

KEY ISSUES IN INTRODUCING INFORMATION TECHNOLOGY IN CRIMINAL JUSTICE: UNITED NATIONS ASSISTANCE TO MEMBER STATES

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1. Introduction

The previous section “Strategies for Information Management” discusses more generally issues of information management. This section focuses on topics dealing with the development and use of information technology in the criminal justice system, the criminal justice processes. Further, this section focuses on how the United Nations can be of assistance to Member States in introducing information technology in their criminal justice system.

This section is organised into four parts. First, there is a discussion of the basic rationale, opportunities, and challenges associated with the introduction or expansion of information technology in criminal justice. Second, guidelines for determining the need for computerisation will be presented. Third, an overview of the methods by which information technology is incorporated as an integral part of the justice system will be explored. Finally, priority issues for United Nations assistance to Member States will be discussed.

2. The Need for Information Technology in the Management of the Criminal Justice System

The criminal justice system runs on information. There is information about criminal incidents and information about potential defendants. There is information about people who are incarcerated either serving their sentences or awaiting trial. There is information about the court process including scheduled events and outcomes of past events. All of this information affects the way people are treated in the system and perhaps impacts the final outcome of any individual case. The quantity, quality, and timeliness of information are crucial to participants in the system. Information flows can also affect the way the entire system works. The efficiency of the system and the quality of justice dispensed are highly inter-related. Criminal justice administrators must be able to understand the flow of cases through their system.

2.1 Potential Reasons for Computerisation

A leading potential reason for the introduction of information technology in the administration of criminal justice is that computerisation can improve the quality and the time lines of information. Higher quality information and more timely information lead to improved decision-making. Further, higher quality information means also more information for policy analysis. Finally, higher quality information and more timely information lead to increased system efficiency of the criminal justice system; also an important issue in managing the criminal justice system.

Existing manual information systems make the availability of high quality, timely and accurate information increasingly unlikely.

Further, as society and the nature of crime grow more complex, the structure of the data required to properly administer the criminal justice system become more complex as well. These complexities soon overwhelm the ability of a manual system and even some more rudimentary computer-based systems. To properly investigate the more complex crimes found in today's society and to more efficiently allocate scarce criminal justice system resources, administrators require more information about criminal events and crimes. In addition, the way the information is used evolves. Instead of using simple statistics such as counts of events, administrators will more intensively process the data using statistical models. In addition, new more powerful graphical and spatial forms of analysis can be employed. These methodologies require the speed, access, and dimensionality of data that are not supported within manual systems.

Further, the need of criminal justice officers and organisations to share data increases as the scope and

complexity of crime increases. Much of the data captured in a typical criminal justice information system has utility to multiple organisations within the same government. This presents two problems. First, that data is captured multiple times with all the inherent data capture costs and the costs of redundancy. Second, it produces the potential for inconsistency since the data may be generated at different times and is potentially measured in different ways even though the underlying concept is the same. Both problems can create problems for criminal justice administrators.

A main assumption about the need to have criminal justice information is that of creating conditions for informed decision-making related to the pursuance of the goals of crime prevention and criminal justice. Planning, monitoring and evaluation should rest on comprehensive, reliable and timely information which must be purposefully produced, processed, analysed, utilised and made available for public utility. Criminal justice systems can not be managed effectively without knowledge and detailed monitoring of both the factors underlying the development of crime and the operation of the criminal justice agencies. Such monitoring is impossible in the absence of reliable and expedient information. Strategic planning, policy development and evaluation across the criminal justice system and operational running of the agencies require such information. This implies a need to develop, maintain and properly utilise crime and criminal justice information. An understanding of the factors underlying the development of crime and of criminal justice processes can not be expected to unfold simply from the production and distribution of statistical data, nor from efforts to promote information technology. While these are of enormous importance they have to be placed within a strategy of a credible and effective crime prevention and criminal justice policy based on community expectations, human and financial resources and the operational potential of the system.

