jail population growth, contraband increases). In overcrowding studies, for example, forecasts of the projected growth of the inmate population and expected jail utilization levels help to provide lead time during which planning and preventative actions for overcrowding may be more carefully considered. Thus, phase 2 of the policy process concludes when a sufficiently complete description and analysis of the jail problem has been made available to the policymaker.

**Stage 3. Developing Explanations: Obtaining Consensus on Understanding or Framing a Policy Problem**

The third stage of the policy process aims to develop an understanding of a problem (e.g., why has our jail become overcrowded? Why has the rate of contraband coming into the jail doubled?
since last year?). Policymakers generally feel that they are on safer ground when they can answer “why” questions. Policymakers and administrators usually have their own hunches, preferences, and preconceived notions about the underlying explanations for such problems. Although these personal hunches can be valuable and may aid appropriate decision-making, they may, if unverified or false, produce rigid and thoughtless policy decisions based on an erroneous understanding of the problem. Thus, this third stage must examine jail policy problems using relevant data that can objectively test the implicit hunches of policymakers and develop valid explanations for the problem. When the hunches and biases of policymakers are verified and a careful, explicit problem representation has been established, policy interventions can be more defensibly formulated.

Political competition in jails over alternative explanations. Intense competition often emerges between different stakeholders to establish or impose their preferred understanding of the nature of the problem (usually to blame someone else). Different political groups (e.g., law enforcement, prosecutors) align themselves with particular explanations of a problem (e.g., the causes and solutions of jail overcrowding). Policymakers are seldom neutral and usually hold strong gut feelings, personal biases, values, and prejudices in support of their political positions. Hard data thus become critical and is often be used selectively to support or attack particular explanations. Blaming, finger pointing, and passing the buck are commonplace. Hidden agendas and political motivations also can motivate policymakers to suppress or ignore objective data to achieve their political goals and impose their preferred explanations. Criminal justice policymakers only reluctantly abandon or modify such initial biases and implicit understandings, even when they face objective data that demonstrate the falsity of their assumptions (e.g., the
assumption that the jail is crowded because of rising crime). Months of work may be required in this stage to breakdown and clarify complex policy issues and establish an actionable understanding of a policy problem that is grounded in hard data.

**How are data-based models used to test explanations?** An explicit data-based model is a profound improvement in the level of explanation of policy problems and has several advantages for policymakers as discussed below.

Explicit models make policymaker queries and hunches explicit, and thus objectively provide test these assumptions and hunches. Hidden assumptions about cause/effect linkages and underlying causes of the problem are made visible and empirically tested in an explicit data-based model.

Explicit models offer a picture or objective representation of the problem that may deepen and clarify a policymaker’s understanding. For example, the graph (shown below) of a jails average daily population under different assumptions regarding booking rates and average lengths of stay can be used in a simple growth model to assess different levels of the jail population across time and projected into the future. Similarly, recent developed software for dynamic systems modeling can represent jail crowding as a series of input flows, feedback loops, and containers. These can clearly organize various cause-effect relationships, suggest likely consequences of interventions, and clarify the factors that are truly relevant to the population growth of the jail.

Figure 4.3 Jail Population Forecasts
Dynamic models can be used to demonstrate what-if and simulation studies. Data-based models can also be used to explore diverse interventions and possible solutions to complex predictions in the form, “If we do X, then Y should follow.” Policy decision-makers can use such simulation or what-if software to estimate the likely outcomes of various policy solution options. When different policy assumptions are fed into such a computer model, the predicted consequences can illustrate the expected impacts of alternative interventions. Simulation approaches, however, highly dependent on the quality of the model and data on which they are based. Thus, they essentially require well-validated, cause-effect models of the impact of major variables that underlie a particular problem (e.g., jail population growth, staff morale issues). This phase of the policy process particularly for jail overcrowding studies is often based on complex statistical analysis. Few criminal justice administrators are expert in statistical projections and stimulation
analysis and many must rely on statistics experts or consultants to conduct appropriate analysis and to help with interpretation. Policymakers and managers must accurately communicate their queries/hunches to the statistical experts to ensure appropriate analysis, to avoid biased interpretations, and to produce needed answers.

Empowerment (vs. immobilization) of policymakers: A good model of a policy problem provides the policymaker with guidance, logical coherence, a way of thinking about the policy problem, and a guide to potential solutions. Hall’s (1985) systems model of jail overcrowding is a good example of these benefits for criminal justice policymakers. Valid models tend to simplify problems, produce greater clarity, and offer effective decision-making guidance to policymakers. Conversely, policymakers often remain immobilized when they cannot “get a handle” on a problem. When policymakers cannot understand what is happening, if they face too many knowledge gaps, or become overloaded with data, they can often become immobilized.

Formulation of guidelines for new policies and solutions: As noted above, a valid causal model of a problem (e.g., jail crowding) is particularly useful if it can clearly point toward a course of action. Explanatory models such as Hall’s (1985) explanation of the causes of jail overcrowding not only clarify major causes, correlates, and outcomes of the problem but often suggest solutions. In the jail crowding model, various inputs may be reduced, throughputs might be shortened in time, various outflows from the jail might be increased, and so on. Each pathway may be linked to particular processes and decision points that can be driven with new procedures or different policies to increase or decrease the effect of these flows on inmates.
Data-based explanations provide rational justification for policies and solutions: Policymakers are substantially more empowered when they have rational, logical, coherent, and data-supported justifications for their recommended policy solutions. Their case is particularly stronger if it can be supported with relevant hard data. Thus, a jail administrator’s justifications are stronger when based on a validated model with appropriate data. This becomes critical in highly conflicted issues (e.g., whether to build a larger jail or increase diversion of prisoners to community-based programs). Conversely, advocates of a particular policy option (e.g., to expand pretrial release to reduce jail overcrowding) are more vulnerable if their policy solution is not linked to an explicit and testable explanation or model.

Stage 4. Using Data to Compare and Evaluate Potential Solutions to Jail Policy Problems

The fourth phase of the policy process builds on a dominant understanding or model that emerged in stage 3 but shifts to the task to evaluating and comparing solutions to policy problems. The systematic use of data in evaluating and testing possible policy solutions can transform the policymaker’s search for effective policy solutions from a trial-and-error guesswork approach to a focused evaluation of possible solutions. In the case of jail overcrowding, for example, solutions might include:

- Expanding the jail,
- Diverting certain target populations (e.g., minimum-risk offenders to community programs, electronic monitoring programs),
- Early release procedures,
Typically multiple solutions are available when an overall systems model is adopted. We now consider some common approaches in which policymakers may use their data to search for and develop solutions to correctional system problems.

(1) **Trial and error**: This is a way to produce poor solutions to a policy problem: Many criminal justice policymakers operate at an intuitive level driven by hunches, untested biases, and a trial-and-error approach. Essentially, these policymakers often try the first or easiest intervention that comes to mind and quickly adopt it with minimal assessment of background data or systematic analyses, without a tested explanatory model, and without any look ahead via simulation studies. This often produces quick-fix solutions or addresses only the most obvious surface solutions to jail overcrowding (i.e., expand the jail). Other solutions may be ignored in the rush to expand the jail. In the case of jail overcrowding, the trial-and-error-solution of expanding the jail often backfires and is typically shown to be inadequate when the jail is again overcrowded, often within period of 18-24 months. Much hand-wringing and consternation has occurred among criminal justice policymakers as a result of such public fiascos.

(2) The use of data-based models to develop policy solutions: As noted earlier, a validated causal model of the problem is perhaps the best strategy for the generation
of effective policy solutions and to offer a logical guide to the design and selection of solutions. Some aspects of these explanations are as follows:

- Models can pinpoint more specific and testable cause-and-effect linkages that may not be obvious to decision-makers. The jail crowding model, for example, indicates many points and processes in the criminal justice system where unexpected delays in offender processing may contribute to overcrowding (e.g., in the district attorney’s office, in the courts).

- Models organize and simplify complex data so that policymakers can more easily visualize the problem and focus on clearer guidelines for action. A model of a complex process (e.g., offender processing across the criminal justice system) may reveal several stages where preventable delays occur and potential interventions are possible. For example, an analysis of jail entry populations using an objective security classification may uncover minor nonviolent offender populations (e.g., public inebriates, homeless indigents) that arguably do not belong in jail and may be better handled in community-based programs. Local law enforcement arrest policies may be partly responsible for the excessive detention of such persons. Policymakers can then re-examine the appropriateness of current release and detention policies and consider policy modifications and alternatives to divert such detainees to more appropriate settings. Appropriate data can help in the evaluation of each of these potential solutions for the number of jail days that would be saved in each case.
A complex model of a criminal justice problem may suggest multiple interventions. For example, current models of jail overcrowding (see Hall, 1985) have suggested three broad causal linkages that contribute to jail overcrowding (i.e., inappropriate entry, delays in processing and decision-making, inappropriate detention prior to release or transfer). Each of these options may include more specific policy or programming changes that may alleviate particular causes of overcrowding (e.g., interventions that focus on delay in case processing by prosecutors, or alternative judicial decision-making options that are, designed to divert appropriate low-risk offender populations to other management placements).

Stage 5. Use of Data to Select a Policy Solution

Following the task of generating and the evaluation of alternative solutions to a correctional problem, jail policymakers must then decide between several policy options, all of which may appear feasible. This decision process again can be highly political and is often dominated by stakeholders who advocate strongly for a particular option (e.g., expand the jail, divert specific populations of detainees). Often certain stakeholders base their decisions on very soft data or rely mainly on subjective impressions or political considerations. This reliance on soft data and political values may result in more effective solutions being overlooked and less effective solutions being chosen. This style may incur very high costs and impose long-term damage to a correctional system.
In general, the ideal situation is that alternative policy options should be evaluated using a range of political and technical inputs. The political input to policy decision-making, although important, must be complemented by appropriate technical input that evaluates each policy option. The role of data input (e.g., determining how many beds will be saved by releasing or diverting a particular target population) can bring a hard-headed reality to such decisions. Relevant data should upgrade the precision and objectivity of these comparisons while reducing the attractiveness of softer, more political discussion. The task of the policy decision-making group or administrator is to demand appropriate hard data to assess the potential impact of each potential solution.

Jail data to compare and evaluate policy solutions. Before choosing a particular option, the jail decision-maker should assess the relative efficiency and cost/benefit data of each alternative policy solution (e.g., decisions about what inmate target populations for diversion would provide the biggest impact on crowding reduction). Common approaches to such appraisals are as follows:

(1) *Impact and pilot study analysis:* This often entails a smaller scale pilot study to assess the likely impact of a new criminal justice policy or program on the total jail population. Small scale pilot studies can be conducted to assess the impact of a new policy or procedural change (e.g., a new classification system that may assign different percentages of detainees to maximum, medium, and minimum security levels, new arrest standards may dramatically alter options for potential diversion of certain offenders away from jail). Evaluative data on the degree to which the desired
correctional goal is reached provide invaluable preliminary data to policymakers. It is also critical to establish baseline data for such studies, since improvement can only be demonstrated relative to current levels and trends.

(2) **Benefit/cost studies for alternative policy options:** Jail policy decision-makers often can rely on a benefit from a benefit/cost ratio that compares policy options for the jail. The method may assess several policy options for several specified costs and benefits and provide guidance on which solution has the best ratio of benefits to costs. This approach rates alternative policy options on cost comparisons for several input and outcome variables. However, this method critically depends on valid data and a correct selection of benefits and costs. For example, the cost of a 24-hour Pre-Trial Release screening program may be compared to the daily bed space cost savings and the numbers of additional detainees released compared to current screening policies. These cost and bed space savings of the new screening program can then be computed. This approach requires data on average daily jail cost per inmate and the number of jail days likely to be saved by the program and the overall costs of such a program.

**Errors in policy decision-making.** This stage of the policy process is often vulnerable to a variety of errors. Studies of the decision-making errors of policymakers in corrections and other public policy areas show that decision-makers (both individual managers and groups) are vulnerable to certain kinds of errors. Two broad categories of error have been noted. Errors of omission are typically understood as the decision-maker’s failure to consider certain factors or to address properly, clarify the background, causes, trends, and consequences of various policy
options. In contrast, errors of commission typically occur when the decision-maker introduces untested biases or faulty assumptions into the decision process.

**Decision styles that often lead to errors of omission.** The following examples elucidate decision styles that often occur in jails and that are highly vulnerable to errors of omission as well as errors of commission:

1. **Impulsive decision-making:** This decision-making style is characterized by jail managers who may engage in premature or rapid-fire decisions quickly made without the benefit of data of considering the merits of alternative policies. Impulsive decision-making among jail managers may result in overreaction, emotionality, panic, anger, or knee-jerk political positions. Virtually all of the requirements of good decision-making are lost as the policymaker rushes into a premature judgment.

2. **Complacent “Do-Nothingism”:** This decision style is opposite of that of the impulsive decision-maker in terms of emotional involvement and action. In this case, the policymaker is apathetic or disinterested regarding a particular problem (e.g., contraband in the jail, complaints about food), does not take it seriously, and remains either unaware or complacent about the long-term consequences of the problem. With this attitude, the jail manager may fail to examine the problem, gather appropriate data, or consider any alternatives and instead basically ignores the issue until forced into action by some crisis. This management style often requires externally imposed litigation and court orders to ensure compliance with appropriate standards.
Generally, complacency and do-nothingism occur when policymakers face problems that do not directly impact their own interests or department. A basic task is to provide such managers with forecasting data that clearly indicates the costs and long-term consequences of ignoring the problem.

3. Casual or muddling-through decision-making: In this style, the jail policymaker is somewhat more concerned than are the “do-nothing managers” discussed above but nevertheless remains fairly casual. There is often little attempt to gather needed background data, clarify causal processes, compare alternative options, or examine the long-term consequences of an issue. In corrections jargon, this is sometimes known as seat-of-the-pants decision-making. The more formal policy literature refers to this style as “muddling through.” People who use this decision-making style often omit or overlook key perspectives, good policy alternatives or may fail to select the most effective policy. Often severe post-decision regret or embarrassment occurs when the chosen option turns into a fiasco. Janis and Mann (1977) Research into decision-making has indicated that such casual decision-making deviates from best practices policy decision-making by failing to:

- Assess the true trends and scope of the problem,
- Gather needed background data to clarify the problem,
- Gather data on the long-term costs of the problem,
- Clarify the underlying factors that caused the problem,
- Develop a clear explanation (model) of the problem,
• Evaluate, compare, and contrast alternatives objectively, and
• Gather comparative data on alternative solutions.

**Decision styles that lead to errors of commission.** Errors of commission are likely to occur when the jail manager or policymaker introduces erroneous bias or false assumptions into the decision. This may produce erroneous thinking and faulty conclusions. The following decision styles might be noted:

1. **Preconceived assumptions and bias:** Many correctional policymakers have strong biases about offenders, recidivism risks, risks of early release, the danger of high security offenders, and so on. These assumptions, if unchecked, may dramatically influence policy choices and incline a closed-minded decision-maker toward particular options that may be quite damaging. These assumptions and biases (e.g., all offenders are dangerous and all require secure detention) must, therefore, be checked against empirical data to assess their validity. The decision-maker must try to be aware of these assumptions and gather data to verify them.

2. **Distractions by irrelevant data:** Policymakers, particularly in the absence of a clear model of the problem, may introduce much irrelevant data and extraneous political considerations. These tend to obfuscate and confuse the issue and may produce immobilization.

3. **Unrealistic expectations (wishful thinking) about consequences of options:** Another danger is that policymakers may hold unrealistic expectations about the consequences
or benefits of a particular solution. Such unrealistic expectations often push the policymaker into erroneous decision-making (recent evaluations of boot camps and scared-straight programs appear to have been based on such false assumptions). Such expectations must be subjected to verification and evaluation with available data. In this situation, what-if simulation studies are useful in providing corrective feedback to policymakers.

(4) False causes and misinterpretation of problems: Policymakers often hold strong, potentially incorrect analyses about the causes of problems. This may result in decisions to address a certain cause that in fact is irrelevant. For example, a policymaker confronted with an overcrowded jail may assume that the cause of overcrowding stems from higher crime in the community. In fact, data that compare crime levels and jail overcrowding indicate only a very weak relationship between crime rates and crowding. This assumption may divert the policymaker away from several causes of crowding based on a variety of criminal justice policies e.g. prosecutorial and sentencing policies. The policymaker may gain a deeper understanding if there is a broader analysis of system-processing policies that may reveal several more powerful factors in producing crowding. Essentially, if decision-makers misconstrue a problem, they are quite likely to waste time solving the wrong problem.

Consequences of poorly developed policy decisions. The above decision-making failures all characterize the rapid-fire crisis mode of decision-making in which a tough-minded,
decisive manager may make policy decisions. If there is insufficient time to study a policy problem systematically, the danger of policy-making fiascos will rise. Too often in corrections and jails, we hear the complaint that “last year’s solution has become the problem.” This underlines the fact that poorly considered policy decisions often produce unexpected side effects, poor long-term outcomes, and poor commitment by those who must implement a misconceived policy. Premature and thoughtless policies also are vulnerable to challenge from relevant data. Thus, policy reversals are a frequent occurrence with poorly developed policies.

**Stage 6. Implementation Assessment of New Policy: The Role of Data**

The next major stage is the implementation of the selected policy option. The use of data in jail policy does not end with the selection of the new jail policy or program. The task of policy implementation is critical and if done poorly, may undermine the success of any new policy. Extreme vigilance is required to ensure that implementation is successful. A well-known implementation may exist as a potential chasm between the intent and design of a new policy and its implementation. Policymakers must often stay involved during the implementation phase and have enforcement authority, even though they may have a lesser role than the managers who are responsible for implementation. It is important that organization failure or inertia at implementation not be allowed to emasculate or sabotage policies. The policymaker’s continued involvement helps to enhance political support for the implementation effort.

A jail administrator’s prime interests typically align with the formal design and intent of the policy and its effective implementation. Thus, they should demand regular feedback and progress
reports to ensure that the new policy is implemented in a manner consistent with the policymaker’s intent.

Data are critical in several aspects of this phase. Critical data issues during implementation are as follows:

1. *Data for resource allocations (budgeting and staffing):* A first part of implementation is to develop and secure an appropriate budget for a new program/policy. In criminal justice systems, the availability of relevant hard data has become virtually mandatory to justify budget and funding requests. For example, to assess budgets, both the public and legislators need to know the makeup of the inmate population. It is often the case that highly inflated budgets may be justified by perpetuating the myth that most inmates in jails are very high-risk, violent criminals. Inadequate knowledge of the true classification structure of the detainee population can perpetuate various misunderstandings that may allow certain administrators to justify inflated budgets or even expand their jails.

2. *Starving a program with inadequate resources:* In other cases, newly designed correctional policies or programs are starved of required resources if policymakers or planners are not fully aware of the program’s true resource needs and the size of the target population to be served. Adequate funds are essential; otherwise, the staff that implements such programs may be faced with a mission impossible. Data to estimate the size of client populations to be served, staffing and training requirements, and
costs to provide specified services are all part of budgetary decision-making. Policymakers must have appropriate data to justify and to meet resource requirements. Hard data are clearly required to estimate resource needs and forecast system trends.

(3) **Critical data for planning new facilities**: New policies or programs that involve building new jail facilities and space planning typically require a pre-architectural functional needs analysis, which must include data on numbers of inmates that are forecast to need specific kinds of programs and housing. In many cases, jail classification data can indicate the expected proportions and sizes of maximum, medium, and minimum security classifications and levels of specific needs that can be critical in such planning. A good classification unit can usually provide the required population breakdowns to establish numbers of inmates with each major programming and housing need. Staffing analysis and staffing patterns also depend not just on the size of the overall detainee population but on the specific diversity, needs, and makeup of this population. Similarly, to staff an intake unit partially depends on variations in workload demand across shifts, so that in some cases only the 4-12 shift may warrant a full staff roster. Such data will be available from the booking log of the jail intake unit.

(4) **Data to monitor implementation progress**: Although jail policymakers may turn over most of the work to implementation managers, there is, as noted earlier, a key requirement for vigilant monitoring of the progress of the implementation phase. The implementation and planning group should develop written plan outlines to indicate
timelines, task sequencing, scheduling, and staff responsibilities for the overall implementation of a new policy or program. The policymaker can request a detailed plan of action that specifies tasks and schedules to translate the new policy into a workable program and schedule meetings to address implementation milestones. These written plans are useful monitoring tools because they provide the policymaker with a framework for progress meetings and a control device by which to assess the achievement of sequential action steps.

Several other techniques are helpful to provide data to a policymaker regarding a systematic performance appraisal or a review implementation progress. Program evaluation and review techniques (PERTs), Gantt charts, and critical path methods (CPMs) are useful management tools for monitoring progress in this stage.

**Stage 7. Evaluation of Criminal Justice Policies and Programs**

The final phase of policy formulation occurs when the new policy is evaluated and results and outcomes are monitored in an on-going fashion. This stage essentially returns full circle and converges on the Stage 1 tasks of routine monitoring of key outcomes of interest and numerous performance indicators. Thus the data in this stage again focus on monitoring the impact of any new policy or procedure to ensure that it is meeting intended policy goals. Thus, all the data elements enumerated in Stage 1 again become important in this final stage.

Data also are collected to identify and assess any unanticipated effects of aspects of the implementation of a new program or policy. As a result of such evaluation, the policymaker will
then make certain decisions regarding this new policy (e.g., whether it should be expanded, modified, or terminated). Broad strategies to gather data for this final phase are as follows:

**Process evaluation:** This approach produces data to assess the degree of compliance with new policies/procedures. Policymakers and administrators must be assured that their decisions and policy procedures have been properly implemented. As noted earlier an unfortunate truth is that public agencies frequently fail to translate policies into actionable programs. Bureaucratic inertia and business as usual continually insert themselves. Furthermore, noncompliance and sabotage of new policies or procedures is endemic in large bureaucracies. The originator of any new policy must be alert to resistance or sabotage. These may range from indifference or passive resistance to outright sabotage at the line level of criminal justice agencies and also at managerial levels. Resistance to new policies or procedures at higher administrative levels can be profoundly more damaging than line-level resistance. As a result of these bureaucratic realities, new policies or programs may be degraded beyond recognition to fit into the bureaucratic needs or culture of the jail. In such cases, the intentions of the original policymakers may be ignored.

Thus, policymakers often use process evaluation to seek data to indicate whether inertia, sabotage, or implementation failure has occurred and to what extent. Process evaluation involves close scrutiny of the actual operating procedures of staff (both line and management) to assess compliance with the program as designed. The evaluator or supervisor must note all deviations from the original design and intent of the new policy and assess the seriousness of these
deviations, the reasons for their occurrence, and the degree to which they impair the original integrity and goals of the policy. Some issues are as follows:

(1) *Compliance monitoring*: Process evaluations in some cases can use data retrieved from a jail's MIS if it can document actions, behaviors, and inmate profiles to indicate whether the appropriate procedures are being followed and goals are being met. A major challenge for criminal justice managers is to develop multiple indices of compliance at both management and line staff levels that are sufficiently unthreatening and nonintrusive but can provide documentation of compliance in the behaviors, actions, and decisions of staff (e.g., to determine whether classifications are performed on time, that overrides are properly documented, and whether inmates are being housed at the correct custody levels). Such data can be reviewed to assess compliance.

(2) *External evaluators and technical assistance*: Given the possibility of bureaucratic inertia or internal sabotage at managerial levels, it is often prudent to involve external evaluators or other external special interest or advocacy groups that have a strong interest in the new policy and can serve as impartial watchdogs and determine whether the new policies are being followed. This demands cooperation by managers of the implementing agency and provision of accurate data to the external evaluation groups.

(3) *Sanctions for noncompliance*: Valid documentation of levels of compliance and noncompliance developed by agency or system managers can be used in conjunction
with a system of sanctions. This system imposes costs for noncompliance and rewards for compliance to the program staff involved in policy implementation. The use of sanctions requires highly reliable and valid data as there may be concerns about unfairness, managerial coercion, and so on. Furthermore, sanctions only work if the top agency administrators have control of all staff that are involved in implementation of a new program or policy. If the control covers only some of the critical staff, the sanction system may have gaps.

(4) Monitoring data that can specify outputs and performance goals: As noted in Stage 1, any new policy or program also must be carefully linked to clear, measurable goals. The specification of goals and outputs, as noted earlier, is ideally measurable and data-based. Past levels of achievement for goals, trends, and forecasting procedures can be used as a baseline for future goal-setting and to assess output levels. Current levels and trends provide necessary input to policy discussions of goal-setting for new programs. The courts and other legislative bodies also may impose legal standards partly based on prior levels of goal achievements and trends. To assess the success of goal achievement and compliance with these standards, it also is necessary to have precise, valid, and reliable measures to assess jail goals and outputs. Built-in monitoring and control devices on the operations of new programs should provide the necessary data to demonstrate levels of compliance with legal standards and goals.

**Impact studies.** A second intensive approach at this stage is to conduct a formal impact evaluation studies to produce data on outcomes and results of a new policy or program. As noted
elsewhere, impact studies are typically not part of the routine monitoring of data elements in jails. Instead, they are specialized experimental designs that are mounted only occasionally to give a detailed comparison of the impact of a new program (e.g., new drug treatment, cognitive therapy, vocational training). These studies typically require random assignment of inmates to an experimental group that participates in the new program and a comparison or control group that typically uses older or standard programming. It is often very difficult to achieve random assignment and the complete experimental controls to ensure a valid comparison between the two groups.

Thus, although we view impact studies as having great value, they are typically not part of the normal routine work of a jail and their data are not routinely entered into the jail MIS. Instead, external researchers typically conduct such one-of-a-kind studies. They also commonly conduct more complex statistical analyses to ensure the absence of confounding experimental effects.

**Routine monitoring of outcomes and performance indicators: Return to Stage 1.** As in stage 1, the manager or administrator will rely on routine monitoring of a large variety of performance indicators to assess the outcomes and impact of any policy changes or new procedures. At this point, the key factor in an effective MIS is whether it contains a sufficient set of data elements that can clearly serve as policy and performance indicators. The main function of these data elements is to provide continuous monitoring of performance goals, trends in workload, overall structure of the jail’s population, work quality, and work output. Policymakers can then review these trends and results to assess the impact of their decisions. The jail’s MIS must then function as a knowledge base to indicate the success or failure of attempts to improve
the jails procedures and policies. As noted for Stage 1, the MIS must provide the key performance data for all major jail policy goals (e.g., inmate safety, inmate health, staff safety, programming outcomes). If a required data element is not routinely collected, then an IT team, usually in conjunction with jail managers, must identify and clarify the missing data elements and include them as part of the information collection procedures of the jail.

**Data problems in performance monitoring in Stage 6.** Missing or unreliable data, ambiguous definitions of data elements, and inefficient data entry and retrieval systems all weaken attempts to monitor and assess levels of goal achievement. Ambiguity and poorly developed data element definitions, lack of operationally defined measures, and inadequate quantitative evaluation undermine the usefulness of an MIS. Unfortunately, inadequate MIS and weak analytical procedures remain common in jails. What is more common is that the data are routinely collected but remain buried in the MIS and are used minimally to guide the evaluation and monitoring efforts of jail and corrections administrators.