2.2 Different Categories of Criminal Justice Information

Planning of criminal justice information systems should recognise the importance of four distinct types of systems. Time and extent of processing are two characteristics that separate the types of information:

- **Archival Information.** Information generally has historical value and is accumulated for later retrieval and analysis. Examples include:
 - fingerprint databases - to assist in the storage, retrieval and matching , of finger-prints,
 - criminal history records, to record previous criminal justice histories , in order to provide up-to-date information when prosecuting,
 - stolen motor vehicles registries - to assist in the storage, retrieval and matching of stolen vehicles,
 - criminal incident databases - to provide facilities for recording and collating loosely structured information, gathered in the course of investigations .
- **Tactical Information.** Through these systems relevant information is gathered from various sources, including archival systems, and analysed to support decision-making in specific situations. Typical uses for tactical information are:
 - pre-trial detention decisions,
 - sentencing decisions - to provide automated support to judges where sentencing guidelines are in operation,
 - investigations, and planning of police patrolling- -to assist with the efficient utilisation of law enforcement resources.
- **Case Management.** This information is designed to support the day to day operations in the criminal justice system such as criminal cases of prosecution and the courts. All aspects of case monitoring including:
 - case and defendant tracking - to track the progress of cases and to ensure that necessary actions are taken at the appropriate times,
 - court scheduling - to assist with the efficient utilisation of resources relating to the court and to other parties associated with the court cases,
 - generating court documents and notices- -to generate summons, records of sentences, fines and cost notices, court registers, etc.
- **Strategic Information.** Diverse types of information is gathered and analysed to detect trends and conditions in the criminal justice system. Strategic information can be used to:

- support planning of law enforcement strategies,
- resource allocation by the prosecutor and courts,
- the evaluation of existing programmes.

All of these different types of information should be considered when deciding how to use information technology in the criminal justice system. They are all interrelated to some degree. Case management systems feed information to criminal history systems. Aggregated case flow information is the life blood of statistical systems concerned with planning and policy development. In most cases the basic information will have many secondary uses and this needs to be taken into consideration when deciding why and what to computerize.

2.3 Potential Benefits of Computerisation in Criminal Justice

Below is a sampling of the potential benefits arising from the computerisation of criminal justice broken down into prosecution, courts and the correctional service.

2.3.1 Prosecution:

- Improved case output through the use of computer-based systems to assist with the recording of case details and to track progress on each case and to trigger reminders when actions fall due;
- Easier recording and collating of information pertaining to cases, and hence better use of clerical and professional resources;
- More rapid transfer of case details from law enforcement, through the use of computer communications systems;
- Positive identification of other prosecutions pending on individuals, through access to the case registers of other prosecutors and courts;
- Higher rate of successful prosecution through better analysis of case details, and assistance with decision making in the selection of charges, through the provision of rapid access to statutes and case law;
- Assistance with decision making in the selection of charges, through the ability to use computer systems to examine the effects of adopting combinations of charges and pleas;
- More efficient use of professional resources through better and more direct communication with case information held by courts and other agencies;
- More flexible and rapid access to summary statistics on case throughput, the work of prosecutors, facilitating policy decisions;
- Better use of staff resources, focusing on the interpretation of recorded facts, through the use of computers to assist with administration and information recording.

2.3.2 Courts

- More rapid transfer of case details from law enforcement or prosecutors, through the direct interchange of computer-based information;
- Improved case throughput through the use of computer-based systems to assist with the recording of case details and to track progress on each case and to trigger reminders when actions fall due;
- Higher case throughput resulting better information being available to court clerks and judges (to assist with managing the court hearings themselves);
- More rapid decision-making on individual cases as a result of improved access to statute and case law in computerised form, using key-word searches, enabling cases to be found and retrieved very much more rapidly and reliably than by manual methods;

- Fewer cases being dismissed on account of procedural errors in administration;
- Improved sentencing decisions through the availability at sentence, of accurate criminal history information, as well as of court-related information (such as the payment history on outstanding fines);
- More potential to involve clerical staff in the in-court work, for result processing during the hearing, document preparation and account initiation, providing more challenging and demanding duties;
- Better utilisation of court resources, through better case scheduling, resulting from analysis of case characteristics to predict hearing times;
- Easier scheduling of adjournments, through provision of access to a central computer-based court diary, reducing the change of double-booking, and enabling better use to be made of court resources; in some cases these are linked to the computer-based diaries of lawyers and police witnesses;
- Easier management of accounts associated with payment of fines, fees, costs, fixed penalties, etc., leading to more prompt enforcement of penalties and hence improved cash flow in fines and fees payments;
- Better presentation of case papers, facilitating the reading and assimilation of case details;
- Easier committal of cases to a higher court, through the automatic transfer of case details and automated scheduling of case hearings;
- Ability to monitor the throughput and sentencing patterns of individual judges, and to allocate cases between judges to take account of experience and practice;
- Easier collation of information on offence and sentencing patterns, to assist with formulation of sentencing guidelines.

2.3.3 Correctional Administration:

- Less requirement for clerical staff for routine clerical duties, associated with maintaining inmate records, door lists, inmate accounts, etc.;
- Better operation of prison regimes, through the availability of centrally-held information on the individual regimes for individual inmates;
- More efficient (lower running costs and higher productivity) operation of prison workshops and related facilities, through the use of computer-based work scheduling systems, product design systems and stock control systems;
- More efficient use of resources in transferring and escorting prisoners between courts and prisons, and between prison establishments, through the use of computer-based transportation planning systems;
- Improved security, through the use of logging systems to record the location and movements of inmates within and between prison establishments, as well as the use of computer-based recording systems to note prisoner associations, psychological information and changes in behavioural patterns;
- Improved monitoring of the use of resources, regime management, statutory requirements, etc., through the collation and aggregation of inmate records held at individual establishments;
- Easier production of statistics for publication and as basis for policy formulation;
- Better prediction of future prison populations, to guide the prison building programmer.

2.3.4 Management of Criminal Justice Department at the Ministerial Level:

- Easier access to more accurate, more consistent, and more complete statistics on the operation of the criminal justice system as a whole, enabling the operation of the overall criminal justice system to be monitored and policy decisions concerning the relative resourcing of components of the systems to be made more readily.
- Better prediction of the effects of changes in criminal policy or statute, through the use of computer-based simulation models based on the statistical information gathered through automated systems in individual agencies.

3. The Costs of Computerisation in Criminal Justice.

Against the considerable benefits which computerisation can generate in criminal justice must be weighed the potentially substantial costs of implementing computer systems. Any computer system of any significance is likely to require considerable investment: certainly of capital, to purchase and install the computer hardware, but also and more importantly, of staff resources, both to design and develop the required software and to introduce the new methods of working to the organisation, and the continuing costs of running and operating the system once installed.

There are no hard and fast rules for estimating how the balance of costs will appear in any particular system. Though the following is a fairly typical breakdown of resource utilisation during the introduction of computing:

I. Hardware and related capital costs	30%
I. Software development or purchase costs	20%
I. Staff training, data take-on, pilot running, prior to full operation	20%
I. Preparing for and managing the organisational changes arising from computerisation	20%
I. Project planning and management	10%

The smaller the system, the higher the proportional capital cost of the equipment (because software is usually less expensive for smaller systems, and the impact on the organisation is generally less).

4. Decision-Cycle: Costs and Benefits

The potential benefits which computerisation can generate in criminal justice must be weighed against the potentially substantial costs of implementing computer systems. Although computer systems are developed for many different purposes, their benefits generally fall into the following categories:

- Cost savings: the computer system may enable routine clerical tasks to be undertaken more rapidly or with fewer staff;
- Quality enhancements: the computer system may enable tasks which have hitherto been done manually to be performed better, perhaps more accurately or in a more timely fashion;
- Task enhancement: the computer system may enable tasks to be undertaken which previously were not, perhaps because staff never had the time to do them, or because the computer can bring together the necessary information to enable them to be done.