**Conclusion**

This chapter focused on the use of data at all stages of policy decision-making in the context of jails. Over the last decade, a gradual improvement in the data collection, storage, retrieval procedures, and overall management information systems of most criminal justice agencies has occurred. Database software, data dictionaries, graphing, and statistical analysis procedures have all improved in recent years following innovations in computer hardware and software. Thus, there are fewer excuses for allowing valuable data resources to remain underutilized, left in a
disaggregated form, or omitted from the MIS. Rising public concern over the efficiency and cost effectiveness of criminal justice agencies, increasing legislative demands for data maintenance, and emerging concerns for outcome data, coupled with rapid improvements in information technology and data analysis should progressively lead to improvements in the use of the vast amounts of information collected and stored by the criminal justice community.

We have noted that decision errors also can creep into each major stage of the policy process in jails. As jail staffs become progressively more skilled, it appears that such decision errors should gradually diminish and a more vigilant approach to data-supported decision-making becomes more prominent among jail managers and decision-makers.
CHAPTER 5: SKILL REQUIREMENTS FOR DATA INFORMATION SYSTEMS USE: DIFFERENT SKILLS FOR DIFFERENT LEVEL USERS

Background

Jails collect tremendous amounts of data about inmates, rosters and headcounts, inmate processing and housing, disciplinary behaviors, and so on. Yet, a frustrating and disheartening finding is that very little of this costly and useful information is properly captured, retrieved, and analyzed so that it can be used to support management decision-making. However, recent advances in the field of data analytics and easy-to-use software can benefit jail managers. Successful and proactive jails are showing steady improvements in the use of jail data for planning, process monitoring, resource allocations, and in general, in the ability to explore and understand policy and management decisions at a deeper level. These jails are increasingly learning the skills to use smart analytical tools to take a more data-driven approach. These skills can help managers and administrators answer a variety of questions and queries regarding jail operations and many of the monitoring, planning, and policy decision factors involved in the complex performance of a jail.

Scope and Aims of this Chapter

This chapter deals with data analytics and management uses of these methods, although a detailed treatment of statistical methods is beyond the scope of the chapter. Instead, we present some of the most basic but useful presentations of data that can be applied fruitfully too many
management and staff responsibilities in jails. We acknowledge that certain jail management problems may require more complex analyses and statistical designs (e.g., evaluation of a treatment program, simulation studies, and what-if analyses of solutions to crowding).

For such more complex problems, it may be prudent for a jail administrator to seek technical assistance from qualified statisticians. A useful reference for more technical aspects of the use of statistics in jails is in the well-known manual by Gail Elias on using data and statistics in the jails (Elias2007). However, we suggest that for many job responsibilities and jail issues, the simple data techniques described in this chapter may be sufficient for a jail manager to address most management issues with insight and positive results. Thus, this chapter focuses on basic, data-driven data-monitoring and group-comparison techniques that produce simple, easy-to-understand management reports.

Is It Necessary to Become an Expert Statistician?

For most jail monitoring and management issues, it is not expected that jail staff will become expert statisticians. Although it is true that jails are drowning in data, it appears unrealistic to expect that most jail managers—either senior administrators or middle managers—will have expert statistical training.

However, most of the statistical and graphical tools that jail managers find most useful do not require complex statistical tests of significance or complex analyses. Instead, a manager can
develop a substantially improved ability to monitor the workload, work performance, and quality of work done by the department or unit without having to use complex statistical methods.

Most jail database and MIS systems incorporate easy-to-use management report generators that are capable of producing most of the rosters, charts, and tables used in this and previous chapters. These systems typically have the ability to do frequency tabulations, simple cross-tabulations, pie charts, time-line graphs, and simple linear projections. High school algebra is all that is needed to understand these simple methods of data aggregation. Many management responsibilities (e.g., monitoring work load) can be readily addressed by these simple methods.

We acknowledge that there are important roles that more advanced statistical methods can play in many jail policy issues (e.g., complex systems dynamics in understanding jail crowding, nonlinear forecasting models). However, the aim of the present chapter is to illustrate several simple tools that are available in most current jail report generators can be used productively by jail staff at all levels of the jail.

What Data Do You Need? What Do I Need to Know to Do My Job?

A first key skill that jail employees—from senior administrators, middle managers to line staff, must have is to know what data are need and relevant for their particular jobs.

Many jail managers have difficulty specifying what information or data elements they need. They often do not think through the links between their job roles and the kinds of data and statistical procedures that may be most useful. Because these jail employees may lack training in
statistics, they may feel blocked or intimidated when they try to match their job responsibilities to a statistical table or graph. Thus, many sheriffs and jail administrators seek help from or rely on their IT staff or other professional analysts to tell them what data elements to collect. Unfortunately, many IT specialists and external statisticians have little understanding of the operations and goals of a jail and may have little insight into what variables to collect.

Thus we recommend the following simple steps that may allow a jail manager to make progress in this first critical challenge of selecting needed variables and designing statistical and data-driven approaches to fit with their own job responsibilities.

1. Clarify job responsibilities. The starting point in identifying needed data, for virtually any jail job, is for employees to list their job responsibilities. These are usually specified by the job tasks, goals, and broad job design. The simple question, “What am I responsible for?” can be used to prompt employees to enumerate their responsibilities, job task, work outputs, and work goals. This list will typically suggest lists of relevant variables that are directly linked to the basic goals of the person’s job. For example, a key task of security staff is to prevent contraband from entering a jail. Thus, a directly relevant data element is the number of contraband incidents that occur each week or month in a jail. This is measurable and can be collected across time to monitor upward or downward trends.

2. Formulate queries about job responsibilities or goals. A clear list of responsibilities, key tasks, and unit goals can help managers begin to formulate a list of data indicators.
and queries as the next step in identifying the precise data elements that may be needed.

A good listing of specific responsibilities often directly suggests many data elements and indicators that are linked to each major policy goal of the jail or of a specific unit. For example, a security manager may quickly realize that disciplinary incidents are a useful indicator of disorder in the jail. Such lists should enable the administrator or IT staff to begin to identify the data elements that are routinely collected, new data elements that need to be collected, and the kinds of reports, counts or rosters that are needed to monitor a variety of job goals (see chapter 3).

Managers may formulate simple queries by asking certain questions that can be linked to specific data elements:

- What caused X to happen (e.g., why has contraband doubled over the last three months)?
- When and where did this problem arise (e.g., specific locations, times of occurrence, kinds of inmates involved)?, and
- Do I have any hunches about the causes or correlates of this problem?

_Sensible queries_. Another critical tool for the identification of relevant data elements is to take each responsibility and formulate queries and data explorations by asking certain simple or explanatory “how” questions:
• How often does a specific problem occur (e.g., staff use of force, inmate suicide attempt, gang violence)?

• How strongly and for how long has this new trend been occurring (e.g., monthly trend in admission rates, disciplinary actions)?

• Has anything else changed (e.g., what factors, such as greater percentage of high-risk inmates or new staff) might be linked to higher staff use of force?

• What other factors may be correlated with or cause this change (e.g., increased overcrowding or arrest rates, delays in pretrial release, changes in police arrest standards)?

The Coding of Data Elements: A Critical First Step in Any MIS or Statistical Application

Managers and administrators are typically not responsible for data coding. This is often a task for IT staff. This basic task, however, is essential to the organization and documentation of the data so that the meaning of each data element is defined clearly and becomes amenable for data entry and for statistical reports. This requires that each data item (e.g., gender) be transformed into coded answers (either given names such as maximum, medium, and minimum; or number codes such as 1, 2, 3). Thus, all variables or data elements that enter the MIS must be clearly numerically defined (e.g., male = 1, female = 2).

In many cases, the jail’s IT or technical staff design a written “coding frame” that is made available to data entry staff. The raw data (e.g., information from the classification interview, rap
sheet evidence) can be keypunched into the jail’s computer database, or a spreadsheet (e.g., Excel) and then, if needed, transferred to virtually any statistical program (SPSS, SAS, etc.).

If the raw data are collected manually on paper forms, the technical staff will usually design a coding frame that consists of a written list of all variables that go into the MIS and also their codes. Below are three common variables and their codes:

(1) Gender: Female = 2; Male = 1
(2) Offense Category: Felony = 2; Misdemeanor = 1
(3) Ethnicity: African-American = 4
               Mexican-American = 3
               Asian = 2
               Anglo = 1

Such data coding of all variables into numerical formats is needed so that means and percentages can be calculated and then used in statistical analyses.

Categories of Variables in Jail Databases: Continuous, Categorical, Alphanumeric

It is important for jail managers to know at least the main kinds of variables that comprise the bulk of the statistical queries and analyses that they will use in their work:

Continuous. These variables are presented as a continuous range of numbers (e.g., inmate age in years, number of prior arrests, age at first arrest). An important feature of
continuous variables is that a mean score or average can be calculated. For example, the average age of offenders in a jail is typically around 34 years. It is often important in jail management to know the average score for many key variables, such as the average number of disciplinary tickets per month in the jail, the number of staff use-of-force incidents per month, and so on. These averages are often standardized further for both specific time periods (e.g., weekly) and for a standardized number of inmates (e.g., the average number tickets per month for every 100 inmates).

**Categorical.** Categorical variables are expressed as a set of categories such as gender (male and female) and ethnicity (Anglo, African-American, Hispanic, etc.). Percentages are typically presented for each category variable (e.g., for ethnic categories, Anglo: 45%; African-American: 35%).

**Alphanumeric.** These variables are not expressed as numbers or categories but are usually used to represent the names of certain entities, such as the name of a person. These are entered into the computer database directly as a name such that no coding is involved. Typically, the alphanumeric name is typed directly into the specific variable field in the jail database. Thus, alphanumeric variables are often used in lists or daily rosters (e.g., of persons housed in the jail as a whole or in specific jail modules; waiting lists for medical examinations). Alphanumeric variables generally are not used in statistical analyses.
Query Formulation by IT Staff

As noted previously, in order to use the enormous MIS database systems that exist in most jails effectively, a key skill is a manager’s ability to formulate queries about management issues that are of concern (e.g., crowding, performance issues in the jail, public safety threats). Bottom-line management queries will focus attention on some aspect of the specific extent or problem and often is focused on some likely underlying causes of a management concerns.

However, in many cases, jail managers and administrators approach IT staff with ill-formed queries regarding a jail policy problem. Thus these preliminary queries must be refined and modified before being subjected to data analysis. In many cases, IT staff must second-guess the intent of the jail administrator’s query implies and what specific data elements are needed and then must translate the query into a specific kind of analysis e.g. cross-tabulations, drill-down exercises, and so forth, to explore the problem effectively.

In other situations, the jail administrator’s request may represent exploratory hunches or guesswork in the form of an open-ended question. In such cases, the IT person must attempt to crystallize the query to address the policy problem (e.g., forecasting staffing needs and future budgets, reasons for increased disciplinary incidents in a particular module). Typically, the IT staff or the statistician will be more aware of the types of numerical analyses that may be used (see below) but will have to search the MIS to choose key data elements to provide insightful data tables or reports.
Useful Data Skills at Different Staff Levels

The design of management reports and informative data tables in the context of jails often begins, as noted above, with a clarification of the job responsibilities of the manager and the departmental goals of the unit. This should result in queries that specify the kind information or report needed by the jail manager. Below, we explore some job responsibilities and related queries that have strong data implications for upper management, middle managers, and line staff. We also include data indicators and a range of common management queries that may suggest the data elements needed at different job levels.

Upper Management and Policy/Planning Staff

Because senior jail administrators are basically responsible for the overall function and performance of the agency, they have a broader scope of responsibilities than other staff members. The senior staff persons must monitor the big picture and typically have a broader dashboard (see below) that covers a range of jail operations, workloads, work performance, work quality, and policy goals. Additionally, these upper-level managers must become adept at formulating useful queries regarding various ad hoc policy issues that arise.

For example, a useful approach to overall work demands consists of graphs for successive time periods (weekly or monthly) that indicate the total numbers of inmates in the jail. This is a useful proxy measure of overall workload demand on staff. The time-graph below gives an example that also can be applied to any measure that is repeatedly counted at regular time intervals. A useful strategy for jail managers also is to place a line that represents a legal standard or any
specific objective, or last year’s trend line directly on the graph, as shown below for the jail’s imposed population cap.

Figure 5.1 Jail ADP Trend

Figure 5.1 illustrates the trend for overall population growth in a small jail across a 10-year period. The graph shows a gradual increase in jail population. In this case, the stabilization of the jail population after 1996 was the result of an artificial cap on growth that was legally imposed based on the rated capacity of the jail. If the jail’s capacity had been larger, it is reasonable to assume that the jail population would have continued its upward trend. Trend extrapolation methods such as a simple regression line can be based on this kind of historical trend data.

For planning purposes, jail managers also must engage in forecasting future resource and staffing needs. The data needed for forecasting typically involve a long sequence of measures of the
specific factor that is being forecast (e.g., grievances, total average daily population) Often a 5-
10 year prior history at specific time intervals is used (see Figure 5.1 above).

Such time-based number sequences can be used first to construct time graphs and then apply a
very simple projection technique known as linear regression that is typically available in
software such as Excel. This method can impose a linear trend line directly on the time graph
using simple extrapolation of the historical trend into the future (see Figure 5.1). However, a
basic problem with extrapolation methods is that they assume that the future will be similar to
the past. Thus, trend extrapolation methods are all vulnerable to factors such as policy changes or
demographic changes in the community.

The manager thus may set up a series of time graphs and forecasting exercises for a variety of
key jail factors to indicate emerging levels of need across time in the jail for the following
purposes:

- Forecast total population trends,
- Plan for facility bed space to match population trends,
- Plan resource acquisition (training, equipment),
- Identify resources needed to meet mandated needs of special inmates,
- Identify resources for inmate rehabilitation and reentry needs, and
- Forecast future staffing needs.
Middle Managers

Middle managers have a narrower focus than top administrators and will require data mainly to monitor factors for their specific unit (e.g., classification, treatment services, foodstuffs, transport). Thus, their critical data requirements may contribute to the monitoring of

- Unit workloads,
- Work performed by the unit,
- Work quality indices of employees within the unit, and
- Goal/ results achievement.

Each of these categories will have multiple subsidiary measures that may only partially reflect each of these issues. Thus, in jails, various proxy measures are used, each of which may only partially reflect the overall concept such as different aspects of *quality* or *workload* (see Chapter 3 for examples).

Line Staff

Line-staff members do not typically engage in big-picture planning and overall monitoring. However, they clearly depend on an effective MIS for individual data on offenders such as identification, classification levels, keep-separate information, and related individualized information about each specific inmate to guide decision-making. These decisions often fall into two categories as described below.
(1) **Routine decisions:** These are relatively simple, routine decisions that are often needed in real time, and relate to classification levels, housing assignments, program and work assignments, transportation arrangements, security arrangements, and so on. All of these decisions to some degree depend on valid custody classification as they can only occur once classification level has been established.

(2) **Non-routine or anomalous decisions:** These represent a smaller number of anomalous inmates who may sufficiently differ from the normal routine decisions, by presenting a variety of aggravating or mitigating factors or ambiguities. These introduce non-routine considerations that often require further information to resolve the anomaly and will usually require supervisory review. Such exceptional cases may be delayed until new information is available to resolve the aggravating (e.g., gang membership) or mitigating (e.g., largely diminished criminal career) issues.

Line staff require real-time information about individual inmates from both criminal and disciplinary histories as well as other data sources. This immediate availability of data is imperative for line-staff decision-makers, as they are engaged in high-pressure processing of large numbers of inmates that must be completed quickly.

However, line staff also may benefit from some larger scale information that is available in current MIS jail software regarding their overall workload, overall work tasks completed achieved, and feedback reports on basic indicators of work quality. Such information may help line staff understand the broader context of the jail and how their own jobs make an important
and unique contribution to the larger organizational performance and goals of the jail (see Chapter 3).

**Simple Statistical Tools for Jail Monitoring and Addressing Policy Issues**

As noted earlier, we cannot expect that most jail staff have been trained in the fine points of statistical methods. This training typically requires at least a one-semester college course to reach proficiency and skills in the use of statistical packages such as SPSS, SAS, or STATA.

However, in the absence of such expertise, we describe below some simple data analysis methods that can be effective in equipping jail staff and managers with tools to allow basic monitoring of workload issues and performance goals and to examine selected policy issues that emerge in jails.

**Static Counts and Rosters (Monitoring Amounts or Volumes)**

The simplest management reports traditionally used in jails have been counts (e.g., the daily number of inmates entering the jail, the daily number of inmates in maximum security, the daily number of visits to the medical unit). These “counts” simply represent the volume of something that occurs in the jail. These numbers are useful for providing a measure of workload for the overall jail or a specific unit or for determining whether some population limit had been exceeded.
Rosters are similar to simple counts but are often given as lists of alphanumeric data (e.g., inmate names) in a table format as a management report. Such lists are a tally of inmates that are in some specific status, stage, or module in the jail. A daily roster is typically maintained to list all inmates held in the jail or in certain housing modules or lists of inmates waiting for some processing event (e.g., release, transportation, primary classification).

**Trend Charts: Monitoring Events and Forecasting Populations Across Time**

Many key events and populations (e.g., inmate violent incidents, overall workload, staff morale, staff competencies) must be tracked and monitored across time. Such monitoring is often critical to address management queries about the emergence of trends or how a specific population or event is changing over time. These counts provide the needed numbers to identify trend lines, assist with forecasting, and to avert future crises.

In addition to monitoring events (e.g., escape attempts, staff sick days), jail managers often wish to monitor levels or trends of a variety of specific inmate population groups (e.g., admissions, inmates needing a specific service, percentage of nonviolent inmates in maximum security). Provided such events or subpopulations can be given as a count, these numbers can also be entered into a line chart.

**Frequency Tabulations: Understanding the Underlying Structure of Inmate Categories**

Although counts are useful and necessary for jails, they gain meaning when they can be broken down into subcategories (e.g., by ethnicity, gender, age groups). These breakdowns, expressed as
frequencies or percentages, can help staff to understand the structure of any inmate category (for the total population or for any subgroup). These simple frequency calculations can be useful to address common management queries (e.g., what is the structure of the jail population in terms of a particular jail category such as current offense, security levels, sentenced/unsentenced).

Multiple frequency counts can be applied to the total population or to any subpopulation in so-called drill-down exercises (see below). The table below indicates the typical frequency breakdown that addresses a single-variable query such as, “What is the racial composition of the jail?”:
The columns of this table indicate firstly the raw count (frequency) of inmates in each ethnic category, and the second column indicates the percentages of each main ethnic group.
Drill-Down Cross-Tabulation Procedures: Slicing and Dicing the Data to Explore Specific Issues

Cross-tabulations and frequency counts can be applied sequentially to drill down into the data to answer more specific questions about more narrowly defined subcategories of the jail (e.g., minimum security inmates by current offense).

For example, a query may involve both offenses that bring inmates into the jail and whether these offenses are felonies or misdemeanors. This type of query is easily addressed by two sequential cross-tabulation analyses, first for the overall jail population by offense category then with a second cross tabulation of misdemeanor/felony for each offense segment as shown in Figure 5.3, which illustrates further drill-down into the jail population. Overall frequency counts had shown that in calendar year 2000, 75.5% of the inmate population consisted of misdemeanants, 17.5% felons, and 7% civil offenders. However, of particular interest is the finding that 40% or more of the population was incarcerated for probation violators (24%) or other court technical violations (16%, e.g., failure to appear).
Another example of drill-down procedures in a study of jail crowding involves a manager’s basic query to show the numbers of jail days contributed by various segments of the jail population. This drill-down process produced the graph shown in Figure 5.4.
The average LOS for the remaining total jail population was 32 days. A first critical discovery shown by this analysis is that misdemeanants accounted for a total of 67% of all the days served. A second key finding emerged in the comparison of the number of jail days contributed by the different slices of the jail population by different LOSs. The bar chart shows that the segment of inmates incarcerated from 3 to 10 days accounted for fully 38% of all inmates but only 7% of all
bed days. By comparison, the 8% of the inmate population that were incarcerated for more than 90 days consumed 40.5% of all bed resources. This analysis demonstrates that LOS is a critical contributor to a jail’s population and its crowding problem.

Thus, a manager can use such drill-down processes to clarify information about various specific sub-populations within the overall jail population that would be invisible of only overall counts or percentages for the total population were used. The manager can repeatedly cross tabulate these more specific sub-populations against additional relevant factors to reveal important factors about these specific sub-populations. The above example clearly shows that it is the longer LOS populations that while only a small segment of the overall jail population, contribute the largest absolute numbers of jail-days and thus make the largest contribution to jail crowding.

These drill-down procedures are typically constructed using the management reports module of most current jail management software. The skills to use these procedures are simple and involve setting up reports to generate the sequenced cross-tabulations to address such queries. Innumerable jail queries about a variety of jail policy problems and sub-populations can be addressed using such drill-down procedures.

**Frequency Counts and Bar Graphs: Simple Data Pictures**

It is often useful to present data in visual form as bar or pie charts, which can have a more powerful visual impact. Certain simple policy queries can involve asking for frequency counts on specific sub-population or event outcomes in the jail. This analysis again involves a simple
cross-tabulation to compute the frequency of selected categories (e.g., current offense breakdown of the jail population) for selected subpopulations. Figure 5.5 indicates the relative frequencies of current offense categories for a random sample of minimum security inmates.

Figure 5.5

This diagram indicates the result of a drill-down process into minimum security inmates that responds to the query, “What primary offense categories comprise the minimum security population”? Based on this query, a simple cross-tabulation is designed to answer such
questions. In this case, the query is addressed by a cross-tabulation of offense category (e.g., assault, property, fraud) with the jail’s custody classifications (maximum, medium, minimum).

**Pie Charts**

A second graphical way to present data visually is in a pie chart. These types of visual displays can represent total populations or any relevant subpopulation. Figure 5.6 below indicates the relative frequencies of maximum, medium, and minimum inmates in a small rural jail with 53.5% of the general inmate population in the minimum security category.

Figure 5.6
Before-After Comparisons: Examining the Impact of New Policies and Procedures

When policy changes are introduced, it is often possible to conduct a before-after comparison of the specific outcomes (e.g., disciplinary incidents, inmates eligible for GED classes, inmates in various custody categories).

**Changes in percentages of categories across time.** Such changes may occur, for example, when jails adopt a new classification system or any new processing policies. It is often important to assess the changes in the numbers of inmates in the various security classification levels. This analysis uses a simple cross-tabulation of two frequency breakdowns to compare how inmates are classified by the old and new methods (see Figure 5.7). This table cross-tabulates the current classification (low, medium, and high shown down left side of the table) with the new classification (low, medium, and high shown along the top). This table shows how offenders are classified by each system and also where the two classifications agree and disagree. The figure shows that the old system places larger numbers of detainees into medium security (447) whereas the new system allocates only 222 to medium, revealing that the new system redistributes many offenders into minimum and maximum for a more even distribution of offenders in the three custody levels. Agreements between the two classifications are those cases that fall into the diagonal cells of the table, often called the main diagonal [i.e., low-low (29), med-med (160), high-high (20) cells]. The off-diagonal cells indicate disagreements between the two systems. The marginal totals (or percentages) in the table provide the numbers of inmates classified as maximum, medium, and minimum by each system (e.g., 82, 447, and 71 for the old system; 232, 222, 146 for the new classification).
Changes in mean values of key performance indicators: In a similar manner, there can be comparisons between old versus new time periods for the mean value of any particular measure (e.g., inmate grievances, rates of disciplinary infractions, staff absenteeism). These before-after comparisons may yield useful indicators of the impact of the policy or procedural change. Note: It is important to acknowledge that these simple before-after comparisons do not attempt to use a careful experimental design, which is the gold standard by which to assess the impact of any new or experimental change in policy or procedure. Careful experimental designs can sometimes eliminate confounding factors relative to any claims about the impact of a new procedure. However, they are very difficult to design in the real world of busy jails and their requirements of randomized assignment of inmates to experimental and control groups are also difficult to achieve in jails. Thus, tight experimental designs are relatively rare in a jail context.
Dashboards

Data dashboard designs for diverse stakeholders. A dashboard contains a set of critical graphs and charts and a set of key numbers that allow managers to assess quickly the status and performance of the unit or department. More specific data dashboards are often designed to assess key jail workload factors and performance goals for specific departments, each with different concerns and responsibilities. Thus, separate dashboards with different key data indicators are customized for different jail departments and categories of users (e.g., line staff, middle management, administrators; relevant public groups). The resources described below may reflect different stakeholders with diverse responsibilities:

Jail administrators: This level may require a data dashboard that displays a broad range of aggregated jail data that cover all major correctional goals (e.g., security, population trends, treatment provision, staff and inmate safety, staff morale, staff training and competence) as well as changes over time in overall jail population characteristics and other relevant policy factors. Such jail-wide indicators should address policy priorities that are measured repeatedly across time so that trends and unexpected problems can be quickly discerned. A data dashboard with key data displayed in consistent formats across time periods should give administrators information needed for quick identification of performance goals, trend changes, and work quality levels of all departments across time.

Community/public-level dashboard: This may focus on indicators of major public concerns (e.g., crowding, rehabilitative services, financial value of inmate community service
work, goal achievement for public safety, incapacitation and rehabilitation). Allocations of public funding may be reflected in staffing patterns, training accomplishments, community volunteer services for the jail, and so on.

**Interagency inmate population control committees.** These dashboards may reflect the multiple causes of overcrowding, population trends and projections, admission categories, release rates by inmate category, detailed breakdowns of jail days by diverse offender target populations, and so on.

**Critical indicators for dashboards.** An *indicator* is a data element that a user may need to monitor in order to ascertain the performance of the jail relative to several correctional goals (e.g., public safety, staff morale, security risk management). For example, the goal of public safety can be assessed by using indicators such as (1) escapes and walk-aways, (2) recidivism rates for violent offences within a specific time period following release, and (3) return to jail for violent offences. Each goal may have several indicators or data elements that yield information about the performance goal. Each jail should develop its own set of indicators for the various major goals of a jail.

**Making Predictions with Data: Simple Forecasting**

Predictive analyses can be applied to any data that are collected repeatedly across time (e.g., average daily population, suicide attempts per month, grievances per month for various reasons). If this data stream has a substantial and long track record (e.g., more than a year) and a sufficient
number of data points (e.g., 30 successive months, 10 successive years), then it is possible to compute the simple linear trend lines using widely available linear regression software (see Figure 5.1).

Such regression software methods basically calculate the most accurate a straight line that represents the line of best fit through the stream of points. This line indicates broadly whether the factor that is repeatedly measured (e.g., ADP) is increasing, decreasing, or static and, of particular importance, can give the rate at which the factor is changing for each unit of time (e.g., ADP is growing at the rate of 5 inmates per month).

More generally, forecasting may require very complex analyses when cyclical and nonlinear processes are involved (e.g., seasonal cycles, weekly cycles, recurring holiday events). These greatly add to the complexity and are better handled by professional statisticians. A further complexity that often undermines trend forecasting occurs when the criminal justice system changes its policies, when sentencing policies change, or when a jurisdiction experiences economic or demographic changes. Such changes can have profound impacts on trend lines that cannot be estimated by any reliance on prior trends.

**Conclusion**

This chapter reviewed a number of simple data analysis procedures that are often used by jail administrators and managers for basic monitoring and management tasks. These procedures do not require the jail personnel to be trained as statisticians. Clearly, statistical training
substantially enhances a manager’s ability to organize and interpret such data and to use more advanced techniques. However, increasingly we have noted that some jail officers have substantial training in statistics and will thus be able to participate in more sophisticated research designs and use more sophisticated methods.

We also note that jail MIS software packages now include useful management report modules, along with Excel and PowerPoint and other systems that support virtually all of the techniques described in this chapter. These systems are constructed to be easy to use, and we expect that there will be steady growth in the sophistication and effectiveness of the management reports being produced for jails that should allow jail managers and administrators to monitor most of the key processes and goals of their jails and policymakers to tackle jail policy issues so that relevant data are clearly applied to the basic problems that confront jails.
CHAPTER 6: PLANNING AND DEVELOPING INFORMATION SYSTEMS

This chapter exclusively addresses all of the important steps involved in planning and developing an information system for comprehensive jail systems or smaller, specialized systems. Depending upon the complexity of functionality and other factors related to implementation, some of these steps may be relatively straightforward. In other instances, each step could be quite involved and may require significant time and resources to complete. However, the use of this method is important to ensure successful implementation of the jail system regardless of size or complexity of the envisioned new jail system.

The pre-implementation steps or phases critical to the information system development process include the following:

- Development of a strategic plan for jail systems,
- Identification and documentation of system requirements,
- Acquisition of a jail system or design and building of a customized system, and
- Testing of the system.

These pre-implementation steps are discussed in this chapter in some detail with the exception of the building or acquisition of the system. Because most jail systems are acquired in a procurement process (as opposed to in-house construction) and because of the unique issues
associated with the procurement process, this topic is covered in some depth in Chapter 8. The steps involved with the actual implementation process are described in Chapter 7.

The major steps, or phases, in the development of a jail information system are shown below in Figure 6.1. After identification of system requirements, there are two options: 1) Procure an existing vendor system that meets requirements, or 2) Design and construct a customized jail system.

Figure 6.1

![Figure 6.1: Steps in the Development and Implementation of a Jail System](image)

*The planning process for jail systems is critical. Historically, a large proportion of systems in both government and the private sector have been total or partial failures. Even systems that*
have been considered successful have frequently been implemented with significant cost overruns and/or time delays. It is not uncommon for the jail user community to be less than totally satisfied with at least some of the functions or to have concerns about critical functionality not included in the system at all. Although there are many possible causes for a high level of dissatisfaction, poor or inadequate system planning is frequently a major culprit.

Development of an Information System’s Strategic Plan

The first major step in the process is the development of a plan. This can be a formal, long-term strategic information systems plan or a project charter specific to a single project. If the objective is the phased development and implementation of systems over an extended time period, an information systems plan for a 3-5 year period may be appropriate and may encompass a strategic vision for deployment of technology projects. A more limited project charter may be applicable to a specific project. In either case, the contents of the strategic plan and a project charter are similar with the primary difference being the scope and depth of the plan.

Organizational Structure: The Right Team

The cornerstone of the system planning process is to put in place the right organizational structure. A common theme throughout this document is the importance of fully engaging stakeholders. This is certainly the case for information systems planning. The right team must be assembled with appropriate representation of the jail from several levels within the organization including executive, middle management, and line personnel. Consensus-building for the scope,
goals, business elements budget, schedule, and other facets of the information system is extremely important.

Organizational structures typically put in place to manage the planning process include an executive steering committee and one or more user groups. The steering committee usually includes jail and IT executives and other management-level representatives from the jurisdiction that are also stakeholders in the jail system. This could include representatives from local police agencies, state prisons, budget officers, prosecutors, and other local criminal justice agency stakeholder representatives. The steering committee provides project oversight and addresses policy issues as they occur throughout the system development process.

User groups also are a critical component of the organizational structure. Typically, subject-matter experts across the disciplines impacted by the jail system are represented in one or more user groups. Depending upon the number of disciplines included in the planned system and the size of the jurisdiction, multiple user groups may operate under the auspices of the steering committee. The user groups will be more involved in the definition of requirements, working with the technical development team throughout the design process, testing all components of the system, and guiding project development from the planning stage through implementation.

**Business Problems to Consider**

It is not uncommon for jail systems to be planned with only a vague idea of what is really wanted and needed. There may be a consensus that a new computer system is needed without much
consideration of the specific business problems to be addressed by the system. The plan or project charter should clearly document the scope of the system from a business perspective. For this planning document, it is not necessary to articulate each detailed requirement. However, each business function, problem, and need to be addressed by the system should be documented. It can also be helpful to specify what is not within scope as well as what is within scope. A clearly defined scope is necessary to manage user expectations and control the development process.

System Development Priorities

Because jail operations encompass a broad range of functions and information needs, and because changes in an organization can be challenging when new technology is introduced, it is important for the plan to identify clearly the priorities for system development. The basis for prioritization can be one or more of many factors including, but not limited to the following:

- Dependencies between system functions requiring some components to be implemented before others,
- Prioritization of business problems,
- Ease of implementation and the need for a quick win,
- Political priorities,
- The need for complex interfaces with other systems, and/or
- Funding limitations or constraints.
It is important for the steering committee to reach consensus on priorities and document system development priorities. This aspect of the planning process is critical in finalization of the strategy for system development and implementation.

**Description and Assessment of Current Systems Environment**

Identification of the future state of systems in an organization requires a clear understanding of the current state. The plan should document both manual and automated current systems used by the jail organization. Current systems should be described at a high level from both a functional and technical perspective. Also, an assessment of the strengths and weaknesses of each system should be described. Part of the strategic planning process will identify how these existing systems will be incorporated in the new system environment. Options to consider include:

- a) continue to operate “as is,” independent of the new system,
- b) maintain the existing system but provide enhancements,
- c) interface the existing system with the new system,
- d) replace the existing system altogether,
- e) some combination of the above.

It is often discovered as part of this planning process that small PC-based systems or other niche systems (i.e., specialized inmate classification systems) have been built or purchased and are critical to a business unit. These niche systems as well as manual systems related to the target business areas should be identified in the plan.
System Development Strategy

The heart of the plan is the determination of the systems, system components, and specific projects and information needs that will be required to address the identified business problems. This is accomplished based upon the prioritization process and within the context of the current systems environment. The strategy or approach can take several forms. A single, comprehensive system or multiple, interfaced systems may be defined. The advantages and disadvantages of alternative strategies are discussed in more detail in other sections.

Phasing is typically a cornerstone of the information systems strategy. A big-bang approach to systems implementation is often not pragmatic. Instead, a phasing strategy is adopted. Phasing can be either functional or geographical. In functional phasing, groups of common or related functions are implemented prior to others. For example, in the first phase of a system, booking, movements, classification, and related functions may be implemented. Visitation, program management, trust accounting, ad hoc reporting, and other functions could be deferred until a later time. Phasing strategies are discussed in more detail in other sections of this document.

The information systems strategy will be based upon assimilation of the priority problems identified, relating these to the current systems, and then identifying the systems required to address the priority problems. This is typically an iterative process with involvement of the various stakeholders. The system strategy is refined until one or more systems are identified. The systems are then decomposed into discrete projects and result in a strategy to transition from the
current state to the desired future state. Multiyear plans that involve several projects are typically updated on an annual basis to reflect changes and evolving business needs.

As previously indicated, this planning process does not have to be onerous. When the direction is fairly clear and a single system is being developed, a project charter that addresses all of the planning components identified in this section but on a more limited, focused basis may suffice.

**Project Schedule and Timetable**

The next step in the planning process is to identify clearly the schedule and timetable for each project and project phase in the information system plan. All major tasks and milestones become part of the project plan. A long-term strategic plan is typically limited to high-level tasks and milestones for each component of the plan. Detailed planning for major tasks such as acceptance testing, training, and deployment is deferred until a time. Tasks and activities relevant to information systems projects are discussed in some detail in other sections of this document.

**Critical Success Factors**

The plan should identify the factors that are critical to the project’s success. Critical success factors will vary depending on the political climate, current state of automation, and other factors that may be influenced by, but not necessarily under the complete control of, the steering committee. Critical success factors may relate to the availability of funding or budget approval, cooperation of other justice agencies at the local or state level, agreement to major changes in
business processes, or several other factors specific to the economic, organizational, and political climate of the jurisdiction in which the jail operates.

**Identification of Funding Requirements and Sources**

It is important that the strategic plan identify the estimated level of resources required for each project in the plan. Both hard costs and soft costs should be specified in the plan. Hard costs are items related to hardware, software, and services from external vendors. In addition to one-time expenditures for these items, ongoing costs for hardware and software maintenance, training, and related costs should be identified in the system budget. Soft costs typically relate primarily to the personnel time of jail, IT, and other staff within the jurisdiction to develop and implement the jail system(s). The identification of one-time special funding sources and recurring sources of revenue should be documented in the plan. This is one of the key roles performed by the steering committee.

At this early stage, it is difficult with any technology project to ensure that all costs are identified and budgeted with a high degree of certainty. Contingency funds of up to 20% of the project costs is one mechanism used to address unexpected project costs as the development and implementation process evolves. It is not uncommon for project requirements to expand, new legislation to be adopted, or other unpredictable factors to expand the scope of the project during the development phase of the system. Contingency funds provide a means by which to plan for inevitable changes and unknowns in the typical IT project while minimizing the need to procure new monies for the project.
Consensus-Building Among Stakeholders

In the final analysis, a strategic plan for an information system will only be successfully implemented if there is consensus among the stakeholders throughout the organization on the goals, priorities, scope, budget, schedule, and other critical components of the plan. Consensus-building is an iterative process facilitated by an active steering committee and user groups. Although it is highly unlikely that total consensus can be reached on all aspects of an information system plan, there needs to be agreement on the basic tenets of the plan to mitigate the risks of project delays or failure.

Considerations That Influence the Development of a Strategic Plan

A number of factors influence the development of a strategic plan:

- Information system trends,
- Build vs. buy decisions,
- Business process re-engineering,
- Documentation of business requirements,
- Information-sharing strategy and interface,
- Phased development strategies,
- Characteristics of exemplar systems, and
- Use of new and evolving technologies.
Each of these topics is discussed below:

**Information System Trends**

Technology itself and how it is used in the jail environment is clearly a moving target. Because the time horizon for a strategic plan is typically 3-5 years, the problem of ensuring that the right information technology is deployed several years in the future becomes more difficult. The problem is further complicated by the investment of time and resources to implement a new technology. Consequently, the strategic plan must ensure that the planned systems have an underlying technical architecture that enables expansion and the use of evolving technologies while protecting the current investment in the system.

**Build vs. Buy Decisions**

In the process of planning information systems, the decision must be made either to buy a commercial jail system (typically referred to as a commercial-off-the-shelf or COTS package) or build a customized system from scratch. The system could be further divided into either in-house with the use of county or city staff resources and hardware or a procurement process for an external vendor to build a customized system. (Also see chapter 8 for a description of the RFP process.)

There are risks associated with each alternative. An existing COTS package that can be configured to meet the needs of the jail without significant customization may represent a more timely and cost-effective solution. This is particularly true if the software has been successfully
implemented in other jails of similar size and business processes. On the other hand, there are always potential downsides to a high degree of dependence on an external vendor for ongoing support and enhancements.

Many agencies simply do not have the option of in-house development because of size or limitations on the availability of IT resources to support internal development. There is always the alternative to select a vendor to develop a customized jail system solution. This alternative has the potential benefit of the development of a customized system that meets all of the unique needs identified in the planning and requirements analysis process. However, timeliness; cost factors; and a custom, unproven system may present significant downsides to this alternative. The jail systems vendor community has matured, and there are now a relatively large pool of software products and vendors that address jail MIS needs. Consequently, the buy alternative in a competitive bid process makes more sense than the build alternative for most jurisdictions and for most types of jail systems.

Business Process Re-engineering

Business process re-engineering is a term that refers simply to changes in the procedures and processes for meeting the operational needs of the jail at the time of introduction of new systems and technologies. In terms of strategic planning, it is important to recognize the willingness and level of acceptance within the organization of process change concurrent with implementation of a new system. To limit strategic planning to automation of existing business practices is usually not the best practice. In many cases, efficiencies can be gained by improving work processes
rather than just converting from manual to automated approaches to the same old inefficient business practices that have been in place for some time. Training issues, resistance to change, and other implementation issues must be addressed with any significant change in the business process.

**Documentation of Business Requirements**

Strategic plans should include tasks and activities related to documentation of detailed business requirements that address the identified problems. Requirements must be fully understood and clearly documented early in the system development process. Requirements documentation is often not given adequate time and staff resources to comprehensively complete this task. There is frequently pressure to implement a system in a short time, which may lead to the temptation to jump right to implementation of a system solution without a clear understanding of the requirements. This is a problem unless the agency has previously identified and clearly documented requirements. Even in this instance, upon selection of a COTS vendor, it is useful to confirm required tasks prior to testing and implementation. This will insure that the scope of the project is clear from both the agency and vendor perspectives.

**Information-Sharing Strategy and External System Interfaces**

Recognition of jail business partners is a critical component of the planning process. Even if information-sharing with the courts, law enforcement, DA, state corrections, and other agencies is not envisioned in the short-term, systems planning must account for the inevitable sharing and exchange of data through technology in the future. To ensure that the underlying technical
architecture supports system interfaces and information-sharing is an important consideration for the strategic plan. Rarely are new jail systems developed without system access by other justice agencies and without interfaces to external systems.

**Phased Development Strategies**

System implementation failures are frequently the result of planners taking on too much too quickly with the new system. This risk can be reduced with a phasing strategy (see Chapter 7). There are two major types of phasing of systems: functional and geographical. Functional phasing consists of implementing only some key automation components initially with other automated functions delayed to a later point in time. For complex system implementations, this strategy usually makes sense. The problem that must be addressed is the inter-relationships between functions and identification of the core functions that must be implemented concurrently for a successful system.

The other type of phasing is geographical. In this case, one jail facility or unit may be selected for initial implementation. This is sometimes referred to as pilot implementation, which provides an opportunity to work out operational issues prior to department-wide use of the system.

Both phasing strategies make sense as part of the planning process for a complex jail system, particularly for midsized and large jails.
Characteristics of Exemplar Systems

Strategic systems planning must primarily consider the current environment and unique needs of the agency. However, in terms of planning and moving forward, it only makes sense to learn from the experiences of other jails both in terms of strategies that worked and those that failed to work. In particular, an understanding of the factors and characteristics of successful jail system implementations in other agencies can provide useful direction in the development of the strategic plan. Two case studies of jail system development and implementation are described in Appendices 2 and 3.

Use of New and Evolving Technologies

The planning process should ensure that new technologies can be adapted and implemented in the jail systems as these technologies evolve. For example, technologies such as handheld scanners, RFID tags, and biometrics are becoming more commonplace in the jail environment. The strategic plan must ensure that the system solutions implemented have the flexibility and the open architecture to allow the agency to take advantage of new technologies as they evolve without requiring a significant rewrite or replacement of the application software deployed.

Common Deficiencies of Jail Information Systems

In this section, some of the more common deficiencies in existing jail systems are described. For the most part, these deficiencies are not unique to jail systems but instead are prevalent in existing automated MIS systems in criminal justice and other government systems. Frequently,
inadequacies of the existing jail system or systems are one of the catalysts, along with other factors such as changes in technology, for the development of a new state-of-the-art replacement jail system. Identification and documentation of these deficiencies in the information system plan will assist in defining the scope and characteristics of the planned new jail management system.

**Limited and Missing Functionality**

Certainly one of the major user complaints of existing legacy jail systems is the fact that such systems often fail to address one or more of the critical business functions of the jail. Earlier generation jail systems tended to focus solely on core processes such as booking, release, and movement. To meet the comprehensive needs of the jail in today's environment, the jail system may require 10 or more unique major functions. This broader range of functionality with emphasis on information needs and data requirements are discussed in other chapters of this document in some detail.

**Misused and Unused Functionality**

The other side of the coin with functionality is functionality that is available in the current jail system but not used. This happens for a variety of reasons. One of the most common is the difficulty of using some of the system capabilities because of poor design. The system may only address part of what is needed and therefore may require a combination of automated and manual processes to complete the job. In other instances, a lack of training, particularly, when using the system requires a high degree of training and/or there is a high degree of turnover for a specific job station, contributes to misused and unused functionality.
Another related problem is the misuse of a system function. This is frequently the result of poor system design that results in a cumbersome process that is not efficient and encourages a busy jailer to bypass or find shortcuts rather than fully use a system function.

Data Quality Issues

The legacy jail system may fail to meet many of the agency’s information needs, particularly at the management level, because of poor quality data and inadequate access to it. If the system allows important data elements to be optional rather than mandatory, the utility of capturing data that will be useful for decision-making may be significantly diminished. This is true for the use of data at both the individual and aggregate levels. For example, on an individual basis, if special handling requirements and alerts are not captured, information important to the jailers upon a subsequent arrest may not be readily available to the jailer. On an aggregate basis, any analysis or assessment of the jail population will be limited and less useful if the extent of missing data is significant.

In addition to missing data, there are data quality issues related to poorly coded data elements. If a data element lacks a list of values that address most possibilities, users may revert to code values such as “other” an inordinate amount of the time. Another aspect of poor data quality is the use of free-form fields rather than coded values. This not only makes it difficult to aggregate and analyze data but also is an inefficient way to capture data. For example, a data element such as reason for release can consist of a series of values that can be selected from a drop down list of a free-form text field. In the latter case, the same data might be represented as “transferred to
state dept. of corrections,” “transfer to state prison,” or “transferred to state DOC,” or some other variation depending upon the end user.

Modern systems, unlike many legacy systems, ensure both improved data quality and efficient data entry by using meaningful coding schemes. Many vendors of jail software packages facilitate this with the use of accepted jail data standards at the national level.

**Poor User Interface**

Older jail systems and many systems still in use have a poor user interface. The user interface consists of the screen displays that the user sees when navigating through the system. Older systems were based upon user screen displays that were frequently congested and difficult to understand. These designs were based upon mainframe computers with limited resources and dumb terminals. Current systems are designed with a graphical-user interface (GUI) that provides users with a much more intuitive, easy-to-use system. Because of the wide acceptance and exposure to Web-based Internet applications, the learning curve for new jail staff is shortened significantly with current GUI interfaces of jail systems and in particular those systems that allow the ordering of screens to match the workflow of the end user.

**Lack of Easy Ad Hoc Query and Report Capabilities**

A common complaint of both line staff and management is the inability to retrieve quickly the information needed from the jail database in a useful format. Although routine periodic reports, such as the court list or daily booking list, can be predefined and generated in a useful format
when required, other reporting requirements simply cannot be predicted either in terms of
frequency of use or specific data that will be needed in detailed summary formats.

These types of ad hoc queries and reports have traditionally been difficult to build into jail
systems. However, current systems with relational databases and more extensive tools for
retrieval of data have made it feasible to offer ad hoc report capabilities that provide a more
flexible approach to the generation of reports.

**Poor Integration of Data-Capture Technologies**

A common deficiency with existing jail systems is the failure to take advantage of current data
capture technologies. Scanning of wristbands for booking numbers (rather than keyboard entry),
capture and presentation of inmates’ photos on inquiry screens, and the use of a single fingerprint
at the time of release to match against the stored fingerprint database are examples of features
now available in jail systems but missing from most legacy systems. Newer jail systems are built
with an open architecture to support evolving data capture technologies.

**Data-Sharing and Data-Exchange Issues**

Another common deficiency of older jail systems is the limited ability to interface and exchange
data with other systems that support law enforcement, prosecutors, courts, other justice agencies,
and treatment providers. The lack of interfaces with external systems results in inefficiencies that
result from redundant re-entry of data previously captured in another system, less timely updates
of data with manual data entry than in a system-to-system data exchange, and reduced quality of
data when the same data are entered multiple times in different systems. The goal should be the entry of data once and only once by the originating agency with a data exchange process to share data of interest with other departments.

An interface with the court system to track inmate court appearances, case charges, case dispositions, and sentences is a perfect example of this. A court interface can reduce redundant data entry, provide more timely updates in the jail system, and improve the quality of the court-originated data to the jail.

Newer systems conform to the national justice data exchange standards to facilitate the exchange of data with the jail’s business partners at the local, state, and federal levels. Bidirectional interfaces are those that include both the transmission of data to and from external agencies. Newer jail systems are designed and implemented with interfaces on a near real-time or scheduled basis that is unavailable in older systems and result in improved workflow processes within the justice community.

Another type of external access now frequently implemented as part of a jail system is public access via the Web to a secure, limited set of inmate data. Public access not only reduces the workload of the jail in functions such as inmate inquiries via telephone calls but also provides a public service.
Requirements Identification and Documentation

Prior sections of this chapter described the development of an information system’s plan. The next major step in the development process is the clear identification and documentation of the requirements of the system. Requirements identification and documentation are discussed in this section. This process fleshes out and provides the details of the requirements of the system consistent with the scope and priority needs documented in the plan.

The plan itself may require updates upon completion of the requirements analysis. It is not uncommon to make some changes in scope, project schedule, and strategic direction as a result of the more detailed analysis in this phase of the development process. The major components of the requirements identification process are described below and include: goals and objectives, and identification of business functions, data, technical, and interface requirements. This section also provides a discussion of how to manage the requirements analysis process.

Goals and Objectives

Goals and objectives of the system need to be clearly stated and documented. To a large extent, these will be restatements of the goals and objectives identified in the plan. However, there will likely be some refinement and more specificity in the goals and objectives than previously documented. For the most part, this should be a relatively straightforward process.
Identification of Business Functions

The requirements analysis process decomposes high-level business functions to specific processing steps related to each function within the scope of the system. A variety of techniques can be used to accomplish this, including some combination of observations, interviews, and review of existing documentation. One must always be careful not to rely too heavily on existing procedure manuals as they may not reflect the reality of actual operational practices. It is also important not only to document how processes are currently performed but also to focus on opportunities for improvement in existing processes. Development of new automated jail system is an opportune time to question how business is currently accomplished and to seek increased efficiencies. Both the current state and the desired future state of each business process should be documented.

A significant component of requirements analysis is documentation of workflow processes and business rules. Workflow processes within and between business functions can be documented by using a variety of tools available to display diagrammatically the operational workflows. Workflow diagrams also provide a means by which to communicate with stakeholders to ensure that what is depicted for the current state and the desired future state is accurate and agreed to by the stakeholders.

Business rules must also be documented. Business rules are those rules that define the constraints and conditions associated with each business function based upon the policies and procedures of the jail. For example, a business rule might state that each inmate must be scheduled for a
classification review at least once every 45 days. In the new system, the software will be configured to enforce the defined business rules. For some business functions, such as the calculation of sentence and release dates, the business rules can be quite complex given all the variations of multiple consecutive and concurrent sentences, good-time credits, credit for time served, and other parameters related to computation of the actual release date.

**Identification of Data Requirements**

The identification of data requirements goes hand in hand with the identification of business functions. The data required to support the business processes in the new system are based upon the information in forms, reports, and existing databases. Data are not limited to specific fields represented by character strings or numbers on a booking form, for example, but more broadly include documents, photos, and other images relevant to the business processes.

As part of the analysis of data requirements, characteristics of each data element must be defined, including data type, length, code values (if relevant), whether the data are optional or mandatory, and other attributes that may be helpful in defining the new system. Functions and data are cross-referenced in the document of the system requirements. In conjunction with the analysis of business functions is the need to document how data will be captured, queried, reported, and otherwise accessed in the new system.

An important part of the data analysis is the documentation of how data are logically related. The entities (or things) tracked in the system, such as inmate, arrest, booking, movements, housing,
trust account, court cases, programs, incidents, and the dozens of other entities that are to be part of jail system, must be defined. Part of this definition includes identification of all of the data attributes (or specific data elements) to be tracked for each entity. Linked to the concept of business rules previously discussed, the relationship between the entities that will be tracked by the system must be documented. For example, there may be zero; one, or many alias names for each inmate; for each court case there must be at least one charge.

The data requirements documentation will provide a road map for the design of the database in the new jail system. If the intent is to select a vendor with an existing jail software application, this analysis, in conjunction with the functional requirements, will serve as a basis for vendors to ensure that their product meets the jail’s needs and also to provide the jail with a basis to evaluate the vendor responses (see Appendix 1).

Identification of Technical Requirements

Another component of the requirements study is the identification of the system’s technical requirements. This component focuses upon the nonfunctional requirements of the system related to system performance and the technical infrastructure. Documentation of technical requirements ensures that the system is appropriately sized in terms of infrastructure components such as servers, disk storage, and network. This process also clarifies expectations for system response time, system uptime and availability, growth, system maintenance support, and other technical factors. Without getting into detail, technical requirements consist of specifications such as the following:
• Estimated number of total named users and maximum concurrent (i.e., logged in) users of the system at any time;
• Expected user response time for various types of transactions;
• Estimated volume of update, inquiry, and report transactions for a given time period;
• Estimated data storage and data retention requirements;
• System security requirements;
• Acceptable levels of planned and unplanned downtime;
• Network connectivity requirements; and
• System access requirements external to the jail (e.g., limited Web-based access by external justice agencies and by the public).

This is by no means a comprehensive list of technical requirements but does include important topics that should be addressed in the requirements document.

**Identification of Interface Requirements**

The interface requirements of the jail system must also be addressed in the requirements study. This overlaps with the functional and data requirements analysis in that the description of functions will specify how other systems will interact (i.e., information exchanges) with the jail system. Also, the description of data requirements will include data derived from other systems through an interface process.
Interfaces will likely consist of other internal systems, particularly if the jail also performs other law enforcement functions such as patrol. Most interfaces will likely be with other justice agencies, such as the local police departments, court, prosecutor, and probation at the local level and law enforcement and corrections agencies at the state level. There also may be interfaces with non-justice agencies such as county financial systems to interface with trust accounting and community treatment providers in support of reentry initiatives.

This section of the requirements analysis will include a technical description of all the systems to be interfaced. The analysis will include both inbound interfaces (i.e., data coming into the jail system from other systems) and outbound interfaces (i.e., data going from the jail system to other systems). The analysis will identify the frequency, business rules, types of data to be transferred, data conversion, data transfer protocols, read/write access, and other system interface requirements.