Most computer systems will generate, to varying degrees, all three types of benefit. For example, a computerised case tracking system introduced to the Public Prosecutor's Office or to a Court may:

- Increase the productivity of clerical staff by reducing the need for information to be duplicated in different forms and registers;

- Reduce the likelihood of errors of omission, by providing regular reminders to staff about actions due on each case;
- Improve the quality of service by printing letters of acknowledgment in relation to correspondence on each case.

In each example of computerisation, however, the crucial consideration is whether the total benefits expected from the use of the computerised system will outweigh the costs of its implementation. This question is usually answered in the form of a cost-benefit analysis, which sets out, on the one hand, the capital and running costs of the system over its expected lifetime (usually about 7 years for larger computer systems, 3 to 5 years on smaller micro-computer-based systems), and on the other the expected benefit from it.

In practice, a computer system can be regarded as beneficial only if the overall gains outweigh the total costs, recognising that in many cases neither the benefits nor the costs can be fully quantified. Success in the computerisation of criminal justice is measured by the extent to which it achieves its specific objectives, generating the benefits expected of it, but at a cost which is acceptable.

The early computer applications in criminal justice administration made a relatively insignificant impact on the operation of criminal justice as a whole. Nevertheless they involved considerable investments of financial and staff resources. These early applications concentrated on computerising those parts of the criminal justice system which were similar to work in the general commercial world and for which computer solutions had already been developed. The first computer systems for the police were database systems for recording criminal histories, computerisation of court administration involved accounting systems handling fine and fee payments, and database systems for recording details of the cases waiting to be heard. In prisons, the systems in use were usually statistical in nature, for keeping track of the numbers of inmates.

These early applications usually addressed local needs rather than the overall or fundamental objectives of criminal justice. For example, although computers have reduced some of the administrative paperwork associated with case handling by courts, until relatively recently few have assisted significantly in the conduct of trials, the output of cases, or in the judicial decision-making process. Similarly, in prisons, although computers provided an audit function for keeping track of the numbers of inmates in custody, they did not assist significantly with overcoming the basic problems of prison overcrowding or regime management.

Great care is needed, therefore, to computerize in a manner which yields real benefits, both in relation to the overall task and objectives of the criminal justice system, and of its agencies, and to the level of investment in the computer system.

5. Introducing Information Technology into the Criminal Justice System

Listed below are a few of the lessons organisations have learned during their own experiences with information technology in the criminal justice system:

- Focus on the problems that needed solving;
- Choose the appropriate scope and scale to solve the problem;
- Need for involvement of management at the highest level;
- Identify potential projects with low risk and high pay-back.

Rather than focus on the problems that needed solving, some organisations have just automated their existing manual systems. In many if not most cases, this approach may magnify rather than solve the problem. In other situations, managers with great vision have correctly identified the problems, but did not limit or expand the scope and scale of the project to something that was both manageable and had sufficient size and scope to solve the problems being experienced. To do so, it is important that the appropriate level of management be involved to solve the policy, budgetary, and political problems that will undoubtedly arise. Finally, it is important that policy-makers understand that the effective implementation of information technology will probably require changes in organisational structure and may lead to flattening of the organisation as the volume, speed, and complexity of information changes.

5.1 Building a Strong Foundation

To address some of these issues it will usually be necessary to carry out a scoping study or needs assessment. The goals of that study are:

- To determine whether there is an appropriate need for computerisation within the organisation being studied;
- If there is a need, to decide on the scope or extent of computerisation;
- To identify the organisation's resources and commitment;
- To identify potential projects with low risks and high pay-back.

5.2 Needs Assessment

The most crucial question that must be answered by any needs assessment is whether information technology can be of any help in solving the problems the organisation is experiencing. Computerisation is a means not an end. Even if information technology can help solve all or part of the problem, those in leadership positions must be able to establish a project with the appropriate scope and scale. That leadership must also have the resources and commitment necessary to successfully complete the project. Management is very important to this process and the needs assessment must establish its capacity to play this role. Finally, the projects chosen should, at least in the beginning, have the characteristic of low risk and high reward. Success brings confidence, resources, and credibility all of which are crucial to information technology projects.