To facilitate interfaces between justice agencies, federal initiatives to standardize data exchanges have been adopted. Adoption of these standards, which are collectively referred to as Justice XML, in newer systems simplify and improve the development and implementation of interfaces with the jail system.

**Management of the Requirements Identification Process**

Requirements identification is one phase of the jail system development process and is, in fact, a project in and of itself that requires management. A project schedule with milestones, identified
tasks, assignments, budget, and other components of a project plan must be documented. Depending upon the scope of the new jail system, level of resource commitment, and existing documentation of the current systems environment, this could be a two-month endeavor or it may extend to a year or longer.

Frequent interaction with the user groups and oversight by the steering committee will be necessary to manage the requirements identification process effectively. The project team will be held accountable to these groups to provide a quality assurance process. The steering committee will be the final approval authority of the requirements documentation.

**System Design and Testing**

As explained in the introduction to this chapter, the system design and testing phase of development may not be required or may be de-emphasized when a jail system is acquired from a COTS vendor. In these instances, the system has already been designed and built and, presumably, will be implemented mostly off-the-shelf. On the other hand, the building of a jail system from scratch requires a design phase. Even with the purchase of a COTS package, it is frequently the case that customizations of the vendor’s system will be required. In these instances, a mini design phase may be required.

It is always desirable to limit implementation of a COTS jail package to configuration. Configuration simply involves the use of the built-in features of the COTS package to adapt the jail software to meet the specific needs of the agency. On the other hand, customization involves
the writing of new software and typically adds to the cost and complexity of implementing the jail system. In general, the vendor community for jail COTS software has added more configuration features over time and improved jails’ ability to tailor the system to meet their specific needs without expensive customization. The reality of the jail business is that although core functions are similar, there are always local variations in policies and procedures that must be accommodated by the COTS vendor.

The system design phase consists of the conversion the functional, data, technical, and interface requirements formulated in the requirements phase from logical structures to a physical design. The database structures, forms, queries, reports, physical interfaces, and other components of the system are defined in this stage. To communicate with users clearly about how the system will work, written specifications can be difficult for the typical user to understand and are usually an inadequate mechanism to ensure that the system design has been clearly communicated to the user groups.

To address this shortcoming, prototyping is frequently used during the design stage. Prototyping consists of visual mock-ups of update and inquiry screens (see Figure 6.2) as well as navigation between screens. Prototypes can be powerful mechanisms by which to ensure that the design is on target and consistent with user expectations.
The design process frequently involves modifications to the requirements identified in the requirements analysis phase. Changes in business practices, new priorities, or overlooked requirements may emerge. To maintain control of scope, a formal change order process that requires approval of the project manager and/or steering committee should be utilized. The change order process documents changes in scope and identifies the impact of the change and the associated costs.
The other topic that should be briefly addressed is the need for testing prior to the implementation phase of the jail system. Whether the jail system is a custom-developed system or acquired from a COTS vendor, thorough testing upon initial delivery of the system is critical.

Requirement identification, sign-off, and testing of a system are multifaceted and accomplished in several stages (see Figure 6.3). Initially, a functional test should be conducted for each system module. This requires a planning effort to develop test scenarios. These scenarios provide a means by which to test as much as possible of the functionality defined in the requirements phase of the project. The requirements document is the primary source for the development of test scenarios.

Upon completion of functional testing, other types of testing are required. Integration testing checks function across various modules of the system. Interface testing, stress or load testing, disaster recovery testing, and other types of tests may be required prior to implementation.

Test plans with test cases or scenarios will be required for each level of testing. Thorough testing ensures that user expectations for functionality, performance, and availability of the system will be met upon implementation. The lack of comprehensive testing, on the other hand, increases the risk of delays and/or failure of the system at the scheduled go-live time.
CHAPTER 7: INFORMATION SYSTEMS IMPLEMENTATION

This chapter discusses strategies, approaches, and methods by which to implement a jail information system. The last chapter focused on system planning and development. Although briefly described previously, implementation and testing strategies are reviewed in more detail in this chapter. Pilot implementation, including testing, training, resolving system problems, and successfully implementation of a pilot jail system are discussed. Full deployment of the jail system is described next, including important considerations from both a management and technical perspective to ensure successful implementation. Topics consist of expectations management, user acceptance, policy and procedural change, cutover and data conversion, and quality assurance. Lastly, the post-implementation phase is reviewed, including a discussion of ongoing problem resolution, managing system enhancements, ongoing training, and managing technology upgrades.

A systematic model of implementation is presented based upon a large number of IT innovations and change efforts in jails in which the present authors have been involved. The primary objective is not to provide detailed descriptions of implementation efforts in each specific jail but rather to clarify general lessons learned and to offer strategies for implementation based upon these case studies. In this implementation model, jail administrators and other jail stakeholders are provided with an understanding of the main sequential phases, tasks, and challenges of
managing complex IT/MIS changes. Management and staff roles across each of the key phases of jail system implementation are clarified.

Jail system implementation is a broad topic that cannot possibly be addressed in an exhaustive manner in this chapter. Instead, some guidelines, overview of methods and approaches to ensure effective initial implementation and the continued evolution of the jail system with functional enhancements and the technical platform are the focus of this chapter. Implementation is not a single milestone but an ongoing process. Of course, the rate of change with new business processes and new technology has to be tempered by the organization’s ability to absorb change. Nonetheless, jail systems are usually not static but typically are subject to ongoing system enhancements. For purposes of this document, the implementation process has been subdivided into pre-implementation, pilot implementation, full implementation, and post-implementation phases.

Overview of Implementation Strategies and Phasing

A Four-Phase Model of Implementation

This model offers a broad roadmap by which to approach change in the jail MIS. The change model can be applied to most situations that require implementation of new technologies, processes, or policies and aims to guide managers through such implementation projects. The framework has four broad overlapping and inter-related phases (Walton, 1989; see Figure 7.1). Jail managers under certain conditions may be tempted to skip various steps. However, this can
be hazardous as these tasks, such as building commitment, continually reappear at each stage and must be repeatedly addressed.

Figure 7.1 Major Phases of Implementation and Key Tasks

Phase 1: Pre-implementation. The main tasks of this phase include:

- Recognizing the problems and deficiencies of current system,
- Building a supportive stakeholder coalition for change,
- Mobilizing resources and building a vision to motivate change,
- Setting up a planning team, and
Phase 2: Design. This complex phase involves detailed pilot tests and revisions of the initial prototype design of the new jail system procedures with the following subtasks:

• Finalizing the system design and performance requirements, building on preliminary work to specify needs and functionalities of the system;

• Staff training in the new prototype procedures. Staff must be trained in the new procedures to engage meaningfully in the pilot test;

• Pilot testing, which assesses whether performance and functionalities have been met and checks the alignment (fit) of the new system to the jail;

• Reviewing alignment examines the fit or alignment of the system to the local jail environment using pilot test results, performance testing, and a process analysis in real-life conditions; and

• Making refinements as necessary to achieve the best possible fit with the jail’s needs.

Phase 3: Implementation. This phase introduces the new system into the jail’s standard operating procedures. The following are the critical tasks:

• Maintain a detailed implementation activity plan,

• Develop mechanisms to monitor progress and identify conflicts and glitches,
• Provide for adaptive problem-solving and design adaptations as glitches or problems emerge during implementation,

• Allow for continuous planning by emphasizing the continuous and flexible nature of planning and the need to be responsive to the emerging dynamic situation,

• Transition from the old to new system (i.e., go live). Normal procedures are often continued for a time, as the new system is phased in,

• Build competence. Successful implementation typically requires new skills at requisite levels. New supervisory procedures may be needed.

**Phase 4: Post-implementation.** This phase involves consolidation, monitoring, evaluation, and continuous learning from the implementation process. The major tasks are as follows:

• Assess impacts and outcomes of the new procedure and monitor outcomes to answer questions such as, Did the new system reach our goals?;

• Evaluate the process to assess the integrity with which staff are using new procedures, as well as resistance, compliance, goal sabotage, and goal substitution;
• Make revisions to the system design or procedures as needed. Using post-implementation monitoring, jail managers may identify system features to be modified or added;

• Conduct debriefing sessions with transition team to answer questions such as, What has worked well? What was difficult? What did we learn about change implementation?;

• Conduct ongoing skill development. The above evaluations may indicate skill deficiencies, the need for new supervision methods, or new statistical reports for jail managers; and

• Provide feedback systems and management reports for all key stakeholders. A new jail system offers a rapidly expanding database with relevance for all stakeholders. Reports should be developed for routine distribution to all units and stakeholders.

The Importance of Implementation Management Skills

Inadequate or ineffective implementation skills can lead to wasted resources, failure to achieve the benefits of a new or improved system and, in some cases, the abandonment of the system, resulting in substantial loss of time and financial resources. Furthermore, the software may be perceived as ineffective. This conclusion is clearly misleading if the new software was never implemented effectively, if competence was not achieved among users, and/or there was little fidelity to its original design. Thus, given the continual emergence of new systems and procedures, many jail managers must develop effective skills in implementation planning and
become change leaders. Yet the traditional seat-of-the-pants approach is still widespread among jail managers. This approach is often characterized as disjointed, poorly conceived, half-hearted, beset with inept planning, and usually lacking in stakeholder support. There is a pressing need for a clear and systematic implementation strategy to manage system changes in jails.

Examples of Changes and Upgrades Implemented in Jail Systems

A variety of changes continue to emerge in the arena of information technology and database management systems. Examples of typical information technology changes and innovations in the jail environment include the following:

1. Development of integrated jurisdictional criminal justice databases: Many local jails are engaged in intense efforts to integrate data across law enforcement, courts, probation, and other external agencies. In some cases, this involves new software systems in the jail. The goals driving these changes involve the need for timely, comprehensive, and high-quality data as well as improved analytical capacities to support decision-making at both line and management levels in the jail.

2. Enhancements and extensions of key data and variables: Many jails are engaged in adding new variables to their databases. This was illustrated by the addition of new, more advanced and validated risk/needs assessments such as the COMPAS, LSI-R, and similar fourth-generation assessment systems.

3. Improved performance-based measures: The budget crisis in many jurisdictions has forced jails to provide updated and more valid measures of work done, work
performance, and objective measures to monitor progress toward the jail’s policy goals.

(4) Broadened range of management and statistical reports: Jail managers must increasingly be informed about a variety of workload, work quality, and policy-related issues. This has forced the design of a broader range of management and statistical reports that increases the flow of strategic information to middle and upper managers. Development of such information flows has profound implications for accountability and resource allocation, particularly as better performance and workload measures are developed as part of jail systems.

(5) Introduction of enhancements in screen design, interface, and navigation: User-friendliness and the resulting time savings in operations has driven an almost constant flurry of small design changes among the jail systems. These enhancements typically respond to user needs relative to ineffective or inefficient screen design or numbers of keystrokes required by certain processes. Such small changes are channeled to data processing IT groups to evaluate the amount of work involved, benefit-cost considerations, and timing of task completion.

(6) New assessment and classification methods, new data elements, and often new software for community re-entry: The pressure to reduce expenditures and shrink the size of incarcerated populations is also having an impact on jails. Increasingly, jails are exploring and adopting augmented classification and risk-assessment techniques that focus on the re-entry process, community follow-up, and the prediction of recidivism. This trend will link in-house treatment programs more tightly to
community corrections and probation. Such prisoner re-entry, early release, and work-release policies are very much high-stakes classification decisions that the jails must increasingly face, with serious implications for public safety, surveillance/supervision levels, and treatment planning. Re-entry software has added new types of data elements to provide comprehensive re-entry information resident in the jail system. An example of new classification software to address such re-entry approaches is the Reentry-COMPAS (Brennan and Oliver, 2000).

(7) New risk assessment and classifications for women inmates: Because of concerns about the validity of current risk classifications for female offenders, jails have begun to explore separate and more valid classification systems for women. These systems also expand the data requirements to address several legal, criminological, psychological, and treatment issues for women inmates (see Brennan, 2010; Brennan & Austin, 1997; Zaplin, 1998).

The Difficulty of Change Implementation in Jails

Experience with jails during implementation of new or changed systems has demonstrated how extremely difficult it is to manage technology change and has shown that the success of implementation is often more important than the technical design of the new system. Implementation problems emerge at all phases of innovation and in some cases may sabotage the whole effort.
In adopting or upgrading information system technologies, remarkable differences exist between jails in the time taken to achieve implementation, as well as in competence, functionalities achieved, data quality, and the integrity with which the new procedures are used. Clearly, top-down implementation alone cannot force new technologies or procedural innovations onto a jail. Top-down implementation may simply graft superficial changes over deeply rooted attitudes, procedures, and correctional cultures. Procedural changes such as the systematic use of management statistical reports are often met with varying levels of indifference, resistance, incompetence, or outright sabotage.

Several factors contribute to the difficulty of making organizational and procedural IT/MIS changes in jails:

1. There is no single standard model of jail technology innovation and implementation. Thus, jail managers have no standard strategy to follow when they implement new IT procedures.

2. Criminal justice management reporting software usually is not designed or documented for easy transfer between agencies. Most are tailored to local organizational norms, policies, and procedures.

3. There is a lack of accurate and readable documentation of previous jail system implementation projects that can be used for training. Thus, there is little cumulative development in this topic of implementation (Brennan, 1998).
The Pre-Implementation Phase

Although already discussed in the context of information systems planning and development in prior chapters, pre-implementation tasks in the four-phase implementation model can be summarized as follows:

(1) **Initial problem recognition**: This task involves presentation of a strong justification that a problem exists with the jail’s current systems and use of technology and that there is need for change. The staff as a whole and top management in particular must understand the deficiencies and rationale, the need for the change, and the new vision, or business as usual will prevail. The reasons behind the change must be clearly communicated.

(2) **Build a supportive coalition**: Change seldom occurs in a jail without strong political support. The ideal is a unified commitment among jail leadership and key stakeholders. To obtain the support of key people who have influence and authority is a priority. If they are not supportive, they may sabotage the IT project. Ideally, such support should be lined up before the project progresses too far, as major stakeholders naturally prefer early involvement in agenda setting and design decisions.

(3) **Involve a broad base of stakeholders**: Any jail-wide IT procedure will typically have broad scope in that it may impact multiple jail stakeholders (e.g., security, classification, IT staff). These stakeholders must all be involved as they are more likely to resist if they feel excluded. Incorporation of all key players also offers some
direct participation, which typically strengthens buy-in, final design of changes, and commitment.

(4) *Specify the deficiencies of current jail system performance:* The change agent must present a persuasive analysis of the performance deficits of the current IT systems and procedures.

(5) *Develop a vision of desired goals/benefits:* A vision statement of expected benefits provides a sense of direction and motivation. All major stakeholders should agree on the intended benefits of a new system.

(6) *Develop performance requirements and functionalities of the new IT/MIS:* This task involves the development of a wish list of ideal performance requirements and specific functionalities of the new IT/MIS procedure by the coalition of stakeholders.

(7) *Mobilize a planning structure to handle the change:* This step aims to strengthen the adaptive capacity of the jail. Normal staff jobs are not geared to the management, design, and implementation of change in the IT/MIS design. Thus, new planning structures or committees are usually needed to enhance the adaptive capacity of the jail. These structures may include:

- Transition manager for IT (change agent);
- Steering committee for IT;
- Implementation team, including key stakeholders;
- A planner to monitor implementation progress; and
• External IT consultants as needed.

The core transitional team will manage training, planning, design, troubleshooting, coordinating, and maintaining the momentum of the process. Leadership is generally provided by a transition manager. This person must often assume the role of change agent. The selection and skills of this person are critical (e.g., respect of peers, management and political skills).

(8) Review preliminary IT functions and alignment issues: This design task builds on the list of performance requirements and benefits. Preliminary specifications are required to finalize a design for a new system (see Chapter 6). It is impossible to design an appropriate procedure if these specifications are left vague.

(9) Initiate training and competence-building for the new software: Major IT changes in jails often require new staff skills and new understandings. A poor understanding of IT functions among staff, for example, can result in unrecognized design flaws that may be introduced into the new system by unwary administrators (e.g., gaps in key data elements, inadequate classification methods, poorly designed data screens, unintelligible or missing management reports, inability to produce ad hoc reports).

(10) Develop (and continually refine) a project plan: A tentative implementation plan must be developed, maintained, and regularly updated by the transition team. Specific tasks, milestones, and responsibilities must be identified. A critical component is to estimate the resources needed to conduct implementation across all phases. The plan should be brief, contain a list of the changes proposed, list why they are important,
name who will do them, estimate how long each will take, and determine the sequence in which they are to be completed.

Pilot Implementation and Training Phase

This phase focuses on the development of a workable, well-tested design for the new jail system’s features and procedures, initial training strategies, and the completion of a rigorous pilot implementation (or a trial run) to assess the JMS’s achievement of the desired goals, to identify remaining design flaws and omissions of key functions, and identify any further modifications that may be needed. Specific topics covered in this section are user acceptance testing (UAT), system performance testing, training strategies, functional and geographical phasing, and the identification and resolution of system defects during pilot implementation.

User Acceptance Testing (UAT)

UAT is probably the most important level of testing in the implementation process. Typically, the earlier stages of testing, such as unit, system, and integration testing, are conducted by technical and specialized staff. UAT provides end users with the opportunity to test how well the system conforms to and supports actual jail business functions and meets expectations. Before UAT, no implementation task demonstrates exactly how well the new system works with real-world inmate data and business processes. Consequently, this is not an implementation task to be taken lightly or limited to superficial testing. The consequences of a failure to identify and correct system defects during UAT can be dire and increase the risk of system failure upon implementation.
The basis for UAT is the documented requirements of the new system. Based upon these requirements, test scenarios are defined and specific tests are documented to be used in UAT. Functions (e.g., initial booking, identification, property management, medical screening, and classification) are tested individually and then also as an integrated complete process (e.g., the entire intake process, including multiple individual functions as previously specified). A UAT plan should be documented with all of the business scenarios, specific test scripts to support the testing these business scenarios, and expected results for each test script. The test scripts should be comprehensive and identify all of the common variations associated with each business process.

It is never possible to test all possible conditions thoroughly; there are simply too many combinations and permutations of intake data that occur over extended time periods. However, the UAT test plan should address all common known variations to ensure that the new system can handle normal variations in business processes. The UAT plan with test scripts and expected results will provide the testers with a basis for the execution of these tests and will report both successful completion and identified problems.

With UAT, tests of unusual conditions or exceptions are just as critical as tests of normal business scenarios. It is just as important to ensure that the system rejects a bad transaction as it is to ensure that a valid transaction works as expected. Every jail system should have built-in business rules (or system edits) that prevent actions that are inconsistent with the organization’s policies and procedures. Building on the business scenarios previously identified as example candidates for UAT, examples of exception tests may include the following:
• **Classification and housing assignment**: What happens when an inmate classified as medium security is given a housing assignment in a minimum security location? How does the system respond when an inmate is assigned to a housing location with a keep-separate inmate, such as rival gang member?

• **Scheduling an event**: Does the system recognize and warn the user of a schedule conflict when a visit is scheduled for the same day or time as a court appearance or medical appointment?

• **Commissary and cashiering**: Does the system alert the user when an inmate attempts to purchase items that exceed the existing account balance or an attempt is made to add more to the inmate's account balance than allowed by policy?

These are just a few examples of a myriad of possible test scenarios of exceptional or unusual conditions. It is not uncommon for more time to be required during UAT to test these exception conditions than the normal business scenarios. It is also more likely that system defects or problems will be identified when testing exceptions.

Another component of some UAT test plans is so-called bust-the-system testing. The jail system should have a robust design and not fail or abort under abnormal data entry conditions. Bust-the-system testing allows end users to ensure that the system does not fail under any condition of abnormal data entry. In any system, inadvertent user actions will occur on occasion, and the system must be designed to handle these occurrences.
UAT test results, not just defects, should be documented in a test results report to provide an audit trail and confirmation that all planned testing has been successfully completed. Part of UAT will be regression testing. A reported defect that has been corrected will need to be retested to confirm that the defect has in fact been corrected. Depending upon the quality of the software and the complexity of the system, regression testing could extend UAT test timeframes significantly. Upon completion of UAT, there should be a high degree of confidence that the system meets user functional requirements and expectations and that there is an acceptable level of risk with full deployment of the system.

**System Performance Testing**

System performance testing is another type of test conducted as part of pilot implementation. The purpose of this test is to determine whether the system meets its performance goals. System performance goals consist of both highly technical and user-focused goals. For example, a performance goal might be stated as, “The response time for a booking transaction should be 2 seconds or less with peak load of 100 concurrent users.” Another performance goal might be that data transferred from an interfaced system should be available within five minutes of initial data entry in the original system. Performance goals to be tested relate to several operational factors such as the following:

- **Response time**: How long does it take for various user transactions to complete from the time a user sends a transaction to the time the system responds to that transaction?
• **Throughput and scalability**: How well does the system handle a large number of concurrent users during peak times?

• **System availability**: Does the system continue to operate, for example, with the failure of one server or network node? Has the system been designed with redundant components to ensure high availability?

• **Business continuity**: What happens with a major outage at the data center? Is there a disaster recovery site to ensure continuity of operations?

• **Interface performance**: How well do the interfaces with other systems perform under peak conditions? Does external data arrive quickly enough to be useful in performing jail operations?

Performance expectations should be clearly documented prior to performance testing. Otherwise, meaningful performance testing cannot be conducted. Technical staff will be required to assist with both the identification of system performance goals and a plan to conduct performance testing. Unlike other types of testing that have been discussed, system performance testing is very difficult to conduct in a meaningful way prior to pilot or initial implementation. Although software tools are available for stress and other performance tests, these tools are expensive and sometimes produce misleading results.

Presumably, if the jail software is a COTS package, there has been some level of performance and benchmark testing has occurred at other installed sites or has been performed by the vendor. However, because the technical environment, including factors such as network infrastructure,
vary from one jail site to another, it is inadvisable to assume that performance of the jail system has been consistent across installed sites.

For all of these reasons, performance testing is best conducted during pilot implementation with real users in the real computing environment of the jail. Key system components can be monitored and measured and bottlenecks identified. Based upon performance monitoring, the jail system can be tuned and improved. Once the system is implemented, monitoring system performance becomes an ongoing task that uses system tools that are readily available to measure and report system performance in terms such as the utilization of CPU, memory, storage, network, and other key system components.

**Training Strategies**

Staff, including both local IT staff and management and line users, must be trained in the new system procedures and in the ways the system can support jail operations. A training curriculum must be developed to explain the multiple roles of the software technology in meeting the various information needs of the jail for administrative, middle management, and line staff. This curriculum also must include the technical procedures of the software, strengths and weaknesses, management report design, critical decision-support information, legal requirements for objective and high quality data, professional association standards for data quality, and coverage of and extensive practice in using the system to support all jail operations.
In a jail context, there is typically a strong focus on building and maintaining the competency of staff. Major policy, procedural, and technical changes usually require new skills, perspectives, and understandings. If jail managers have a poor understanding of the roles and functions of IT, they may remain unaware of its full capacities as well as any design flaws in a new jail system. Training plans are required with any new technology or procedural change as these may render current procedures and organizational knowledge obsolete. With rapid change, a jail’s inventory of skills and procedural knowledge may decay. Thus, skill-building and effective training cannot be ignored.

A common training strategy used with jail systems implementation, particularly in large organizations, is a train-the-trainers approach. Experts in the new jail system are developed with thorough training and involvement in UAT. These individuals then become the trainers for other jail staff and frequently become so-called super-users who are capable of serving as a first level of support to answer system questions and provide technical assistance to users on an ongoing basis. This approach can be a cost-effective initial training strategy and may provide a means for in-house training of new and rotated staff. Another strategy that supports the organization’s training needs, depending upon availability by the software provider, is the use of online tutorials for both initial training of new users and to refresh the skills of existing users.

**Functional and Geographical Phasing**

Chapter 6 provided a brief discussion of functional and geographical phasing in conjunction with the system planning process. Pilot implementation typically represents one or both of these
implementation strategies. Functional phasing involves subdivision of a jail system into manageable chunks, or components, and implementation of limited functionality in an initial pilot phase. Geographical phasing, on the other hand, limits the implementation of a jail system at a single facility or module within a facility, for example, before widespread use of the system throughout the jail organization.

There are a number of reasons that an agency may decide that functional phasing is required for jail system implementation. Perhaps it is a matter of how much change the organization can undertake at once or budget constraints may limit which jail functions can be implemented in a first phase. In other instances, further requirements analysis will be necessary before a function is well understood and can be implemented. Jail systems sometimes involve dependencies that dictate functional phasing. Implementation of a business intelligence (BI) component in the jail system, for example, makes no sense until core functions are implemented and a database is created to support meaningful BI capability.

External factors also may influence functional phasing. An audit of the commissary and inmate fund accounting system may mandate the immediate implementation of a new cashiering system to resolve financial audit issues. The need to develop an interface may dictate a lower priority and implementation in a later phase. For example, a comprehensive legal cases module in a jail system may not be practical or useful until an interface with the jurisdiction’s court system has been developed and implemented.
Regardless of the reasons, functional phasing usually makes more sense for jail system implementation than a big-bang approach with its inherent risk. In determining how to conduct a pilot implementation with functional phasing, it is important to ensure that all interdependent and tightly linked functions are implemented in a single phase to avoid, as much as possible, a situation in which multiple systems or a combination of manual and multiple systems are used to complete tasks. For example, it usually does not make sense to implement a new system for the intake process unless all of the associated functions for intake are included.

Geographical phasing is normally part of pilot implementation for different reasons than functional phasing. Although budgetary constraints may be part of the basis, typically geographical phasing allows the organization to refine business processes and new procedures before widespread deployment. The introduction of new hardware technologies may be a driving force for geographical phasing. Use of handheld wireless scanners, for example, to track inmate movements and activities has technological risks. By limiting implementation to one part of the jail, the risks are minimized.

With geographical phasing, any operational problems and/or needed enhancements to the jail software can be identified and deployed as part of the pilot implementation. It should be noted, however, that geographical phasing may not be realistic. The jail jurisdiction may not be large enough to justify this type of phasing or system benefits and avoidance of expensive parallel operations may only be feasible with full deployment throughout the jail.
Identification and Resolution of System Defects and Problems

Management of the process of identifying, reporting, and resolving system defects, problems, and issues is an ongoing task throughout the testing and use of the JMS. Although initiated during the testing phase, this process of tracking system problems and defects continues throughout the life of the system. System defects are expected to be more extensive during the system performance and user acceptance testing phases. However, testing can never be thorough enough to test all combinations of data and processes. Consequently, issues will continue to be identified throughout pilot implementation. Likewise, with full implementation, issues will continue to be identified as unique situations arise but, in all likelihood, will be less frequent and less severe than during earlier stages. As the system stabilizes and matures, the focus usually shifts from identification of defects to identification of desirable system enhancements.

Identification of problems during the testing stage results from execution of the test plan by running test scripts and test transactions. When results are different from the expected results, the problem is then reported by the tester. During pilot implementation, system problems will be identified in the course of operation and will likely use the same reporting procedures as during the test phase. It is important that system problems and issues be documented in a timely manner and not simply reported verbally. At a minimum, problems should be communicated via e-mail. Ideally, a problem-tracking system will be used that includes who identified the problem, a description of the problem with related screen shots or documentation of the error message, and the date and time it was reported. If a problem-reporting system is not available, a spreadsheet
that initially captures key data and subsequently updates the problem and its current status could be used.

Issues reported should be assessed by the IT team immediately after the problem is reported. A good practice is to assign a severity level to the reported problem. Four levels of severity (critical, major, minor, or cosmetic) can be used. Definitions and criteria for each of these levels of severity are as follows:

(1) **Critical**: These defects tend to be show-stopper problems. There is no way to complete the system operation and no meaningful workaround to the problem. These issues should receive the highest priority and typically require the immediate attention of the technical team.

(2) **Major**: These defects make it difficult to complete a system function or operation. However, workarounds, although difficult and not easy to use, exist for the reported problem. These issues are severe and a high priority but not as high as the critical problems described above.

(3) **Minor**: Minor defects are those that are annoying to the users but have easily available workarounds. Inadequate user help documentation, misleading system messages, and misaligned field problems are examples of minor issues that may arise during testing and implementation. These are typically given a lower priority.
(4) Cosmetic: These are very minor defects that are noted and tracked but given the lowest priority. Cosmetic defects have no real impact on the function of the system but affect its look and feel.

Upon the completion of the categorization of the issue, its status should be tracked until resolution. Depending upon the severity, defects are immediately addressed or placed in a hold status until resources can be made available. Upon resolution of the issue, a system patch (or patches) are installed and tested. If upon retesting the corrective action resolved the problem, then the system patch is installed in the production environment and the issue is closed out in the tracking system.

A best practice is to ensure that an escalation process is in place to provide a mechanism to inform higher levels of management of issues that are not addressed and resolved in a timely manner. User perception of the system in the early stages of implementation can be unduly influenced in a negative manner if significant issues linger too long without resolution. Once that negative attitude sets in, it can become difficult to change users’ overall perceptions and acceptance of the new system. The early stage of implementation is a critical time to ensure, to the extent possible, that user expectations are fully met.
Implementation Phase

This phase involves the go-live process of the new jail system and changes to daily operating procedures based upon the new system. Some of the key components and considerations of the implementation phase are highlighted in this section.

Putting the System into Routine Use

The new system is put in place, staffed, institutionalized, and used in routine daily jail operations. The transition team then shifts its focus to specific plans and project management schedules including timetables, sub-tasking, staff training, monitoring, and identification of any unexpected problems that emerge during implementation. This phase, although it requires careful planning, also involves various ad hoc problem-solving events. Unexpected problems may arise and require immediate solutions and input from a variety of staff users. Line staff can often be the first to identify new bugs, software glitches, or other user problems that require immediate attention. Thus, upward communication is critical, and staff users must participate in problem-solving activities to incorporate their knowledge of the workplace and how it should best be aligned with the new IT procedures. Several issues become critical during this phase:

Incremental implementation vs. radical shock. This is a choice faced by most transition teams. In some jails, an incremental strategy for implementation planning gradually introduces a series of limited functionalities in IT procedures or only at limited decision points in the jail. This approach temporarily retains several current procedures. In this strategy, IT
implementation does not occur in one total big bang. The radical approach of introducing the new IT for total across the whole jail organization is often politically or practically unrealistic and risky. Thus, a slower, scheduled introduction of selected functionalities or software modules is used, with several current procedures remaining in place. In jails with many stakeholders, the incremental approach is often preferred. The goal of establishing the total IT/MIS system remains, but the strategy uses successive implementation of smaller components/modules to install the whole system gradually.

This scheduled dissemination may help to sort out unexpected glitches, maintain the supportive coalition, and allow organizational adjustments to be managed progressively. This incremental strategy was successfully used, for example, in the Detroit Wayne County Jail, where a new classification module was introduced into the IT system. This was initially installed only in several modules of the jail (e.g., the women’s module) and then progressively diffused across the total 2800-bed facility. This approach also allowed expertise in this IT module to accumulate while buy-in at various levels of the organization was established.

**Top-down linear implementation:** Top-down implementation involves the transition team and top managers providing highly specific plans and schedules for change and work role specifications to lower line staff. This approach involves reliance on very tight planning and coercive monitoring with the assumption that a carefully designed implementation plan and bureaucratic power will achieve successful implementation. The transition team may devote much time to the development plans, setting schedules and goals, subtasking, progress monitoring, and other control procedures. This style assumes that with sufficient bureaucratic
power and control, implementation should occur smoothly. However, it is increasingly recognized that the top-down approach can often be too rigid and may fail under certain conditions, particularly in complex and overworked environments. More specifically, jail conditions that may undermine top-down implementation are as follows:

1. **Insufficient adaptive capacity of some jails**: The top-down approach, although it can apply strong bureaucratic pressure and control, may run a danger of asking for a mission impossible from a jail that simply lacks the technical or human resources to use or introduce a new IT approach successfully or effectively. The technical, human, and/or data collection resources simply may not be sufficient.

2. **Weak or incoherent relations between higher management and line staff**: Top-down control crucially depends on a sufficient level of managerial monitoring, supervision, and communication. Thus, top-down implementation may fail if supervisory strategies are ill-developed or weak or if senior staff are cocooned, distant, or isolated from line staff. In such jails, it may be difficult to force line staff, several levels lower in the hierarchy, to follow new procedures strictly. Resistance and sabotage are likely if supervision is weak or inconsistent and top managers remain isolated. Staff may readily revert to business as usual if top managers do not stay focused on a project with sufficient intensity to see it through to completion.

3. **Inadequate completion of the design phase**: If this failure occurs, there may be a danger of unexpected misalignment and design flaws in the IT system. Thus, a hazard occurs when the selection and pilot testing of new IT technology is largely the work
of senior managers who may have no clear understanding of the real IT needs of the jail or true working conditions at the line level. Design flaws are likely when top management does not allow for sufficient input from lower level staff during pilot testing. Poorly aligned IT procedures may be unusable at the line level and may fail to address the realities of line-level conditions. Thus, any flaws in earlier phases will, unfortunately, emerge at Phase 3 of the implementation process.

(4) *When Phase 1 political and buy-in tasks are not achieved:* Another hazard arises when powerful stakeholders have not fully bought into the new IT/MIS approach. They may react by ignoring, blocking, or sabotaging the implementation effort. This is likely in large politicized jails with many departments or so-called fiefdoms and several hierarchical levels. Essentially the span of control of the transition team may be insufficient, and one or more key stakeholders may remain antagonistic to the new IT project.

(5) *Downward communication failures:* In strongly hierarchical jails, communication from top administrators down to middle managers and line staff is frequently noisy, inadequate, and infrequent. This may result in impaired communication and failure to achieve sufficient understanding or buy-in at lower levels. Thus, senior managers may fail to communicate, giving only inadequate guidance, or may leave staff in the dark about many aspects of the new system.

(6) *Upward communication failure:* Again, highly rigid hierarchical jails may be characterized by poor upward and downward communication. Line staff may not be encouraged either to question or improve the procedures or to present their points of
view. Such exclusion of line officers, and in some cases middle managers, may wreak havoc on the design and implementation process by blocking upward input, communication, and staff creative problem-solving. These issues can be critical for the design, planning, and implementation of IT changes.

Setting and Managing Expectations

Although the vision and expectations for new IT/MIS projects are primarily developed and communicated during the pre-implementation phase, it is critical that in the busy, stressful stage of actual implementation, there be recurrent reminders of the benefits and vision for the new IT procedures. All senior and middle managers as well as line staff will require continued reminders of the rationale, vision, goals, and justification for the new IT procedures. It is common during implementation for these reinforcements to be forgotten.

Thus top managers, the transition team, and change leaders must repetitively reinforce the vision, reasons for change, and justification for new IT procedures. These communications should be continuous and not a one-shot deal. Commitment among many jail stakeholders can be lost if these communications occur only at the beginning of an IT implementation project or when administrators are trying to justify a budget. Multiple communication channels also may be needed to provide and celebrate progress reports with all involved stakeholders. Top administrators should support the project by requiring review meetings to assess key progress/milestone meetings and to stress the payoffs, benefits, and visions of new IT projects repeatedly to jail staff, citizen advisory groups, and other stakeholders.
User Acceptance

Four major factors are critical in determining the degree of user acceptance. Supervisors and the transition team must carefully monitor these issues during the implementation phase:

- **Maintaining trust and buy-in with frequent communication**: The transition team and senior management must be active in building trust and commitment by using open and frequent communication with both line staff and other stakeholders. This may involve many strategies: periodic progress reports, memos, announcements of milestones achieved, meetings, and so on. Line staff and middle managers should be encouraged to raise any questions, concerns, or suggestions and be allowed participatory input. Jail leadership must continue to provide vision of benefits and direction, bolster morale, provide rewards, and acknowledgements for milestones achieved, and communicate progress.

- **Ease of use**: User acceptance is tightly linked to user-friendliness and ease-of-use. A major component of the earlier pilot implementation is to ascertain whether the new IT procedures and software are sufficiently efficient and easy to use and to resolve such user problems. However, during the implementation phase, the introduction of the new system into routine operations in the jail provides an sterner test of ease of use.

- **Time and workload demands**: The transition team must stay alert and maintain open communication with line staff to identify quickly user problems and to
generate new fixes or solutions. Common problems include: cumbersome screen designs, data scattered across diverse sources and screens, difficulties in locating needed data, poorly designed management reports, the number of keystrokes to complete simple tasks, and so on. Thus, user acceptance can be influenced if staff experience workload problems. The possibility exists that in real-life conditions, the IT workload may be excessive. The transition team must be vigilant in monitoring staff workload, errors, and staff complaints during the go-live phase. The transitional manager and supervisory staff must also be alert to work overload or staff stress in using the new methods.

- **Effectiveness and usefulness of the system**: A further feature that influences user acceptance is whether the new IT system is useful to staff in terms of helping them with their work tasks and decision-making. If the new system truly provides effective decision support and high levels of reliability and validity, it will typically have high level of user acceptance. A key feature, therefore, is the usefulness of the various management reports and rosters provided by the IT system. User acceptance, again, will be high if the scope and range of these reports has a good fit with the information needs of staff, middle managers, and administrators.

**Policy and Procedural Change**

During the implementation phase, it is critical that a sufficiently detailed and updated policy and procedure manual is available to prescribe staff job tasks, rules, and new procedures for the use
of the JMS. Thus, the transition team and unit supervisors must provide adequate policy and procedures documents for staff who will use the system. The policy and procedures (P&P) document will be severely tested during the go-live phase, and if incomplete, will need to be updated. The transition manager and the implementation committee thus must be alert to weaknesses or gaps in the documentation of the new IT procedures.

Furthermore, any deficiencies in the P&P document may hinder training of staff in the new procedures. Another danger is that jail administrators may fail to assign sufficient staff hours to produce and write an effective MIS policy and procedures manual. These managers may underestimate its value and the time and effort needed to develop, maintain, and update the document. Another common problem is a shortage of staff with appropriate writing skills. Yet, adequate policy and procedures are critically important in the design and implementation of a new jail system both procedurally and for liability protection.

**Cutover and Data-Conversion Considerations**

Cutover to a new system is a transition that requires careful planning and coordination of the efforts of both IT and jail staff. Typically, cutover involves movement from an existing automated system to new improved automated system. To accomplish this in an orderly manner, at the time in when the agency begins to use the new system, all of the data from the old system, particularly for inmates in custody but also important historical inmate data, must have been converted to the database of the new system. A data-conversion plan and cutover strategy document is a best practice to ensure that this transition is smooth. There will always be
disruptions with the introduction of a new system and related new policies and procedures. However, a well-planned cutover can minimize the degree of disruption.

Execution of the data conversion will undoubtedly result in some downtime. To have the least negative impact on staff, the conversion should occur when the jail operation is least busy, for example, 2 A.M. to 6 A.M. on a relatively slow day. By running scripts and simulating data conversion, the IT staff and/or vendor can predict the likely block of downtime to cut over to the new system. Part of the cutover strategy is to prepare a contingency plan. What happens if the conversion and transition is unsuccessful? How will the agency revert to the old system? With detailed planning and testing, the likelihood of implementing a contingency plan decreases significantly, but such an outcome must be planned for to minimize any possible disruption of jail operation.

Data conversion and cutover to production should include the following activities:

- Develop a conversion plan and design,
- Prepare conversion programs and scripts,
- Complete any required data cleansing and preparation,
- Perform a simulated conversion and check for errors,
- Prepare a cutover plan including contingency planning,
- Rehearse the cutover process, and
• Provide adequate technical support staff for cutover.

With differences in data coding structures, it can be difficult to reconcile some data to the new system and account for differences (mapping may not be one-to-one, for example, with special handling codes, charge codes, or other coded data elements). Although automated conversion is preferable, some manual conversion may also be required, which can make the data-conversion effort even more challenging. For example, if the new system has new features (which it typically will), there may be entire data sets that must be entered for the existing jail population at go-live. Decisions will have to be made based upon the tradeoff of benefits of having existing and historical data in the database at the time of cutover compared to the cost of data conversion.

With the importance of inmate data derived from prior jail stays, it is usually not advisable to implement a new jail system as a day-one system with no historical data. With the need for historical data in a decision-support jail system, data conversion from prior systems is normally a mandatory task. Numerous examples illuminate how and why historical data are critical in a jail system; some, such as a history of inmate assaultive behavior, is absolutely critical information. If data conversion from the old system is technically too difficult or expensive, there are less desirable alternatives. In some jurisdictions, the old system is maintained for an indefinite time to query historical inmate data until the new system has been operational long enough to become a reliable source of prior-stay data. Implementation of this cutover strategy is less inefficient and less cumbersome but provides an alternative to a full data conversion initiative.
The conversion plan should include identification of each conversion-related task and preparation of a schedule for the start and finish date of each task. All of the databases and files that need to be created for the new system must be identified. A process is required to confirm that all data have been created as planned. The plan should also specify new interfaces that must be activated and become operational. New procedures to go into effect must be specified. Management controls should be identified to ensure that all conversion-related tasks are completed.

**System Quality Assurance: Supervision of System Use**

System quality assurance (SQA) of the IT software was partly addressed earlier under UAT, system performance tests, and various test procedures. Additional aspects of software quality focus on software engineering, internal algorithm checking, and methods used to ensure appropriate design quality. These tests primarily involve IT staff and aim to ensure that the jail software conforms to standards, such as ISO 9000 or models such as CMMI.

Quality assurance for jail use of IT is the responsibility of staff supervisors and has the aim to ensure high quality of staff training and competence and identification and resolution of any skills gaps that may occur among staff in the various phases of implementation. Staff, particularly in the early implementation phase, must learn new skills to use the new IT procedures. A skills gap is, in fact, a normal occurrence and may be anticipated at the earliest stages of implementation. Transition teams often develop temporary contingency plans (e.g., extra supervision and repeated training) to cope with skills deficiencies in this early period. A
gap in skills in the early phase of implementation must be managed appropriately and may cause serious harm to the staff morale and commitment, as well as increased liability risk as a result of user errors. A second and opposite problem that may emerge as staff become expert is a skills surplus that can occur when the new IT methods are mastered. In some cases, this surplus may lower the quality of work as a result of boredom, routinization, feelings of stagnation, and job impoverishment when most major decisions are automated. Supervisors must carefully monitor staff for problems as boredom and routinization also can damage staff morale and job quality.

Quality is also a function of effective supervision. This may involve monitoring staff, making evaluations, and spot-checking for data and decision errors. Supervisors cannot ignore these issues because they are critical in maintaining high quality and low errors in the IT system. Findings from such supervisory actions can be accumulated in statistical reports and fed back to line staff and appropriate managers for job performance issues and corrective actions as needed. A sobering finding is that IT capabilities are often dramatically underused in jails.

Supervision procedures may also include elementary process-evaluation methods during the implementation phase to ensure that staff are positively motivated and using IT procedures correctly. Supervisors must be vigilant in ascertaining that staff are not undermining IT procedures by streamlining, cutting corners, or other forms of sabotage and also whether IT capabilities are being used to the fullest extent or only partially. Process evaluation is an intense examination of the manner of IT implementation, staff competence, and integrity of actual use.
Quality circles also may be formed to upgrade the quality and scope of staff utilization of jail IT capabilities as noted in previous chapters. Utilization for managerial and policy issues often depends on whether a jail has staff who are trained in needed data analytic skills. Jails spend an enormous amount of money and time to collect relevant data on inmates and their behaviors and jail operations. These large databases that emerge in busy jails are an enormously valuable resource for managerial use in monitoring jail operations and performance outcomes and for policy analyses. Quality assurance also focuses on the basic data entered into the MIS to ensure quality and to minimize data errors. In the implementation phase, the transition team should meet to identify, discuss, and correct any data quality and data verification issues. Data quality is enhanced when jails conduct verification and spot checks. Ideally staff should verify the important background and classification factors. Failure to verify data can produce serious decision errors. Yet, verification is time-consuming and occasionally impossible (e.g., if records are unavailable or from other institutions). Many jails pay lip service to systematic verification and checking. Staffing shortages and workload demands also impose severe obstacles. Some large jail systems include routine data quality control checks on a monthly or quarterly basis, although these have usually been externally imposed by court orders.

**Post-Implementation Phase**

The management of implementation does not end with the transition of the new procedures into routine operation. Several critical issues emerge in the time period following the introduction of a new system. These tasks deal with the following questions:
• Have the new IT procedures achieved the desired goals and outcomes? Are they working as expected?

• What longer term impacts have the new procedures had on the jail?

• Is the system a good fit and in good alignment with the jail? Are additional adjustments in alignment required?

• Over the long term, have there been any unexpected forms of resistance, sabotage, or loss of integrity in the staff’s use of the system?

Such questions cannot be answered until the new procedures have had a chance to achieve their expected impact and until the organization and staff have settled down and adjusted to the new system. The issues identified in this section are critical in the post-implementation phase.

Development of Feedback Loops

Post-implementation feedback loops are needed to identify and resolve system problems. To design an effective IT system, it is critical that all stakeholders are involved and have some input participation, particularly if they are end users. Extremely hierarchical jails may smother upward feedback, which can result in fragmentation, mistrust, impaired communication, and political antagonism. Lower-level IT staff may be discouraged either to question or improve the procedures and in some cases, it may not be considered safe to share opposing views about certain IT design issues.
Upward feedback and participation should also enhance continued commitment and buy-in across the organization. Specific strategies may be instituted for the following:

- Effective mechanisms should be established to collect complaints or weaknesses as seen by an extended IT user group across the jail (e.g., security, classification, booking and intake);
- Management reports should be developed to provide feedback from IT to all major units of the jail as an information strategy that can accurately monitor workloads, work quality levels, trends relevant to that unit, and so forth;
- Unit supervisors should provide routine reports to IT regarding unit information needs, complaints, and suggestions.

Management of System Enhancements

Jail systems continue to evolve over time for a variety of reasons. Changes in policy and procedure, the introduction of new data capture technologies, or simply the identification of areas of business process improvement are all examples of catalysts for system enhancements. System enhancements consist of both totally new software modules and improved functionality for existing software modules in the jail system. System enhancements are distinct from system defects and the release of new software patches to correct these defects. On occasion, there will be the debate with a COTS vendor about whether a particular reported problem is a bug or a feature. Also, for the convenience of the user community and to minimize costs, system patches and system enhancements are sometimes bundled and released concurrently.
As previously discussed, a mechanism needs to be established within the jail organization to identify and document potential system enhancements and to plan and budget for contingency funds to support system modifications. Inevitably, post-implementation experience with the system over time will result in the identification of such enhancements, with some relatively minor and others involving major development and implementation costs. The same pre-implementation and implementation tasks apply to both small and large system enhancements. Testing and training tasks, for example, apply to all system enhancements. However, these tasks can be completed relatively quickly and efficiently for minor system enhancements.

Potential system enhancements should be documented and periodically reviewed by the steering committee or similar oversight group to determine whether to proceed and, if so, the priority of the new proposed functionality. Identified enhancements may include some that can be handled internally by the IT organization. For example, development of new reports may be accomplished within the organization, particularly if a report-writing tool is available and staff have been trained in the use of the tool. On the other hand, the system enhancement may require modifications to be made by the COTS vendor that provided the jail system. If the steering committee decides that the enhancement is worthy of pursuing, the vendor will clarify the scope will be and provide a cost estimate. This can be conducted as either a formal or informal process.

If the decision is made to proceed, a formal change order will be generated to authorize the COTS vendor to provide the system enhancement. Recognizing the need for ongoing system enhancements, some jail organizations budget funds annually to support system enhancements. The status of the change order must be tracked. Implementation of the enhancement requires a
mini development process with testing, training, possibly data conversion, and other pre-implementation tasks applicable (see Figure 6.3). Upon the completion of the preparatory tasks, an implementation plan will be executed.

In summary, it should be noted that system enhancements can be initiated by users, executives, or the vendor and may vary from minor to major changes to the jail system. Each system enhancement should be managed like any other IT project.

**Ongoing Training Strategies**

Clearly, with normal rates of staff turnover in jails and the rapid and continual evolution of IT technology, there is a need for ongoing training. In the post-implementation phase, several strategies may be used to further the training, skills, and competence of the users of the IT procedures:

- Systematic job rotation involving the use of IT procedures coupled with appropriate supervisory reviews should promote multiple skill development of IT staff and complement their formal training;

- External training is provided by a number of national associations and private companies (e.g., ACA, AJA, NIC, Northpointe). Similarly, dedicated associations such as the Correctional Technology Association (CTA) provide regular IT training for a variety of correctional issues. Typically during each calendar year, these organizations offer multiple training programs and an
opportunity for jail IT and other staff to upgrade their skills continually in such programs.

- Supervisor training is also important. Incompetent IT supervisors can severely erode the skills of an IT unit. Conversely, highly trained IT supervisors can substantially upgrade the overall quality and expertise of the IT unit and also provide training to other units in the jail that routinely use IT procedures.

- As noted earlier, quality assurance and problem-solving groups can be invaluable in identifying competence gaps among staff and ways that IT/MIS capabilities can be enhanced. The IT supervisor can be instrumental in organizing such groups. Essentially, these groups offer a conduit to identify skills gaps, training needs, and a venue for discussion and correction of any IT problems.

- Error detection procedures are a critical component of training and skill-building. Several strategies are available. The local supervisor must be vigilant in instituting spot-check procedures on routine decision-making IT tasks. The approach to staff regarding error detection cannot be overly punitive as the supervisor must also create a climate in which errors are not swept under the rug but are openly detected and promptly fixed. A further approach to error detection is to build error-detection procedures into the system to identify data errors, exceptional or anomalous cases for review, and unexpected trends. It is beyond the scope of this document to conduct a full
review of error-detection procedures but detailed treatments of this topic are available (Reason, 1990).

- Skill development and continuous learning can also be achieved with so-called *informating* feedback in which relevant management reports are designed for each IT job and routinely provided to staff (e.g., monthly). These reports will be custom designed for each specific IT job and should contain basic information on work volume, work quality indices, error rates, other outcomes and performance data, and so on (see chapter 3 and appendix 4). Such feedback is designed to educate and motivate staff, provide a broader perspective, and reach a deeper understanding of their jobs and their overall impact on the jail. Such feedback reports can augment formal training and support continuous learning and professional growth.

**Management of Technology Upgrades**

Technology upgrades occur throughout the life of the information system. In recent years, the rate of technology change has accelerated. Technology change may involve any combination of hardware and software. Hardware upgrades may involve desktop PCs, back-end servers, and/or introduction of a new peripheral device, such as a bar code reader or magnetic card reader. In other instances, an entirely new end-user device (e.g., wireless handheld PDA) may be introduced.
As with hardware, software upgrades occur at several levels. An update to the operating system or tools on either the PC or back-end servers may be required. The database itself may need to be upgraded to a current version of the relational database management system. New or improved interfaces may require software upgrades.

For most jail environments, it makes no sense always to chase the latest versions of hardware and software. Although some upgrades may be transparent to end users, others may require training and adjustments in system operation. These instances require careful planning to ensure successful deployment. It is not uncommon for a technology upgrade to require modifications to the jail application software. In these cases, a more extensive testing process will be required. Other technology upgrades, such as a new release of a server operating system or database management system, may be accomplished by the technical team during a scheduled maintenance period and can be transparent to end users.

The timing and frequency of technology upgrades should be based upon several factors, including impact on users, whether changes to the jail application software are required, the urgency of making the change, and the benefits of the upgrade. As with all jail system activities, the process will require planning, management, and post-implementation support. Consequently, it may make sense to routinize this process by bundling new releases and limiting the frequency of upgrades. There may be occasions, however, when a technology upgrade is required to resolve a problem and must be executed immediately.
Undue delays in making technology upgrades can result in increased risk of system failure. Hardware and software vendors typically limit the timeframe for support of released versions of software and hardware components. If the lifecycle of support has expired, both the risk of a system failure and the difficulty of resolving any problems encountered increases. This can occur in jails, as in other organizations, because of budget constraints, limited technical staff, complexity of the upgrade, and other factors that make it easier to maintain the status quo. Budgeting and planning for technology upgrades of jail systems, just like desktop software and PCs, should be part of the long-term information systems planning process.

As with the private sector, jail organizations are beginning to realize the potential of technology to improve business processes and reduce costs. The trend is positive with more jail agencies embracing new technology and using it effectively in their organizations. The caveat is to avoid being on the leading edge of technology or at least to ensure that a proof-of-concept process has been successfully completed before deployment. Active radio frequency identification (RFID) is a case in point. Although the concept of real-time location tracking of inmates to reduce assaultive behavior between inmates, assaults on staff, and escapes is a worthwhile goal, early implementations have typically either not lived up to expectations or failed. The use of GPS and electronic monitoring for home detention of low-risk inmates, on the other hand, has been proven to be a cost-effective means by which to reduce jail populations.

The repeating theme of comprehensive planning and management applies equally to technology upgrades and to other aspects of jail system development and implementation.
CHAPTER 8: INFORMATION SYSTEM RFP DEVELOPMENT AND VENDOR SELECTION

The request for proposal (RFP) process is the primary mechanism used by jails to acquire and implement a jail system. This is the process in which a jurisdiction prepares a formal solicitation that is released to the vendor community to obtain proposals for a jail information system. This chapter describes the steps involved in RFP development, RFP content, and the vendor selection process, including important prerequisites. The focus is on best practices to ensure that the jail agency obtains a cost-effective system solution that meets the agency’s needs.