5.2.1 Requirements for a Needs Assessment

The needs assessment has two prerequisites. The first requirement is that the organisation which is experiencing the problems will positively participate in the assessment. Those conducting the research will depend heavily on the staff of the organisation to draw a complete picture of the problems and the relevance of information technology to the solution. The second prerequisite concerns the talents of those conducting the assessment. They must certainly have expertise in problem solving using information technology but they must also understand the nature of organisations, their culture, and the relationship between information flows, the organisation's business, and the organisation's current structure. Demonstrated experience in working in all of these areas is extremely important.

5.2.2 Is there a Role for Information Technology?

The first goal of the needs assessment expressed earlier in this discussion is to determine if there is a role for information technology. To answer that question three objectives must be met:

1. Identify the problems being experienced;
2. Determine if computerisation is the right answer;
3. Decide if low cost non-technological solutions are appropriate.

In order to meet the first objective, the needs assessment must clearly identify the problems being experienced by the organisation. Some potential problems were summarised earlier. Timeliness and accuracy of the information coupled with the need to expand the type of information collected are problems which are typically experienced by manual systems. On the other hand, the source of the problem may be a lack of inter/intra agency co-operation or organisational structure which inhibits the flow of information whether manual or automated. Correctly identifying the problem and its source is absolutely key to deciding if an information technology solution is warranted. There will also be cases in which the addition of an index card system coupled with a manual statistical system supplementing a filing system is sufficient to solve the problems found. It is important to know if non-computerisation approaches will yield significant benefits.

5.2.3 Proper Scope and Scale

Setting of the proper scope and scale of a project is extraordinarily important:

- The boundaries of the problem and the solution must coincide;
- Limiting the scope may limit the benefits;
- Expanding the scope may increase the costs beyond the benefits;
- Centralised, distributed, hybrid, and integrated systems are considered.

Here the expert needs to consider the role the organisations management will play. Senior management can make the difference between success and failure in any computerisation project.

It is no easy task for an outside person to assess the ability of management to play these roles in the project but it is absolutely essential that it be done. A needs assessment that does not attempt to measure the capacity and receptivity of the various communities of interest from management to users has not accomplished its goal.

5.2.4 High Reward, Low-Risk Projects

The final goal of the needs assessment is to identify some low risk projects with high rewards and a high probability of success. This is particularly important for organisations that are new to information technology projects. The reasons for this strategy are summarised:

- Think big but start small;
- Success brings respect and cooperations;
- Resources well sent yield other resources;
- Organisational fear will be reduced.

5.2.5 Results of Failure to Explore Needs

A failure to explore needs very often results in project attempts leading to unrealistic expectations which cannot be met; or to projects which, when implemented, do not meet the requirements of the user; or to projects with a degree of complexity in the system design which exceeds the capabilities of technical and user staff.

The planners may also underestimate the complexity and specialised nature of criminal justice, and assume that general commercial software packages can be applied to criminal justice work. This is particularly a mistake made by private sector consultants.

A failure to explore needs may further lead to attempts to computerise without a clear overall strategy, either at agency or overall criminal justice system levels. This may well lead to a loss of opportunities for integration of information sharing. It may also lead to a failure to identify the relationship between operational computing systems and statistical systems, thus leading to unnecessary duplication of information systems and effort.

Finally, the planners may overestimate the capabilities and suitability of leading-edge technology to resolve the problems of criminal justice. This may lead to expensive and inappropriate systems.

5.3 Conducting a Needs Assessment

The needs assessment for computerisation in the field of the administration of criminal justice should be based on an open dialogue between experts in computerisation in criminal justice and the future participants in the system. These participants include the policy-makers, the criminal justice administrators and the end-users of the system. The study should be conducted within the immediate environment where the system is to be deployed, in order to place the needs in context.

All too often, a needs assessment is based on a projection by the computerisation experts of their own views of the user's needs. The expert(s) in charge of the study must guard against substituting their own views for those of the participants. The participants, on the other hand, must be open-minded so that new ideas can be raised and discussed. As the participants learn more about what is possible, the quality of the dialogue will change and become more productive. This learning curve is one of the issues that consultants should be aware of and cultivate.