As discussed in earlier chapters, it is typically not realistic to build a state-of-the-art jail system by using either internal agency resources or an external vendor because of development costs, time delays, and the inherent risks of a technology project. Rather, it is usually a more viable option to take advantage of existing software solutions using a commercial-off-the-shelf (COTS) jail software package. It should be pointed out, however, that this approach is not a panacea. In fact, it is unlikely that any COTS package can be placed into jail operation without some degree of configuration and/or customization. Also, it is frequently the case that some changes in business practices (i.e., business process engineering) will be required to obtain optimal benefit from the selected jail system. Even with these caveats, the RFP process for selection of a jail system is usually the most viable option.

An RFP is used when requirements are known but the jail system solution and implementation process may vary, thus requiring the proposer to provide a system solution and the approach to
its implementation. Price is important, but proposals also will be evaluated and selected on the basis of other criteria to ensure the most desirable solution for the jail.

Other mechanisms, besides the RFP, are sometimes used to solicit bids in many jurisdictions. The invitation for bid (IFB) and request for quotation (RFQ) processes are two other jail system procurement mechanisms. It should be noted, however, that these are typically not appropriate for a jail system. IFBs and RFQs require detailed specifications that must be met in their entirety and are evaluated solely on the basis of price. In the acquisition of a jail system with software, services, maintenance, and perhaps even hardware, a broader basis for evaluation than cost alone is almost always more appropriate. It typically makes more sense to provide the vendor with the opportunity to present a proposal and not merely a price bid sheet. Consequently, this chapter focuses upon the RFP process as opposed to other solicitation processes used by government agencies to procure systems.

The RFP development and vendor selection process described in this chapter is subdivided into the following topics:

- Management of the RFP process,
- Prerequisites to RFP preparation,
- Components of the RFP,
- Evaluation of proposals and vendor selection, and
- RFP best practices.
It should be noted that the approaches defined in this chapter are simply guidelines. In fact, there may be constraints on the RFP process that are specific to local government procurement rules or other considerations for specific jail system procurements that may dictate a somewhat different RFP process. Nonetheless, under most circumstances, the methods and guidelines identified in this chapter should be followed to ensure the selection of the most cost-effective system that meets the jail’s specific business requirements, both immediate and long-term.

Management of the RFP Process

Management of the RFP process is simply a continuation of the processes identified in earlier chapters for the management of the development of jail information systems. Ideally, the RFP process represents the culmination of thorough planning and analysis steps that have already occurred. The organizational structure for management of the RFP process should have been established and should include oversight provided by a steering committee, user groups, and a project team (see chapters 6 and 7). Continuity of the team involved in earlier stages of jail system development is important to avoid learning-curve issues and delays in the RFP process.

The project team should include representation from both jail business units and IT staff. Unlike earlier stages in the development of a jail system, other participants from local government will likely be required at this stage, including, as applicable, representatives from the purchasing unit, contracts unit, and legal entities within the local jurisdiction. The participation of other departments within local government will vary based upon the size and structure of the
government entity. In any case, it is important that the jail, under the auspices of the steering committee or a related oversight group, manage the RFP process and not defer to other local government entities that have the same stake in the outcome of the RFP process.

The steps involved in the RFP process are shown below in Figure 8.1. Although some steps are optional and depend upon the degree to which business requirements have already been defined and documented, these steps are usually required, either formally or informally, to reach the point of selection of a jail system vendor and to establish a contract to implement and maintain the system.

All of the steps shown in Figure 8.1 are decomposed and described in later sections of this chapter. Steps 1 through 4 are described in the next section under prerequisites to the development of the RFP document. The next two sections describe components of the RFP document and the last section discusses the evaluation and vendor-selection process.
Figure 8.1

Management of the RFP Process

1. Document Business and Technical Requirements
2. Issue RFI (Request For Information) or Conduct Informal Survey
3. Review Vendor RFI Responses, Presentations, and Site Visits
4. Document Gaps and Re-evaluate/Refine Final Requirements
6. Issue RFP and Conduct Bidders Conference
7. Evaluate and Score Proposals
8. Select Vendor and Negotiate Contract
Prerequisites of RFP Preparation

Before preparation of the actual RFP document, there are several prerequisites as illustrated in Figure 8.1. Most critical of the prerequisites is a clear understanding of scope and documentation of the business functions to be performed by the jail system. The requirements definition process was specified in some detail in Chapter 6. This functional requirements document (FRD) provides the starting point for RFP preparation. Because of the passage of time, it may be necessary to augment or modify the functional requirements. In addition, the functional requirements need to be supplemented with technical, operational, and transitional requirements that are not addressed in the FRD.

These additional requirements will be formulated with support from the IT group and will vary from jurisdiction to jurisdiction depending on factors such as the existing IT infrastructure and the extent to which the new jail system will utilize this infrastructure. Without getting into a lot of detail, examples of technical and operational requirements commonly identified as part of the RFP process include the following examples:

- **System architecture requirements:** Web-based access, relational database, GUI requirements, reporting tools, and system navigational requirements;

- **System performance requirements:** Expected response time, system uptime expectations, business continuity and disaster recovery, system administration;
• **System security requirements:** Encryption requirements, access privileges and roles, security administration, data auditing;

• **Operations requirements:** Hosting (internally, on dedicated or shared hardware, or remote), data archiving (including routine system back-ups), technical interface, and related items; and

• **Support requirements:** Ongoing maintenance support for correction of defects, new software releases, system enhancements.

This is not an exhaustive list but identifies some of the technical and operational requirements needed to supplement the FRD in preparation for RFP development. IT staff support will be required to assist in addressing these areas.

Transitional requirements also should be specified for purposes of the RFP. These requirements relate to factors such as data conversion in the transition from an existing to the new system. Other transitional requirements may be defined and will be related to items such as training, system documentation, and deployment of the system. Transitional requirements should be reflected in the tasks and deliverables documented in the statement of work (SOW; discussed in a later section of this chapter).

Once the baseline requirements are defined, or concurrent with the process of finalizing these requirements, it is important to understand what the vendor community can offer to satisfy these requirements. One mechanism used when there is adequate time is a formal request for
information (RFI) process. The RFI provides interested vendors an opportunity to document features and capabilities of their jail systems relative to the stated requirements. The RFI is relatively easy to prepare and provides a systematic way to conduct vendor research.

The RFI is basically a market survey. It is an effective way to determine interest level among potential vendors and to gather information on recent developments and current technology used in jail systems. The RFI also provides a means by which to determine a general range of likely costs. Vendors who respond to RFIs typically require some degree of confidentiality of any cost data included in the response.

The RFI process can be particularly useful in solicitation for a system that uses specialized technology. For example, an RFI for a wireless real-time inmate locator system provides an opportunity to determine whether practical solutions that use newer technologies have actually been deployed in a jail environment or whether the technology is adequately mature or affordable.

In addition to or in lieu of a formal RFI process, other means by which to conduct survey research and discover potential vendor solutions are available. Web searches, inquiries to national jail organizations, and surveys of similar jails are some of the ways to become familiar with potential system solutions. Survey findings and RFI responses can be supplemented with vendor presentations and/or on-site visits to jails that already use the jail system.
The purpose of this research is not to attempt to predetermine the vendor to be selected in the RFP process but rather to ensure that RFP requirements are complete and realistic. This review of existing systems facilitates the filling of any gaps in functional requirements, modifying technical requirements, or otherwise refining the final requirements and managing expectations for system features and cost factors.

A couple of caveats deserve mention. It is not a good practice to use the RFI and vendor presentation processes as the primary basis by which to define functional requirements. The RFI process can be performed in conjunction with FRD development, but it is important that requirements are based upon the needs of the jail and not solely on what may be available in the vendor community. Some system features may be critical to the jail but not available out of the box from among existing vendors. It may still be worthwhile to include features that require customization of a vendor’s product. It is also important not to get caught up in the bells and whistles of a system at the expense of the underlying functionality, configurability, manageability, expandability, and other characteristics of the system.

Once vendor RFI responses have been reviewed and the gathered information has been analyzed, any gaps in documented requirements can be identified and a final set of requirements prepared. Upon completion of these preparatory steps, the RFP document itself can be developed. RFP components are described in the next section.
Components of the RFP

There is no single correct format or specific set of components that applies to all jail systems in all jurisdictions. Most local jurisdictions have specific rules and exhibits that must be included in all RFPs. Nonetheless, certain components and best practices should be incorporated in the development of any RFP that solicits proposals for a jail system.

Several factors should be kept in mind during preparation of the RFP document. Although not an exhaustive list, these considerations include answers to the following questions:

- How time critical is the implementation of the jail system?
- What are the minimum mandatory requirements for any vendor?
- Are there opportunities for process and practice improvement?
- What level of staff resources and expertise will be provided by the jail?
- Are the implementation constraints well understood?
- Are expectations of the number of users and system growth documented?
- Are budget constraints and funding sources identified?

The primary RFP components consist of the following:

(1) General information,
(2) Proposal submission requirements,

(3) SOW,

(4) Requirements matrix, and

(5) Evaluation criteria and selection process.

Each of these is described below with special focus on those components that require a higher degree of customized content and less RFP boilerplate.

**General Information**

The general information or introduction section of the RFP document usually consists of a combination of information specific to the jail system solicitation and boilerplate information common to all RFPs in the local jurisdiction. The background, purpose, overview, terms and definitions, and minimum mandatory requirements should be developed for the specific RFP. Minimum mandatory requirements serve as pass/fail criteria and provide potential proposers a quick basis to determine whether or not they should respond to the RFP.

A sample contract may be referenced in this section and attached to the RFP as an appendix. Other items in this section may provide customized information but will consist primarily of boilerplate terms and conditions that are specific to the local jurisdiction. The procurement and/or contracts staff will play a key role in the development of this and the next section of the RFP.
Proposal Submission Requirements

This section identifies the specific format and contents expected in the proposer’s response to the RFP. Significant reductions in the evaluation score or disqualification of the proposal may be imposed if the vendor’s response does not conform fully to submission requirements. Typically included in this section of the RFP are the following components:

1. **Proposer capability**: Responses will be required to describe the proposer’s qualifying experience as a jail system vendor, provide references, and document the qualifying experience for the proposed project manager and key technical staff. The response also will provide references to installed sites of the vendor’s system. Documentation of the company’s financial capability and viability also may be required.

2. **Management approach**: This component of the submission will document how the proposer will manage and execute the project. The vendor will be required to present a proposed detailed work plan including timeframes, resource assumptions, and staff assignment rationale. The management approach section of the proposal also should include an organization chart, risk mitigation and management, and the proposer’s quality control plan.

3. **Proposed system solution**: This is a critical section of the response that should comprehensively explain how the proposed system will address each of the functional, technical, operational, and other requirements named in the RFP. The proposer should present a development, implementation, and support strategy consistent with the tasks and deliverables identified in the SOW. Each specific
requirement in the RFP should be acknowledged in the response, including an explanation as to how the requirement will be met by the proposed solution.

(4) **Cost proposal**: Proposers must submit a pricing schedule that includes all cost components related to software licensing, development and implementation services, maintenance, and hardware (as applicable). It is important that all cost factors are identified in the proposal to ensure that total cost of ownership can be assessed as part of the evaluation process. The cost proposal should include the cost of each task/deliverable as identified in the SOW. A budget narrative that identifies all pricing assumptions should be a required component of the cost proposal.

To the extent feasible, costs should be fixed price to minimize risk of escalating costs. Some deliverables (e.g., such as training and interfaces), however, will be bid on a time-and-materials basis with an hourly/daily rate and a ceiling price. RFP requirements for withholds or holdbacks until successful implementation of the jail system also should be addressed in the cost proposal.

(5) **Required contract forms**: Certain contractually required forms and information must be submitted by the proposer. These forms and requirements vary from one jurisdiction to another. Part of the submission is typically acceptance of the terms and conditions identified in the RFP or identification of terms to which the proposer takes exception.
Statement of Work (SOW)

The SOW in the RFP defines the scope of work to be performed by the vendor. All of the tasks and associated deliverables required of the vendor to develop, implement, and support the jail system are defined in the SOW. The tasks presented in the SOW will vary from RFP to RFP based upon the existing system environment of the jail and the level of support required of the vendor to modify, implement, and maintain the proposed jail system. Although the proposed system may require some degree of customization in support of defined functions and/or interfaces, most of the defined services in the SOW will likely consist of those required in support of installation, testing, training, go-live, and post-implementation maintenance. The SOW will be based upon the defined functional, technical, operational, and transitional requirements specified.

The SOW will be prepared collaboratively by jail and IT staff to ensure that all tasks and deliverables required of the vendor have been clearly defined and are included in proposers’ responses to the RFP. Some typical tasks that may be defined in the SOW for a jail system are as follows:

- Project planning and management,
- Confirmation of requirements,
- Installation of software in test environment,
- Configuration and/or customization of software and interfaces,
• System testing and user acceptance testing support,

• Train-the-trainer and end-user training,

• Data conversion and data take-on,

• System cutover and go-live support,

• Final system acceptance, and

• Maintenance and ongoing support.

Most of these SOW tasks are self-explanatory. Inclusion of a final system acceptance is a best practice procedure to ensure successful implementation of the jail system. This task consists of a period of time, such as 60 days, in which the system functions with no major defects. Upon completion of this time period, a holdback payment would be made to the vendor. A final system acceptance test reduces the risk to the jail of implementation problems and a vendor with less incentive to correct bugs after go-live.

Each task defined in the SOW should be accompanied by a deliverable. The deliverable represents the product provided or outcome as a result of task completion. Examples are a project plan document, installed software, training and training materials, or accepted system. Deliverables typically represent pay points for the vendor and, when well defined, help avoid disagreements with the vendor as to when a task has been successfully completed and accepted.
**Requirements Matrix**

The requirements matrix provides a means by which to present clearly and concisely in the RFP all of the functional, technical, and other requirements that the vendor must address. The matrix supports the proposal evaluation process by documenting each requirement with a unique reference number and a designation of whether the requirement is mandatory or optional. Additional columns in the matrix provide for a vendor response of yes or no to indicate whether the requirement can be met by the vendor and comments on how the vendor will meet the requirement. It is important that the requirements be defined with as much specificity as possible. A completed requirements matrix as part of the vendor’s response not only confirms whether the vendor can meet each requirement but also includes a description of how the requirement is satisfied by the vendor’s system. The completed requirements matrix supports the evaluation scoring process. A predefined evaluation score sheet for each mandatory and optional requirement will be developed as part of the initial evaluation process.

As with the SOW, the requirements matrix should be prepared on a collaborative basis between jail experts and IT staff. A completed requirements matrix helps the proposer and jail project team to avoid misunderstandings. The matrix also provides a basis for confirmation of the jail system’s capabilities during reference checks and/or demonstrations of the software as part of the final evaluation and selection process.
Evaluation Criteria and Selection Process Description

This section of the RFP provides the vendor community with a high-level description of how the proposals will be evaluated and the basis for selection of a vendor. This RFP section describes the evaluation steps and processes to be followed by the evaluation committee. One technique used in the evaluation process is to pass or fail each proposal on the basis of its meeting minimum mandatory requirements specified in the RFP. The evaluation process also may specify the disqualification of proposals that fail to adhere to the format and contents identified in the proposal submission requirements.

In addition to definitions of the basis for disqualifying proposals, this section of the RFP will identify the evaluation criteria and the weighting factor associated with each criterion. Criteria for a jail system evaluation typically include the following:

- Proposer qualifications,
- Functional and technical requirements of the proposed system,
- Approach to the provision of the required services, and
- Cost proposal.

There are no hard and fast rules for weighting factors for each criterion. Proposer qualifications may be weighted in the range of 20% to 25%. This criterion consists of an assessment of the vendor’s relevant experience and capabilities based upon verification of references and resumes.
of proposed staff. A review of the vendor’s financial capability also may be part of this
evaluation category.

The extent to which the vendor meets the mandatory and optional requirements is a second
important criterion that may be weighted as much as 40% to 50% of the total evaluation score.
This score is determined by analyzing and scoring the response to each specific requirement
documented in the requirements matrix.

The approach to the provision of required services is a third criterion that may be weighted in the
range of 10% to 20%. This scoring is based primarily upon the comprehensiveness and methods
presented by the proposer in response to the SOW.

The last criterion is the cost proposal, which is typically weighted in the range of 30% to 40% of
the total evaluation points. Although the cost of the system is clearly important, it is risky to
weigh cost too highly as an evaluation factor to the detriment of other factors such as the extent
to which the system meets requirements or the capabilities and experience of the vendor and
proposed staff. For each cost criterion, maximum points are assigned to the proposal with the
lowest overall costs based upon the inclusion of all one-time and recurring cost factors. This
ensures that the cost assessment is based upon total cost of ownership.

**RFP Sample Contents Summary**

To summarize, the RFP should at a minimum include the following major components as were
described above:
Section 1: Introduction and general information,

Section 2: Proposal submission requirements and instructions,

Section 3: Proposal evaluation and selection,

Appendix A: SOW tasks and deliverables,

Appendix B: Functional and technical requirements matrix, and

Appendix C: Sample contract and required forms.

There is no single correct format for a jail system RFP, and each local jurisdiction may use a different standard format for the document. Regardless of format, the important matter is that the RFP include the categories of information as outlined in this chapter.

**Evaluation of Proposals and Vendor Services**

The evaluation and selection process is just as critical as the RFP development process to ensure a successful jail system implementation. The vendor selected to install and support your system for a minimum of several years becomes an important business partner in jail operation. The first major step is the release of a comprehensive RFP with system requirements and services for the jail system clearly and concisely identified. The next major step is to ensure that the best vendor is selected. This section describes evaluation planning, scoring, and selection process. The evaluation process, to be effective, must follow the evaluation criteria identified in the RFP. The
scoring of each proposal must be comprehensive and performed in a consistent manner. This will ensure a fair assessment of each response.

The evaluation committee should be determined early in the process and typically consists of 5-7 participants. The committee should include a balanced mix of jail experts, technical staff, and procurement staff. Jail representatives on the committee should include jail staff with a history and understanding of the jail system requirements. Members of the user groups previously identified are good candidates for the evaluation committee. There also should be representation on the committee by the procurement or contracts unit that was involved in the RFP process and will later participate in contract negotiations with the selected vendor. It may also be appropriate to include an evaluation team member from outside the local jurisdiction to provide an objective external perspective.

Evaluation team members selected must to commit to the level of effort and timeframe required for the evaluation process. The time required to plan and perform the evaluation is frequently underestimated as considerable effort may be expended in preparing the scoring instruments, rating the proposals, and coming to a final decision. However, this decision is extremely important and worthy of well planned and executed evaluation process.

The evaluation process consists of the following steps:

- Plan the evaluation, including the selection and orientation of the team members;
• Document the high-level evaluation process and criteria in the RFP document;

• Prepare detailed evaluation scoring instruments;

• Conduct initial review of proposals to determine any disqualifications;

• Review the proposals thoroughly and score each proposal including:
  ✓ Check proposer’s references, and
  ✓ Rate each proposal and complete the evaluation scoring instruments;

• Reach consensus on evaluation scores and rank order proposals;

• If appropriate, interview the finalists and see demonstrations of the software;

• Revise scores, if applicable, based upon the interviews and software demonstrations; and

• Select a vendor and begin contract negotiations.

Any number of several variations on this process may be appropriate for a particular jail depending upon the procurement policies and procedures of that jurisdiction.

The first two steps in the process already have been discussed. Determination of the factors to be evaluated and assignment of weights to each criterion is part of the planning process. Typically, the evaluation criteria, as previously identified, center around the following four criteria: (1) proposer’s qualifications, (2) extent to which the proposed solution meets requirements, (3) management approach to provision of services, and (d) cost proposal. The evaluation criteria
and weighting factors should be documented in the RFP to ensure that vendors understand the
basis for the evaluation of their proposals. Selection of the evaluation team, as already discussed,
is another part of the evaluation planning process.

The next step, preparation of detailed evaluation scoring instruments, consists of customized
rating score sheets for each of the evaluation criteria. A common approach is to assign a
maximum number of points (e.g., 1,000) for the perfect proposal. If proposer qualifications were
weighted at 20%, for example, then a maximum of 200 points of a 1000-point evaluation could
be awarded for that criterion. Likewise, if costs are weighted at 30%, then a maximum of 300
points would be awarded for low cost. Within this framework, separate scoring sheets are
required for each of the categories evaluated. Although there is no single correct method for
development of objective scoring instruments, some suggestions are provided below for each of
the major categories. The challenge with this process is to quantify (i.e., determining a numeric
score) for factors that have at least some degree of subjectivity or interpretation by the scorer.

Cost Evaluation Scoring

Evaluation of the cost proposal begins first by determining the relative weight assigned to each
cost category. Typically, at a minimum, there are software licensing costs, professional services
costs (to accomplish the tasks in the SOW), and ongoing maintenance costs. For illustrative
purposes, assume a 30% weight for cost and equal weighting for each of the three cost
components identified above or a maximum of 100 points each for software, services, and
maintenance costs. The maximum of 100 points would be scored for the low bidder in each of
these categories. Other bidders would receive proportional points based upon the degree of deviation from the low bid. For example, a bidder with twice the software costs of the low bidder would receive 50 points.

To compare vendors’ proposed costs can be difficult as different vendors bundle and price their products, services, and support costs in different ways. This can be somewhat mitigated by providing a detailed cost sheet that clearly breaks down costs for software, customization, hardware, training, project management and support, interfaces, travel, and so on to provide reviewers a way to compare apples to apples. An algorithm also can be used to assign scores for the cost proposal. However, it is usually not quite that simple. Adjustments for missing cost items or low-ball bids may be required as part of the cost proposal scoring process. Vendors also may make different pricing assumptions, such as those related to the degree of involvement of jail staff in the training and implementation process. A fair cost comparison will be based upon common pricing assumptions. Clarifications of the proposers’ pricing assumptions may be required before it is possible to complete the cost evaluation. The objective of cost proposal scoring is a fair comparison of costs based upon total proposal costs, including both one-time and recurring cost factors.

Proposer Qualification Scoring

Scoring of the proposer’s qualifications is based upon a number of factors related to demonstrated qualifying experiences in implementing jail systems. Reference checks to validate experience and to determine of the degree of satisfaction with the proposer from the perspective
of installed sites will be part of the assessment. Other factors, such as the financial viability of the vendor, also may be part of this assessment.

Assuming that a hypothetical 20% (or 200) of the points will be allocated to the qualifications category; the scoring sheet must first decompose this category and assign points to each specific factor. If two reference checks were required in the RFP to confirm qualifying experience, for example, 50 points could be assigned to each reference check. A reference check worksheet should be developed to ensure that the same questions are asked and that the basis for scoring is consistent for each reference interview. Typically, a smaller group within the evaluation committee will be selected to conduct all of the reference checks to ensure consistency. The reference check worksheet will include questions that confirm the vendor’s implementation of the jail system as well as questions to measure the degree of satisfaction with the vendor’s performance.

The scoring of proposer qualifications also may include an assessment of the expertise of the proposed project team based upon submitted resumes. Scoring factors may be based upon rating the project lead and key staff as meeting, exceeding, or failing to meet expectations. A review of the proposer’s financial data is often part of the qualifications category also with higher scores for vendors with a high degree of financial viability that may represent lower risk to the jail over the life of the project. An external, knowledgeable resource may be required to analyze financial information.
Scoring the Assessment of Proposed Systems

A significant component of the evaluation scoring is an assessment of the extent to which the proposed system fully meets the functional and technical requirements identified in the RFP. The requirements matrix provides a good starting point for the development of this scoring sheet. All of the functional, technical, and operational requirements that must be met should have been identified in the RFP. The vendor’s response should indicate whether or not that requirement can be met and also describes how each requirement will be met. A cross-reference to the sections of the proposed solution response that addresses each requirement should be requested of proposers to facilitate completion of this scoring instrument.

Assuming a 40% (400 points) weighting of this component of the evaluation and further assuming that 100 specific requirements were identified, several approaches may be taken to determine the scores. Each requirement could be considered of equal importance with a maximum of 4 points assigned or a differentiation in points could be determined based upon the perceived criticality of each individual requirement. More points may be assigned to mandatory requirements, for example, than to optional requirements. A three-tiered scoring system may be used with a different score applied based upon fully meets (maximum points), partially meets (half of the maximum points), or fails to meet (no points). To reach consensus more easily among evaluation team members, the use of three or four rating scores is suggested instead of any numeric value within the scoring range.
This component of the evaluation can be quite tedious and time-consuming. Different approaches may be used. Scoring can occur for each proposal by each member of the evaluation committee on an individual basis. Consensus scoring can then be determined by a review of the individual scoring and reconciliation of differences. Alternately, an average score can be computed across the individual score sheets and used as the final evaluation score for each proposal.

Because requirements range from functional to highly technical, another method sometimes used is to have jail business experts address functional requirements and IT staff on the evaluation committee score the technical requirements. In the final analysis, the score for this component should reflect the degree to which the proposed system comprehensively meets all of the requirements identified in the RFP.

**Scoring the Management Approach to Provision of Services**

This last major category complements the assessment of the capabilities of the proposed system by evaluating the proposer’s approach to provision of the professional services identified in the RFP’s SOW. Assuming that this component accounts for 10% (100 points), the scoring instrument might be subdivided into four factors to be rated with a maximum of 25 points for each. Examples of scoring factors include responses to the following questions: (a) Are all of the professional services identified in the SOW accounted for in the proposer’s response? (b) Is the project plan complete, realistic, and within the timeframe required?, and (c) Did the vendor assign an adequate level of professional services to accomplish all of the identified tasks?
For each scoring factor, a three-tiered scale could be used with the assignment of maximum points if expectations are fully met, partial points if expectations are not fully met, and no points if the response is very weak. As with the scoring of the proposed system (discussed in the prior section), a mechanism will be required to reach agreement among the evaluators to determine the final consensus score for each proposal.

**Finalization of the Evaluation and Selection of a Vendor**

When evaluation scoring is complete for each qualifying proposal and a consensus score has been reached, proposals are then rank ordered based upon the composite scores. At this point, a clear winner may be evident and selected.

Another option is to select the top two or three proposers and conduct a final evaluation process. In this step, the proposers selected would be provided an opportunity to meet with the evaluation committee. During the session, software could be demonstrated and the proposer interviewed. Based upon this process and with confirmation that the proposed system can meet the RFP requirements, evaluation scores may be adjusted as needed and the ranking of the proposals finalized.

The evaluation results should be clearly documented to assist in addressing any protests or disputes by the vendor community. Documentation should include completed preliminary scoring instruments and the final consensus scoring documents signed by all members of the
committee. The documentation also should include working documents, such as reference check findings, used in the evaluation process.

Note: Evaluation of the finalist’s software with on-site or on-line demonstrations (i.e., Webex) is often a good idea. Vendor requirements matrix may indicate full compliance but vendors may not always be entirely truthful or offer workarounds for a specific requirement. Also, provision of the required functionality as described in the requirements matrix is one thing but the extent to which the provided data support the information needs of the unit or jail, how data are stored and accessed, the degree of automated error-checking and required inputs to preserve data integrity, and the design of the user interface is another. Another issue with software reviews is that different evaluators may have different and subjective perspectives about what is adequate or required. For example, unit managers may focus on the functionality that pertains to them but be ignorant of functionality (e.g., ad hoc reporting) that may be critical to another. Others may be impressed more by the user interface than the functional substance. Still others, IT staff for example, may be more swayed by the technical prowess of the system. Thus, it often becomes difficult to reconcile these software evaluations around a common, objective evaluation method. See Appendix 1 for an example of an objective software demonstration evaluation guide.

Upon selection of the winning proposer, the contract negotiation process will commence. Based upon a comprehensive RFP and proposal, contract negotiations may be relatively quick. Because contract negotiations do not always lead to a final contract, it may be necessary in some instances to revert to the vendor with the second highest score. Another possibility that may occur on occasion is that none of the proposals meet the minimum standards required and the
RFP process must be initiated again. The probability of this occurrence can be minimized by an effective RFI process (to determine what system solutions are available in the vendor community) coupled with broad distribution of the RFP to the vendor community.

**RFP Best Practices**

This chapter described RFP development and proposal evaluation processes. This final section identifies and presents in no particular order RFP best practices for jail system procurement. Some of these practices have been highlighted in earlier sections, whereas others were mentioned but not necessarily emphasized. Best practices include the following:

- Include in the RFP a comprehensive list and description of well-defined functional, technical, and operational requirements;
- Create an RFI or less formal survey that allows reviewers to examine existing system offerings in the marketplace prior to finalization of the RFP;
- Identify each requirement as mandatory or optional;
- Require the inclusion of vendor references of sites where the software has been installed;
- Identify all required professional services required of the vendor in the SOW with clearly defined tasks and deliverables;
• Include a final acceptance task in the SOW that requires 60 days of operation with no significant defects with a corresponding holdback of some funds until this task is successfully completed;

• Require completion of a standardized, detailed cost proposal form that includes all one-time and recurring support costs as well as all pricing assumptions to ensure that total cost of ownership can be assessed;

• Conduct a bidders’ conference after RFP release but prior to submission of responses to ensure that all potential proposers understand proposal submission requirements;

• Define a system infrastructure in the RFP requirements that is consistent with current standards such as Web accessibility and open interfaces to provide long-term flexibility, maintainability, and interoperability with third-party tools (e.g., report writing tools);

• Select an evaluation team early in the process that includes members with complementary skill sets including jail business function expertise, technical expertise, and procurement expertise;

• Consider the inclusion of an external resource as part of the evaluation team;

• Evaluate proposals with a balanced approach rather than over-emphasizing costs;

• Prepare an evaluation plan and detailed scoring instruments to ensure consistent and fair ratings by the evaluation team;
• Consider the use of vendor interviews and software demonstrations before finalization of the vendor selection.
REFERENCES


Hall (1985), Alleviating Jail Overcrowding; A Systems Perspective, National Institute of Justice, Washington, D.C.


Measuring Success: Improving the Effectiveness of Correctional Facilities. MTC Institute, May 2006.


APPENDICES

1. Evaluating Your JMS System Support Features and Usability

2. Case Example: Contra Costa Jail, Martinez, CA

3. Case Example: Kent County, Grand Rapids, MI

APPENDIX 1
EVALUATING YOUR JMS SYSTEM SUPPORT FEATURES AND USABILITY

Introduction

The following is intended to assist in two areas. The first is an evaluation of the comprehensiveness, functionality, and usability of your agency’s current jail management information system (JMS) components and identification of areas of needed improvement to support the running of an intelligent jail. The second purpose is to serve as a guide for the assessment of the comprehensiveness, functionality, and usability of new JMS systems that may be designed or considered for purchase. These various example functions and outputs of the JMS listed in the evaluation instruments also may be useful in the development of system specifications for Requests for Proposals (RFPs) of new JMS systems. Note: The functions, outputs, and reports listed in the assessment guide are examples and are not intended to be all inclusive. You may wish to add additional functions and outputs to the assessment list in the guides.

Using the Self-Assessment and Inventory Instruments

In preparing to use the JMS Self-Assessment and Inventory Guide that follows, select a group of 6-10 system users and stakeholders who represent various units, organizational levels within the jail and Information Technology. At the unit level, these may include the following:

- Booking/intake,
• Medical/mental health,
• Classification,
• Housing,
• Transportation,
• Scheduling,
• Work/program assignment, and
• Release.

Organizational level representation may include the following:

• Line level,
• Shift supervisor,
• Administration,
• Planners and budgeting, and
• Outside stakeholders (e.g., courts).

For each system, collect hard copies of input and output documents and screens, navigation screens and relevant manuals, data dictionaries, and code tables. Hold assessment sessions, using the attached Table A1-2. System Assessment and Inventory Guide. Each member of the assessment group scores the appropriate sections of the assessment instruments separately. The group discusses the reasons for any poor assessments and any differences in scores.
Instrument Scoring Definition Guidelines for JMS Features

Using the assessment guide that follows (see Table A1-1), this section presents definitions by which to score your assessment of the JMS system’s data support, functionality, timely access, data quality (integrity), and ease of user interface.
### Table A1.1

<table>
<thead>
<tr>
<th>Score</th>
<th>Level</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Data Support Inputs</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>To what extent do the data inputs designed in the system adequately support the information needs and processes of the jail? Are there data holes in the system (data gaps that the system does not capture? To what extent are data complete (provision in the system to capture the data but data is missing)?</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Comprehensive</td>
<td>Data inputs are comprehensive and meet all of most expectations/requirements</td>
</tr>
<tr>
<td>2</td>
<td>Adequate</td>
<td>Data inputs are adequate: do not impair effectiveness of system</td>
</tr>
<tr>
<td>1</td>
<td>Insufficient</td>
<td>Data inputs are inadequate: seriously impair effectiveness of the system</td>
</tr>
<tr>
<td></td>
<td><strong>Functionality</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>To what extent are the data inputted and stored in the system organized in an efficient and useful manner for efficient support of inmate management and agency decisions? Do routine automated system edits prevent missing data? Do the edits use available automated information, coded fields, logic matrixes, etc., to prevent errors?</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Good</td>
<td>System organizes case processing and decision support data in efficient, effective manner and readily displays data as needed by the user. System edits prevent missing data and prevent as many inaccurate entries as possible based on coded fields and automated logic.</td>
</tr>
<tr>
<td>2</td>
<td>Fair</td>
<td>Some data organized in efficient and effective manner, some decision support data readily displayed. Prevents most missing data, prevents some erroneous data entry.</td>
</tr>
<tr>
<td></td>
<td>Poor</td>
<td>Keyed data not efficiently organized and presented to the user in support of decisions. Little or no missing data or erroneous data entry checks.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td><strong>Timeliness</strong></td>
<td>How timely is the information provided for the immediate task at hand? Examples include data entry clerks keying in instant offense information, classification staff accessing criminal history, prior classification history, disciplinary history to complete the classification instrument, etc. Ease of accessing information from prior bookings. In some systems data from prior bookings is just a click or two away, but in other systems you may have to back all the way out of screens, look up historical book numbers, copy and paste them into additional screens, etc.</td>
</tr>
<tr>
<td>3</td>
<td>Good</td>
<td>Meets all or most expectations and requirements</td>
</tr>
<tr>
<td>2</td>
<td>Fair</td>
<td>Meets some requirements but does not seriously hamper the immediate task.</td>
</tr>
<tr>
<td>1</td>
<td>Poor</td>
<td>Much of the data is not provided in a timely manner and seriously impairs the efficiency of the system.</td>
</tr>
<tr>
<td></td>
<td><strong>User Interface</strong></td>
<td>Are the data screens easily understood and do they follow the workflow? Is the system easy to navigate and move between systems and screens? Do the input screens automatically fill in all available data? Does the system minimize or eliminate redundant steps and data entry? Is the screen layout logical? Is the flow intuitive? Are there shortcuts that the experienced user can use that speed tasks up? Can the user add codes to code table or drop-down lists without calling tech support? Can the user set a field as mandatory or add a default value without asking for an enhancement?</td>
</tr>
<tr>
<td>3</td>
<td>Good</td>
<td>System is easily understood, screens are well organized and navigable, well integrated with the workflow, data fields are automatically populated where appropriate</td>
</tr>
<tr>
<td>Score</td>
<td>Rating</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>2</td>
<td>Fair</td>
<td>System is understandable and relatively easy to train to, follows work flow relatively well, some data fields are populated automatically, system is relatively easy to navigate.</td>
</tr>
<tr>
<td>1</td>
<td>Poor</td>
<td>System is not very understandable, does not adequately follow the workflow. System is not very easy to navigate, few if any fields are automatically populated.</td>
</tr>
</tbody>
</table>

**Tabulating the System Assessment Score (for JMS Features)**

Table A1-2 is a sample system assessment guide. This guide provides a format for the rating of the system reviewers’ findings so that the assigned numerical values can be manipulated to arrive at a single score for the system in question. To use the guide, add the total scores for each column and enter that score on the total column score line under each column, including the total row score column. Count the total number of assessment items scored in the column. If all items in the example are scored the total is 64. The number of items scored should be the same for each column. Enter that total on the total items scored line under each column. To compute the total average column score, divide the total column score by the total number of items scored (the average column scores will be between 1 and 3). Row scores may also be totaled to provide insight into the adequacy of each system component with scores ranging from a maximum of 15 to a minimum of 5 points. Total row scores of between 10 and 15 indicate an adequate to good system functions.

To compute the overall system assessment score, add each of the total column scores and enter the total on total column score under the total row score. Enter the total number of items scored in the assessment on the total items scored line (this should be the total items scored in the first
column times 5, 64 if all items in the example are scored). Divide the total of the column scores by the total number of items scored to get the overall JMS functions score (the overall score will be between 1 and 3). If all items in the assessment were not scored, this will need to be acknowledged when during your final assessment of the system’s comprehensiveness.
### JMS Related Features

(Note: Function examples below are not intended to be all inclusive. Additional functionality to be assessed may be added as desired.)

<table>
<thead>
<tr>
<th>JMS Related Features</th>
<th>Data Support Inputs</th>
<th>Functionality</th>
<th>Timeliness</th>
<th>Data Integrity</th>
<th>User Interface</th>
<th>Total Row Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3 = Comprehensive</td>
<td>3 = Good</td>
<td>3 = Good</td>
<td>3 = Good</td>
<td>3 = Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 = Adequate</td>
<td>2 = Fair</td>
<td>2 = Fair</td>
<td>2 = Fair</td>
<td>2 = Fair</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 = Insufficient</td>
<td>1 = Poor</td>
<td>1 = Poor</td>
<td>1 = Poor</td>
<td>1 = Poor</td>
<td></td>
</tr>
</tbody>
</table>

### Intake

#### Positive Identification
1. Master System ID Search
2. Automated Fingerprint Match
3. Physical Characteristics
4. Automated NCIC/CCH Search

### Booking

1. Inmate Demographics (*auto-populate with existing static data*)
2. Background Data*
   1. Offense Information
   2. Identify Keep Separates*
   3. Identify Detainers/Warrants LEIN

### Initial Medical/Mental Screening

1. Initial Medical Screening
2. Initial MH & Suicide Risk Screening
3. Previous MH Brought Forward
4. Current MH Inventoried
5. Medical Status Alerts
6. Previous History Brought Forward
7. Previous Suicide Assessments and Attempts Brought Forward
8. Current History Inventoried
9. MH Status Alerts

### Time Computations

1. Sentence Dates, Sentence Lengths, Concurrent/Consecutive, Statutory Minimum/Maximums
2. Time Credits at Intake
<table>
<thead>
<tr>
<th>JMS Related Features</th>
<th>Data Support Inputs</th>
<th>Functionality (Information efficiently organized, edits prevent missing/erroneous data)</th>
<th>Timeliness (Information for process at hand provided to user in timely manner)</th>
<th>Data Integrity (Are data reliable and accurate?)</th>
<th>User Interface (Are the screens easily understood, uncluttered, easy to navigate, coded fields)</th>
<th>Total Row Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3 = Comprehensive</td>
<td>3 = Good, 2 = Fair, 1 = Poor</td>
<td></td>
<td>3 = Good, 2 = Fair, 1 = Poor</td>
<td>3 = Good, 2 = Fair, 1 = Poor</td>
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<tr>
<td></td>
<td>2 = Adequate</td>
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<td></td>
<td>1 = Insufficient</td>
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<td>3. Automated Ongoing Time Credit Adjustments</td>
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<tr>
<td>1. Integrated Criminal History</td>
<td></td>
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</tr>
<tr>
<td>2. Inventories Current Offense Seriousness, Disciplinary History, Escape History, Gang Status, Age, Substance Abuse and Previous Incident History</td>
<td></td>
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<tr>
<td>3. Other Instrument Risk Factors</td>
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<tr>
<td>4. Automated Recommended Classification Assignment</td>
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<tr>
<td>5. Documents Override Assignment</td>
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<tr>
<td>6. Automated Inmate Notice</td>
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<tr>
<td><strong>Alerts and Events Tracking</strong></td>
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<td></td>
</tr>
<tr>
<td>1. Automated Alerts</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. Manual Alerts Posted, e.g., gang member, special diet, hold/detainer, etc.</td>
<td></td>
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<td></td>
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<tr>
<td>3. Mis-housed</td>
<td></td>
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</tr>
<tr>
<td>4. Past Projected Release Date</td>
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<tr>
<td>5. Due for Court</td>
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<tr>
<td>6. Due for Classification/Review</td>
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<tr>
<td>7. Sentenced</td>
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<td>8. Visitation, Sick Call, Pill Pass, etc.</td>
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</tr>
<tr>
<td><strong>Programs Needs Assessment</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1. Previous Assessed Needs and Treatment History Brought Forward</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2. PSI Information Brought Forward or Inventoried</td>
<td></td>
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</tr>
<tr>
<td>3. Criminal History (e.g., domestic abuse, drug/alcohol offenses) Inventoried</td>
<td></td>
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</tr>
<tr>
<td>JMS Related Features</td>
<td>Data Support Inputs</td>
<td>Functionality (Information efficiently organized, edits prevent missing data)</td>
<td>Timeliness (Information for process at hand provided to user in timely manner)</td>
<td>Data Integrity (Is data reliable and accurate)</td>
<td>User Interface (Are the screens easily understood, easy to navigate, coded fields)</td>
<td>Total Row Score</td>
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<td>Transport Assignment</td>
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</tr>
<tr>
<td>1. Automatically Matches Inmate to Appropriate Transportation List</td>
<td>1=Insufficient</td>
<td>3 = Good, 2 = Fair, 1 = Poor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Alerts for Transport Issues (e.g., Medical Holds, Keep-Separates)</td>
<td></td>
<td></td>
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<tr>
<td>3. Automatically Schedules Transport</td>
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<tr>
<td>4. Documents Transport Activity</td>
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<tr>
<td>Housing Assignment</td>
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</tr>
<tr>
<td>1. Automatically Inventories Appropriate Available Beds Based on Housing Policies</td>
<td></td>
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<tr>
<td>2. Automatically Warns of Keep-Separate</td>
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<tr>
<td>3. Documents Housing Assignment and Any Policy Housing Override</td>
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<tr>
<td>Program/Work Assignments</td>
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<tr>
<td>1. Matches Programs to Assessed Needs</td>
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</tr>
<tr>
<td>2. Tracks Program Openings and Automatically Schedules Enrollment</td>
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<td></td>
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<tr>
<td>3. Tracks Program/Work Assignment Schedules</td>
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<tr>
<td>4. Tracks Enrollments, Terminations, Termination Reasons</td>
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<tr>
<td>5. Automatically Tracks and Posts Earned Good Time</td>
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<td>Reclassification</td>
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<tr>
<td>1. New Mitigating/Aggravating Circumstances (e.g., Detainers, Disciplinaries, New Needs, Program/Work Outcomes Inventoried</td>
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<tr>
<td>2. Automated Recommended Classification Assignment</td>
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<tr>
<td>3. Documents Override Assignment</td>
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<td>4. Automated Inmate Notice</td>
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<tr>
<td>JMS Features</td>
<td>Data Support</td>
<td>Functionality</td>
<td>Timeliness</td>
<td>Data Integrity</td>
<td>User Interface</td>
<td>Total Row Score</td>
</tr>
<tr>
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<td></td>
<td>Inputs</td>
<td>(Information efficiently organized, edits prevent missing data)</td>
<td>(Information for process at hand provided to user in timely manner)</td>
<td>(Is data reliable and accurate)</td>
<td>(Are the screens easily understood, easy to navigate, coded fields)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 = Comprehensive</td>
<td>3 = Good</td>
<td>3 = Good</td>
<td>3 = Good</td>
<td>3 = Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 = Adequate</td>
<td>2 = Fair</td>
<td>2 = Fair</td>
<td>2 = Fair</td>
<td>2 = Fair</td>
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</tr>
<tr>
<td></td>
<td>1 = Insufficient</td>
<td>1 = Poor</td>
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<table>
<thead>
<tr>
<th>Community Placement and Reentry</th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>1. Early Release/Pretrial Release Eligibility Determination</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td></td>
</tr>
<tr>
<td>2. Inventories Community Placement Risk Predictors (e.g., Criminal History, Escape, Prob/Parole Violations, Work/Education Histories; Substance Abuse Severity, Social Stability, Criminal Cognition’s, Age).</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
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</tr>
<tr>
<td>3. Risk and Needs Assessment</td>
<td>___</td>
<td>___</td>
<td>___</td>
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<tr>
<td>4. Reentry Plan</td>
<td>___</td>
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<th>Release</th>
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<tbody>
<tr>
<td>1. Release Date Confirmations</td>
<td>___</td>
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<td>___</td>
<td>___</td>
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</tr>
<tr>
<td>2. Positive Identification</td>
<td>___</td>
<td>___</td>
<td>___</td>
<td>___</td>
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</tr>
<tr>
<td>3. Automated Victim Notification Registration Alert</td>
<td>___</td>
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<tr>
<td>4. Automated Offender Sex Registration Alert</td>
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<tr>
<td>5. Detainer/Holds Alert</td>
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<td>6. Release Date and Reason</td>
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<table>
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<tr>
<th>Other</th>
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</thead>
<tbody>
<tr>
<td>1. Flexible Notes and Comments Throughout System</td>
<td>___</td>
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</tr>
<tr>
<td>2. Automated Data Quality/Missing Data Checks</td>
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<tr>
<td>3. Workload Driver</td>
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<td>___</td>
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</tr>
</tbody>
</table>

**TOTAL COLUMN SCORES** | ___ | ___ | ___ | ___ | ___ |                |

**TOTAL ITEMS** | ___ | ___ | ___ | ___ | ___ |                |

**AVERAGE COLUMN SCORE** (Total column score divided by total items scored) | ___ | ___ | ___ | ___ | ___ |                |
To Compute Overall Score:

1. Add total column scores for inputs, functionality, timeliness, integrity and interface, then
2. Add total items together for each column, then
3. Divide the total column score by the total items to get the overall JMS features score.
Outputs and reports require considerations that differ from those of the overall systems and should be addressed separately using their own rating scale, as shown in Table A1-3. This table shows an output/report system assessment guide similar to the system assessment guide shown in above. The form provides a format for entering the findings of the reviewers to determine a single score for the output/report system capabilities and comprehensiveness. The following presents scoring definitions for assessment of the JMS system’s reporting availability, user interface, comprehensiveness, timeliness, and data quality (integrity).
<table>
<thead>
<tr>
<th>Score</th>
<th>Level</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Availability</strong></td>
<td>Are these outputs or reports available with your system?</td>
</tr>
<tr>
<td>2</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>1</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**User Interface**

<table>
<thead>
<tr>
<th>Score</th>
<th>Level</th>
<th>Definition</th>
</tr>
</thead>
</table>
|       | **Are the outputs or reports easy to generate? Can they be easily and quickly modified if needed?**
| 3     | Good  | The output and/or report is easy to generate, flexible, and offers the user the ability to select or change parameters, reorder data, change formats, or create supporting ad hoc queries quickly |
| 2     | Fair  | The output report is moderately easy to generate and offers (if applicable) some flexibility in changing parameters, reordering data, supporting ad hoc queries, etc. |
| 1     | Poor  | The output report is not easily generated and offers no flexibility in modifying the content or format |

**Comprehensiveness**

<table>
<thead>
<tr>
<th>Score</th>
<th>Level</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Do the data captured in the system provide adequate coverage of the information needed for the output or report content? Is some necessary information for the output or report missing or not available?</strong></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Good</td>
<td>Complete coverage and content availability of all necessary information to produce an informative output/report is available and meets most user expectations</td>
</tr>
<tr>
<td>2</td>
<td>Fair</td>
<td>Adequate coverage of most necessary information is available to produce informative output/report, does not seriously degrade the comprehensiveness of output/report</td>
</tr>
<tr>
<td>1</td>
<td>Poor</td>
<td>Adequate information/data in the system is not available to produce informative report; lack of comprehensiveness severely limits the usefulness of the output/report</td>
</tr>
<tr>
<td>Score</td>
<td>Level</td>
<td>Definition</td>
</tr>
<tr>
<td>-------</td>
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<td>------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Timeliness</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>How timely is the output/report provided to the user for the immediate task at hand, e.g., Are outputs/reports on inmates due for court transfer immediately available what staff are ready to schedule the event? Is the appropriate output/report available for inmates due for classification/reclassification? Are management and strategic planning reports produced in a timely manner?</td>
</tr>
<tr>
<td>3</td>
<td>Good</td>
<td>The output/report is provided in a timely manner and meets all or most of the time requirements of users</td>
</tr>
<tr>
<td>2</td>
<td>Fair</td>
<td>The output/report timeliness meets some user requirements but does not seriously hamper the immediate task at hand</td>
</tr>
<tr>
<td>1</td>
<td>Poor</td>
<td>The output/report is not provided in a timely manner and seriously impairs the efficiency or need for the task at hand.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Data Integrity</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Are the data in the output/report accurate and reliable? Are they often missing? Are the data continuously kept current?</td>
</tr>
<tr>
<td>3</td>
<td>Good</td>
<td>High level of confidence in the quality, accuracy, and reliability of data needed for output/report</td>
</tr>
<tr>
<td>2</td>
<td>Fair</td>
<td>Moderate level of confidence in the quality, accuracy, and reliability of data needed for output/report</td>
</tr>
<tr>
<td>1</td>
<td>Poor</td>
<td>Low or suspect level of confidence in the quality, accuracy, and reliability of data needed for output/report</td>
</tr>
</tbody>
</table>
Tabulation of the System Assessment Score (for Outputs and Reports)

For the first column (available; see Table A1-4), total the item response scores (1 or 2). Divide the total number of items assessed (rows) by the total column score to determine the percentage of outputs and reports your system currently provides. For the remaining four self-assessment columns (user interface, comprehensiveness, timeliness and data integrity), score only those items that were identified as available (having a score of 2). Add the total scores for each column and enter that score on the total column score line under each column, including the total row score column. Count the total number of assessment items scored in each column (74 if all items in the example are scored). The number of items scored should be the same for each column. Enter that total on the total items scored line under each column. To compute the total average column score, divide the total column score by the total number of items scored (the average column scores will be between 1 and 3).

To compute the overall outputs/reports system assessment score, add each of these four total column scores and enter the total on the total column score line under the total row score. Enter the cumulative total number of items scored in the assessment on the total items scored line (this should be the total items scored in each of the four columns, 74 if all items in the example are scored). Divide the total of the four column scores by the total number of items scored to get the overall outputs/reports score (the overall score will be between 1 and 3). If all items in the assessment were not scored, this will need to be acknowledged when for the final assessment of your system’s comprehensiveness.
Row scores also may be totaled to provide insight into the adequacy of each system output or report relative to the interface, timeliness, integrity, and comprehensiveness. Component scores will range from a maximum of 12 to a minimum of 4 points. Total row scores of between 9 and 12 indicate an adequate to good output/report.
## Table A1-4. System Assessment and Inventory Guide

### Outputs and Reports

(Outputs/reports easy to generate, easy to modify/create)

<table>
<thead>
<tr>
<th>Available</th>
<th>User Interface</th>
<th>Timeliness</th>
<th>Data Integrity</th>
<th>Comprehensiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 = Yes</td>
<td>3 = Good, 2 = Fair, 1 = Poor</td>
<td>3 = Good, 2 = Fair, 1 = Poor</td>
<td>3 = Good, 2 = Fair, 1 = Poor</td>
<td>3 = Good, 2 = Fair, 1 = Poor</td>
</tr>
<tr>
<td>1 = No</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### Automated Internal/External MIS System Interfaces and Data Exchanges

<table>
<thead>
<tr>
<th>Exchange</th>
<th>Available</th>
<th>User Interface</th>
<th>Timeliness</th>
<th>Data Integrity</th>
<th>Comprehensiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>State/Local Courts</td>
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### Case Processing/Inmate Tracking

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<td>Inmate labels</td>
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<td>Schedules/rosters of inmates for classification review, recategorization, court appearance, etc.</td>
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<td>Schedules of inmates to process for legislatively mandated initiatives, such as DNA, sex-offender notification, victim notification</td>
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<td>Work logs for staff to complete, such as classification forms</td>
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<td>Rosters of program vacancies and inmates awaiting program assignments</td>
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<td>Preprinted fingerprint cards</td>
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<td>Rosters of inmates available for movement</td>
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<td>Housing alerts and vacancy reports</td>
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<td>Mis-housed and keep separate rosters/reports</td>
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<td>Medical intake summary</td>
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<td>Outputs and Reports</td>
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<td>11. Pre-parole reports on inmate’s institutional adjustment</td>
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<td>1. Classifications overdue for review</td>
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<td>2. Inmates mis-housed today</td>
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<td>3. Distribution of classification workload and overrides by classification officer and facility</td>
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<td>4. Relation of inmate program assessed needs as compared to program/work assignments</td>
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<td>5. Use of program resources: program vacancies, program utilization</td>
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<td>6. Percentage of population with zero fund balance</td>
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<td>7. Inmate Management Plan Performance/Progress Reports</td>
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<td>8. Inmates in administrative segregation by reason by days</td>
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<td>9. How many inmates in disciplinary segregation by days by infraction type</td>
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<td>10. How many inmates in medical cell/unit by days</td>
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<td>11. Exception reports including:</td>
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<td>a. Data accuracy</td>
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<td>b. Data omissions</td>
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<td>c. Inmate releases without victim notification, sex-offender notification, etc.</td>
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<td>12. Number of inmates assigned to special housing by type and facility</td>
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<td>13. Security profile of the jail today by gender</td>
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<td>14. Cells off-line today by reason by days off-line</td>
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<td><strong>Management Control</strong></td>
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<td>1. Use of staff resources: caseloads and unit productivity</td>
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<td>2. Use of bed resources: patterns of bed vacancies, bed shortfalls, bed misuse, beds off-line</td>
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<td>3. Use of transportation resources: Transports by type by week, month, year; patterns of empty seats</td>
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<td>4. Checked property lost last quarter, last year</td>
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<td>5. Inmate fund deposits, debits, fund balance last quarter, last year</td>
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<td>6. Total inmate processing fees collected last quarter, last year</td>
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<td>7. Disciplinary infractions rates per 100 inmates last month, year by classification level</td>
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<td>8. Rates of inmate on inmate assaults last month, year by classification level</td>
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<td>9. Rates of inmate on staff assaults last month, year by classification level</td>
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<td>10. Total trust account revenues last quarter, last year</td>
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<td>11. Rates of sexual assaults on inmates by month, year, classification level</td>
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<td>12. Aggregate medical/MH needs of population last quarter, last year by type</td>
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<td>13. Aggregate assessed program needs of population by type</td>
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<td>14. Utilization of programs by assessed need and termination reasons by month, year</td>
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<td>15. Work assignments vs. program capacity by month, year</td>
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<td>16. Facility capacity report: Actual capacity versus design capacity and lawful capacity</td>
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<td>17. Security profile of population by month, year by gender</td>
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<td>18. Aggregate release reasons by month, year</td>
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<td>19. Number of inmate and staff grievances by month, year by reason</td>
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<td>20. Number of released inmates who are homeless by month, year</td>
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<td>21. Cells off-line by month, year by reason by days of line</td>
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<td>22. Aggregate number detained past authorized release date by days past due by reason by month, year</td>
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<td>23. Percent of population delayed release due to forfeiture of good-time by reason by days delayed by month, year</td>
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<td>24. Projections of resource needs: trends in stock and flow populations by resource variables, e.g.:</td>
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<td>a. Trends in numbers and types of special needs inmates</td>
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<td>b. Trends in distribution of security classification types</td>
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<td>c. Trends in education levels</td>
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<td>25. Frequency of staff shortages by reason by month, year</td>
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<td>26. Security profile of the jail by week, month, year</td>
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<td>27. Inmates boarded for a fee by type last month, year; total fees generated</td>
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<td>28. Recidivism rates of inmates booked in the past month, year</td>
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<td>29. INS/ICE holds not boarded for a fee by month, year</td>
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<td><strong>Strategic Planning</strong></td>
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<td>1. Total bookings and releases by month, year</td>
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<td>2. Average length of stay by year</td>
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<td>3. Average daily population by month, year by security level</td>
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<td>4. ADP housed less than 72 hours</td>
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<td>5. ADP greater than 72 hours</td>
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<td>6. Rates of mis-housings by security levels by average days mis-housed by year</td>
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<td>7. Recidivism rates of inmate population by assessed needs if available</td>
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<td>8. What are the inmate target populations for early release consideration</td>
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<td>9. How many times did population exceed functional capacity or court mandated capacity</td>
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<td>10. Internal Policy Simulations, e.g., changes in classification variables</td>
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<td>11. Population Forecasting</td>
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<td>12. Staffing Analysis/Projections</td>
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<td>13. Legislative Impact Analysis e.g., mandatory sentences, determinate sentencing</td>
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<td>TOTAL COLUMN SCORES</td>
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<td>TOTAL ITEMS SCORED</td>
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<td>AVERAGE COLUMN SCORE (total column score divided by total items scored)</td>
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To Compute Overall Score:

1. Add total column scores for interface, functionality, timeliness, integrity and comprehensiveness, then
2. Add total items together for each column (excluding the first column (available), then
3. Divide the total column score by the total items to get the overall output/reports score.
Please provide a brief narrative history of your MIS planning and acquisition process:

In 1999, the Contra Costa jail went live with its previous JMS system. This system and the vendor support proved to be very costly. There also were significant YTK problems that would be costly to fix. Even the smallest of change requests (e.g., functional and report outputs) were too costly on an ongoing basis. As a result, the jail began to consider replacement of this system with one that was more cost effective and with customer support that was more flexible and affordable. It was also noted that the skills of the correctional staff did not fit well with the user interface demands of the JMS software. The jail began the planning process, which resulted in the development and release of an RFP. Subsequent to the RFP release, five JMS vendors responded. Just as the RFP responses were coming in, a local software provider that had previously provided iris recognition software to the department approached the jail with an offer to design and build a new JMS. The downside, as stated by the jail, was that this vendor had no previous experience with JMS systems. The significant upside was that the vendor offered to
build a system, including software, hardware, and database with no up-front cost and that no payment would be due until the new system went live. It was further determined that the new system could be paid for by simply using the annual software maintenance and support monies required from their current vendor’s contract. Further, the vendor agreed to place software developers inside the jail’s work units help them understand the functional requirements of the system and to demonstrate proof of concept. Although this process had its merits, perhaps its biggest downside was that it fostered significant project scope creep; that is, that the functional requirements kept evolving as the process unfolded even though a general requirements guide existed in the RFP document. The project unfolded over a four-year timeframe from 2005 to going live in 2008.

Note: The original vendor who offered to build the JMS system was motivated by the desire to enter the JMS market and leverage Homeland Security monies that they felt would be available in the future. This company was bought by a much larger, international, identity solutions company during the project, which ushered in new priorities and commitments by the new company that did not focus on continuation in the JMS market. The company did, however, finish its commitment to Contra Costa.
Planning for Your New Jail MIS

A. In planning for the development/acquisition of your agency’s jail MIS,

1. What was your planning process?

Although there was no formal goal or vision statement developed by the jail, the primary objective was to acquire a more efficient and cost effective JMS system. The jail did not adopt a formal planning process for the design and implementation of a new JMS. The impetus for the change mainly came from middle management in the technology and custody services divisions. The internal project work teams were not established until after the decision was made to work with the identity solutions vendor that offered to build a custom system as noted above.

2. How did you engage stakeholders (both internal and external to the agency) in the planning process and who were they?

The primary approach was to examine the various workflows in the jail, starting with booking and then moving from there out to other inmate processing functions. As the major functions were identified, workgroups representing staff from each unit were identified to work with the software developers. Work groups included clerical, civilian, line, and supervisory staff. Middle management took the lead in the project and was held accountable for the project’s success. No formal, high-level steering committee was developed. Higher-level administration was not significantly involved in the project nor did it contribute to identification of their JMS needs. Some effort was made to engage the courts in the design process but with little success as there
was no big-picture vision for the project and thus no perceived stake in it by external agencies. Thus, no other external stakeholders were involved in the project.

3. **Did you have or engage the appropriate political support (e.g., sheriff, county commissioners, courts) both internal and external to the agency?**

There was very little political support for this project as it was primarily engineered and managed by mid-level management (e.g., captains from technical, custody services, and central identification departments and their support staffs).

4. **How did you identify your data/information needs?**

The systems data needs were principally identified by the software developers who worked directly with each unit (e.g., booking, medical, classification, property) of the jail. Data needs were driven by the work processes of each unit and by the perceived reports needed by each unit.

5. **How did you identify your functional requirements?**

Technical and custody services management met with the internal workgroups prior to the meetings with the vendor to discuss the limitations of the current JMS system and desired improvements. Management did not want the workgroups simply to re-engineer the functionality of the current system and thus just replicate current practices. They discussed more flexible software navigation and user interfaces and identified old processes that could be dropped from the new system. The software vendor then met with the work groups to develop the functional
requirements. They then reviewed the requirements with the technical and custody services management. PowerPoint slides of workflows and screen mock-ups were used to facilitate the process.

6. **What happened during the planning phase that you did not expect?**

   Working with little or no money allocated to the project and adapting to the lack of interest and participation from outside stakeholders were the biggest issues. They were “kind of winging it” through the planning process so there were consequently not a lot of initial expectations. Upper administration did not engage in the process either positively or negatively.

7. **What planning processes were most useful?**

   On their own initiative, the vendor researched state legal requirements that pertain to the jail and reporting and assisted in bringing that information to the design discussions. It also was noted by the mid-management project team that “the facility is not the backbone of corrections operations; it is the JMS system.”

8. **What were the pitfalls in the planning process?**

   In addition to those previously mentioned, perhaps the biggest pitfall was ironically the fact that the JMS system was being developed and offered at no cost (paying for it after go-live with software maintenance and support monies already allocated to the previous vendor). The fact that there was no cost allowed top administration and other stakeholders to be less engaged in the
process. Because no new money was allocated, it became difficult to implement system change requests and to grow the system further after go-live.

9. How did you deal with the obstacles?

Issues were dealt with by the management team as they arose. Fortunately, administration and other jail stakeholders outside the process did not dig in their heels on any issues. The funding obstacle was addressed by timing the new JMS to go live at the end of the old system’s maintenance contract year, so no new money had to be allocated.

Members of the workgroups and the mid-management project team changed over time as people moved to new positions. These changes allowed the experience and knowledge of those members to leave the project.

10. What would you have done differently?

The project team identified several things that they would have done differently with the project:

- Appoint a high-level steering committee that involved the sheriff and other key stakeholders both inside and outside the agency,
- Engage a system integrator to pull together all of the related MIS vendors for information sharing,
- Involve administration more in the process and have them take some ownership of the project,
• Establish a dedicated JMS transition team and keep core user groups intact through completion of the project,

• Involve county administration in the process to pull together external stakeholders (despite concerns of the risk them getting too involved in the process),

• Complete more education work with the county police departments ahead of the project to get their buy-in for remote booking functionality built into the system but not used by arresting officers, and

• Institute a better change-control process so development could proceed more effectively.

11. What has been gained with the new system?

The new system provides a more accurate inmate identification/confirmation process that uses iris-scanning for booking and release. The workflow processes and components can be modified to accommodate change better, especially in the area of booking. Most of processes can be performed in-house and without the cost or delay of going through the vendor. The JMS user interface is more intuitive and easier to learn than in the previous system. The system provides an easier reporting process and our data is more accessible. Money savings included no individual user license costs, no Oracle database maintenance, reduced maintenance, and increased stability of SQL server.
12. **List examples of data outputs and their impact on the jail and stakeholders.**

The new Contra Costa JMS system offers both canned reports and an ad hoc report feature that uses Crystal Reports. However, the ad hoc reporting feature is only used by the technical services staff as custom reports are requested. System users can change a limited number of report select-and-sort parameters (e.g., date ranges, facility, gender) on the ad hoc reporting screen. Rosters must be exported to Excel or Acrobat to get row and column totals.

The system offers numerous routine reports for event-scheduling activities (e.g., court actions, transportations, pending classifications, visitation, due for release, temporary release, inmates still in booking after X hours). The system produces various facility counts, including current population head count, number booked, released, and so on. It offers various inmate notices, including fee agreements, property receipt, program status report, required counseling notice, participant rights letter, etc. Various other reports include work assignments, rosters, schedules, arrests/charges rosters, etc. Accounting reports include financial transactions, account balances, check registers, inmate cash authorization, etc. Some of the aggregate historical reports offered by the system include arrest by agency last month/year, bookings last month/year, classification scores, ICE/Fed holds last month/year, Taser, battery incidents last week, population demographics last year, etc.
Contra Costa County Sheriff

Exemplary Use of Technology in the Jail Environment

The Contra Costa County Sheriff has been using a system referred to as ARIES (Automated Regional Information Exchange System) since 2003. The system shares jail data with all agencies in Contra Costa County. It represents the innovative use of technology in several respects with more than 5,000 users and 61 agencies participating in the system. Although several features and functions could be cited, the Electronic Probable Cause Declaration (PCD) system is described here. The electronic PCD system is a good example of interagency data and document exchange as well as the use of a dashboard in the jail. This module has been in operation since April, 2007.

The system enables law enforcement officers to create draft PCDs and submit them electronically on a concurrent basis to both the duty judge and the jail. The jail is informed, on a close-to-real-time basis, of the current status of the PCD process for recent bookings. The judge reviews the draft PCD submitted electronically and can approve, deny, or return the PCD for more information to the law enforcement agency. Each PCD is logged into the system and its current status maintained throughout the process. The judge can access the PCDs from home during off hours by using an encrypted Internet connection. The documents can then be e-signed and transmitted electronically.

The status of the PCD is available to the jail for all relevant inmates at any time through a refreshed dashboard. A ticking clock informs all three involved parties, including the originating law enforcement agency, the judge, and the jail, the amount of time remaining for a PCD to be
issued before the inmate is released from jail custody. If an approved PCD is not available within the statutory time limits (typically 48 hours), the jail intake staff will release the inmate at that time based upon the status displayed on the online dashboard.

This implementation of technology meets a business need for several justice agencies from both a functional and technical perspective. Documents and data are exchanged electronically in an efficient manner with timely notification to the jail by using a dashboard.
Please provide a brief narrative history of your MIS planning and acquisition process:

We started planning and analyzing our needs in March 2001. The RFP went out and we selected our vendor by the end of the year. Development work started in 2002 and go-live implementation was in June 2004.

A. Planning for Your New Jail MIS

A. In planning for the development/acquisition of your agency’s jail MIS:

1. What was your planning process?

We had an implementation team with representatives from several divisions from the jail, courts, and IT. We probably should have solicited more involvement from detectives and investigators, since they are big users of the data. This is mentioned again below.
2. **How did you engage stakeholders (both internal and external to the agency) in the planning process (who were they?)**

The County had already formed a stakeholder group around the topic of criminal justice system computer integration, and they had already been meeting for a while by the time the sheriff’s department got the money to move forward with the jail MIS project. The jail MIS project was made a recurring agenda item for those regular meetings, and our issues were added at the subcommittee level as well. The committee had members from the circuit court, some district courts, community corrections, county administration, IT, prosecutor’s office, juvenile detention, and law enforcement. Internally within the jail, we had a monthly update newsletter that kept people informed and solicited input. The jail’s project manager also met frequently with concerned parties, including the Office of the Sheriff.

3. **Did you have or engage the appropriate political support (e.g., sheriff, county commissioners, courts) both internal and external to the agency?**

Yes, we had their full support.

4. **How did you identify your data/information needs?**

Essentially the same answer as #5 below.
5. **How did you identify your functional requirements?**

Our jail had been automated, at least in part, since 1985, with older mainframe technology. We were able to build on that when we decided to move to a client server solution. We surveyed a number of other large jails to see what they had and were happy with and what they wish they had. We went to conferences and looked at JMS display booths. We got our own users together and created detailed descriptions of the functionality they desired. I’d mention that one problem we discovered with surveying other jails is that the person I would call would be the administrator, since I’m an administrator. The administrator frequently tended to put the best possible face on their JMS and would claim to be happy with it unless it was just a wreck. Then one of our lower level staff would talk to a lower level staff in that same jail and get a totally different story. We found out we had to drill down to the lower levels to discover how the JMS was really working. (You might want to keep that in mind as you read the responses to these questions.)

6. **What happened during the planning phase that you did not expect?**

I was not quite prepared for the amount of time that it took to accomplish, partially because we went into such great detail and the JMS developers were willing to make many of the changes we requested. Our planned interface between the JMS and the court records system was never successfully developed, and I didn’t expect that. The main thing that I didn’t expect, although it wasn’t part of the planning phase, is immediately after we went live, the parent company laid off the project manager that we had worked closely with for over three years. Ownership of our JMS has changed hands twice since then.
7. **What planning processes were most useful?**

Actually, it was the very laborious process of documenting every single aspect of our previous system. We went through every single field, each field length, every code, every user profile, the details of each table in the old database, and more. We looked at data, tried to find where the bad data were, and what could be done in the next system to clean it up and prevent the same thing from happening with the new system. It all was very detail-oriented but gave us a very solid foundation to build on.

8. **What were the pitfalls in the planning process?**

The amount of staff time required in the whole planning and implementation process was phenomenal. It was difficult to get everyone involved who probably needed to be involved, since we all had other jobs and responsibilities as well. Another pitfall was working through the unrealistic expectations of some of our staff people for the new JMS system. The vendor or the project team would meet with users and ask them what they would like to see in the new system, and many people essentially wanted a computer that would read their minds when they came into the room and do all of their work for them, and then turn itself off at the end of the day. In many instances the project manager for the jail (me) had to come back in after a meeting with accounting, or medical, or court security, and bring them back down to the real world. Part of this too was around the topic of “automated vs. manual” that I discuss in more detail in the concluding paragraphs.
9. **How did you deal with the obstacles?**

It all boils down to time. Many of the technical obstacles or difficulties could be resolved once everyone in the decision making process was educated on the topic to the point they finally understood what the techies were talking about. That takes time, but it is needed. Some people in positions of power or influence would attempt to block something or push something through without having a good understanding of what that meant. Once we were able to educate them so they actually understood the technology, the human obstacles went away. As it relates to technology or hardware, we were beaten by some obstacles simply because we didn’t have the money in the end to buy everything we would have liked. For example, we wanted to greatly expand our delivery system for jail reports (i.e., Crystal Reports and otherwise), and make them available at the desktop level in the prosecutor’s office, courts, community corrections, etc. We also wanted some of the dashboard features that were just coming out in 2003-2004. We identified a Crystal enterprise solution, but in the end, we had to throw in the towel after it turned out to be just too expensive.

10. **What would you have done differently?**

Given the scale of the project and the fact that it included software, hardware, network, and about 12 interfaces, we probably should have given more serious consideration to hiring an outside project manager to guide us through the process.
11. **Did you upgrade/enhance or purchase new?**

We purchased new.

12. **How are you using the system (line staff, middle management, administrators, other stakeholders)?**

We have modules for booking, classification, visitation, basic medical, housing unit floor log, case notes, charge tracking, visitation, work release, report writing (and hearings and administrative approval), and property. We have a little functionality for programs but not much. Line and mid-managers use the JMS every day for almost all functions of their jobs. We do not have much functionality specifically for top administrators. Outside of the courts and community corrections, our main outside users are detectives, and their main access point is via a Web interface.

13. **What has been gained with the new system?**

One big thing is the advantages in the report writing. For example, with the new system, we went through and attached code tables to every conceivable field that we could, so the uniformity of data entry would help with our selection and query processes. The whole system approach was built with a view toward getting the data back out when and how we wanted it. The second big thing we gained, paradoxically, was an expansion of free-text fields that allow us to put in as much narrative detail as we want. The case notes are an example of this, and the staff now love to enter case notes for all kinds of interesting details. In many cases, we will have both a code
table and a free text narrative field for the same thing. For example, for classification overrides, the classification staff can select a code that describes the reason for the override, and add an expanded free text narrative to provide more detail. The same for tattoos, floor log entries, moves, etc. This combination of codes only, free text only, and code and/or free text, has come to mean a lot for our data abilities.

B. Data Capacity and Use Issues

1. Analytical Capacity

a. How did you specify a report generation procedure for the vendor?

We gave the JMS vendor a stack of reports from our previous JMS system that we wanted replaced and improved upon. We went over the vendor’s proposed reports and made improvements. They created some Crystal Reports for us. We trained a number of our people in Crystal Reports and then the new JMS vendor provided us with some training in writing Crystal Reports using our own database table structure. The tables are pretty complicated, so in some instances our vendor created views to simplify the Crystal Report Generator. They also enabled us to send almost every report or query result to file or to Excel, so that helps. In a few instances, we have used Microsoft Access as the tool to query our database, and that works very well for the staff people who know how to use it. The new JMS does not have its own report generator tool.
b. Who was involved in specifying performance requirements for report generation?

We had a JMS implementation team made up of people with differing responsibilities in the jail.

c. Did the report generator live up to your requirements?

We are happy with using Crystal Reports and Excel and do fine with that along with the vendor’s JMS canned reports. Now that we’ve used it for a while, I’d like to see if we could get some more views created of the database to simplify some things for us, but ownership of the parent company of our JMS has changed hands twice and the new owners are not as good to work with.

d. What staff in the jail has the competency to set up/build ad hoc reports?

We started with three corrections staff, one in community corrections and two IT staff, but now six years later, because of promotions, job changes, layoffs, etc., we are down to one in corrections, one in community corrections, and one in IT.

2. Routine Monitoring Procedures

a. Can the MIS produce charts to monitor key outcomes (e.g., disciplinary rates per month) across time periods? If so, explain.

The JMS does have limited ability to produce charts, but we export to Microsoft Excel for all of our charts and graphs.
b. Does the MIS offer procedures to monitor trends in the jail? If so, explain.

The JMS does not have this ability beyond allowing us to select by date range, but we generally export to Excel and go from there. For the more detailed trend analysis, our community corrections guy uses SPSS.

c. Does the MIS offer procedures to monitor classification percentages (max, med, min, etc.) across time? If so, explain.

Again, only to the extent it allows us to select data by date range. We take daily snapshots and export to Excel instead of relying on the JMS to recreate a historical build of data. The JMS does store its own snapshots, but we’d still want to get it into Excel to do any work.

3. Coding of factors in the MIS

a. Who sets up your coding configuration for new factors (e.g. sexual assaults, grievance coding) to be monitored?

The JMS administrator at the jail.

b. Who set up your original canned/out-of-the-box coding configurations?

The JMS implementation team.
4. **Canned Reports**

a. **Who set up your initial set of canned reports?**

We had our JMS implementation team made up of people with differing responsibilities in the jail.

b. **Are the canned reports meeting the information needs of key stakeholders in the jail?**

Generally, as supplemented by the ad hoc reports.

- Security monitoring
  
  Yes

- Drug use in the jail
  
  Yes

- Identification and coding of security incidents
  
  Yes

- Safety of inmates
  
  Yes
• Safety of staff

Yes

• Disciplinary order (misconduct rates/types, grievances, staff use of force, etc.)

Yes

• Services and treatments provided

No

• Program activities of inmates

No

5. Information needs of Specific Divisions and Division Managers

Which departments in the jail monitor the following information categories?

a. Work demands across time

Jail administrators and senior administrators in the Office of the Sheriff.

b. Work done (daily, weekly, monthly, etc.)

Sergeants, classification officers, medical and mental health staff, video court staff.
c. **Work quality (what indices of quality)**

Intake sergeants monitor errors made in check-in and booking. The records supervisor monitors errors made in entering court paperwork. In these two cases, the supervisors are not typically using any computer-aided search to conduct quality checks; they are simply responding to reported errors. The classification supervision does conduct a monthly audit that is guided by a number of reports that reflect quality, such as override rate, housing plan compliance, AFIS verifications, etc.

d. **Work outcomes (meeting your goals? Achieving selected outcomes?)**

The jail sergeants and lieutenants use the JMS to make sure the deputies are meeting security outcomes like block/housing checks. We have a set of performance measures that we report to the Office of the Sheriff quarterly, and the JMS assists with the collection of that data. The Jail Population Management committee uses JMS data to make sure we stay on track with our jail population projections.

6. **Ad Hoc Policy Queries**

a. **Do senior administrators make ad hoc queries regarding management/policy problems?**
I’m a senior administrator and I do, but I’m the only one. Other administrators with the sheriff’s office occasionally request data from me and outside entities such as county administration frequently do.

b. **What happens when a senior administrator needs answers for an ad hoc public policy issue?**

I take care of it.

c. **Does the jail have staff to routinely conduct ad hoc policy queries?**

We did until the county started going through budget cuts and we started laying people off.

d. **How do you feel about the analytical and reporting capacity of the JMS/MIS system?**

Overall, I’d give it about 80%. The table structure is very complicated, and that limits one’s ability to extract things sometimes unless one is very skilled with query writing.

7. **Data Quality Assurance Procedures/Error Detection Methods**

a. **Does your system have built in data quality, omission, or error detection features?**

We have the ability to set any field as a required field, so that takes care of some but not all of the omission problems. We don’t have any true error-detection features beyond input masks to
require date/time fields to be correct, etc. There are some things that we decided to allow staff to have some leeway or freedom when it comes to entry, but it may not have been the best move. For example, with scares, marks, and tattoos, we have code table fields for location, type, color, and a couple of other things, and also a narrative notes field to describe the tattoo. None of the fields are required, so the booking people are free to enter all, part, or none of the fields that describe the tattoos. It seems like they don’t want to be bothered by it, and if we make one of those fields required, they just skip the whole thing.

b. If so, what features?

We don’t have any true error-detection features beyond input masks to require date/time fields to be correct, etc.

8. Please note any other relevant comments about your agency’s experience or ongoing issues:

One of the things that we probably made a wrong choice on in the beginning was to not link our address fields with dispatch’s database of true or correct addresses in the county. When dispatch types in an address, the database will alert them if it is not a “true” address. At the time, we thought it would complicate our lives since a certain number of people are from out of town, but in retrospect, I wish we would have done it so at least we would have confidence in a certain number of addresses.
That brings up another thought, and that is I’ve discovered that the single biggest users of our jail data (besides us) are the detectives in our agency and the surrounding agencies. There may have been some things we’d done slightly different if I’d known that going into the project to the degree I know it now. We do not give the outlying agencies direct access to our JMS, but we did provide a Web interface that allows them access to nearly everything they want, and it is very popular with them.

Another thing that I did not think through to the degree I wish I had is this whole thing of “primary charge” or “driving charge.” If an inmate has five charges, how do you decide which is the charge that is the one principally holding an inmate? Or, for reporting purposes, people always want to know how many inmates are in jail for drugs or assault. We built in a logic model to calculate and flag the top charge for “in-custody inmates” based on severity, bond, etc., and I’m happy with that. The part I failed to comprehend was how frequently the primary charge changed upon release, and the last active charge at the final moment before release might be a minor civil charge instead of the serious violent charge that actually was the principal charge holding the inmate for several months. So our JMS did not store after release what the primary charge was for the majority of the time the inmate was here in jail. The vendor wrote us an “expression” that we can include when we write Crystal Report queries, and it works pretty good, but it greatly increases processing time as it has to recalculate the primary charges all over again.

In a similar vein, I wish we would have had a canned report that would allow us to search by charge a bit easier, particularly for inmates out of custody. There is a way to do it in our new
JMS but it is not as clean as I’d like. We have a Crystal Report that I use but it is not widely available to everyone.

One area that was underdeveloped in our initial launch is a module for inmate programs. There is very minimal functionality in there now, and we always thought we would come back and enhance it and we just never did. Now that we are doing much more inmate program work and getting very active in the whole inmate reentry initiative, we are missing it and having to turn to outside third-party solutions to meet this need. I’d much rather have all of this functionality in our JMS.

Another philosophical issue that informed our team’s development discussions back in 2003 but still pops up from time to time is the discussion between automatic entries vs. manual entries. What do you want the computer to fill in automatically, and what do you want a human to fill in, even though the computer could do it if you told it to? For example, our housing unit floor log is called the *Daily Journal*. We want the housing unit officer to know what is going on in their housing unit and be accountable for everyone who is off the floor, so we thought it would be best if the housing unit officer was required to make a journal entry when an inmate left the floor for a visit, off to court, or something else. After a few years of doing that, we decided that it was tying the officer to the computer too much, and we’d rather free them up to be with the inmates, so we opted for an automatic entry. Our one concession was to leave the ending date/time entry up to the officer, so now the computer automatically logs the event and the starting time, but the officer is required to enter the end time in the computer by hand when the inmate returns to the housing unit. That was our compromise. That same automatic vs. manual discussion comes up from time to time in the context of many other modules, including classification.
APPENDIX 4

“MEASURING WHAT MATTERS”: KENT COUNTY ANNUAL STATISTICAL REPORT