Needs assessment is done with the participants and not to them. For that reason the selection of the expert(s) who will conduct the study should be evaluated very carefully. This is of particular importance when the expert is not from within the environment where the system is to be deployed and may even be from another country. The best selection is probably the expert who has successfully conducted a needs assessment in an environment similar to that of the participants.

5.4 Development of Overall Strategy

Once the needs assessment has determined the purpose of computerisation, and has indicated that computerisation should go forward, the next issue in the needs assessment process is the development of an overall strategy. This strategy serves a variety of purposes. First, it should clearly identify the goals and objectives of the organisation as a whole. Second, it should define the information needs of the organisation as a whole and for the component parts of the organisation. Third, the strategy should identify the impact of information on the way the organisation works, in order to determine those factors that can critically affect the achievement of the objectives. Finally, it should clearly specify how computerisation can help the organisation to improve the information flows.

In developing the strategy, consideration should be given to the merits of proceeding with a system of integrated justice in contrast to a series of parallel, justice sector-specific (police, courts, corrections, etc.) systems. In addition, the costs and benefits of building a custom-designed system, in contrast to transferring technology from elsewhere, or tailoring packaged systems, should be examined.

Since the organisation, its objectives, and even perhaps its structure is likely to be affected, top management must play a significant role in developing the strategy. Since many decisions will require the participation of many parts of the organisation, computerisation can not be left to the middle manager. Middle management will however play an important role in the planning and implementation stage of projects that are within their span of control. Finally, top management must make budgetary decisions, decide which projects should be carried out, and assign the authority for carrying out projects.

There are many reference books, manuals and methodologies for developing a computerisation strategy. At its most basic, however, a needs assessment and a strategic plan are simply a coherent study which set out the aspects of an organisation's work and identify the functions which are to be computerised.

5.5 Standard Needs Assessment and Strategic Plan Activities

Standard needs assessment and strategic plan activities are:

- Examining the existing organisation;
- Examining the future organisation;
- Examining the possible scenarios which can lead to the future organisation.

5.5.1 Examining the Existing Organisation

The importance of clearly delineating and analysing the existing organisation can not be overemphasised. An incomplete understanding of the existing organisation may mislead the study effort. A clearly stated and agreed understanding of the following elements is the best start of the strategy planning effort

- The aims and objectives of the existing organisation;
- The structure of the organisation, both functionally, and organisationally (do the two match);

- The present information patterns;
- The particular strength of the organisation;
- The particular weaknesses of the organisation;
- The constraints acting upon the organisation.

5.5.2 Examining the Future Organisation

The purpose of examining the future organisation is to design a model of the future organisation, in terms of:

- The structure of the future organisation, both functionally and organisationally;
- The opportunities and role of information systems.

The analysis of the future organisation provides the opportunity to explore new ways of better meeting the organisation's aims and objectives. Information systems have the potential to change the way in which the organisation's business is conducted. So, thought should be given to the issues of how the structure of the organisation can be improved, how the effectiveness of management can be increased, how procedures can be streamlined. Known and possible changes to the policies of the organisation also need to be addressed.

It is important to recognise that strategic thinking on the future role of information systems in the future organisation should not initially be constrained by the present status of information supply. Consideration should be given to create an entirely separate concept for the future information systems, one which is not merely a logical extension of the existing system.

This aspect of strategic thinking may require the use of special techniques for modeling information, data and processes. There are methodologies that can provide assistance. There is, however, no single recommended approach. The prime requirement is for the appropriate skills and experience.

5.5.3 Examining the Scenario towards the Future Organisation

The third step of strategic thinking is to develop a set of scenarios how the future organisation is to be achieved. A scenario is an outline or synopsis of a process showing its development, and giving all essentials for implementing the process.

The transition from the existing organisation to another attended with the introduction of new means of information must be affordable, achievable and manageable. Mostly there will be constraints acting upon the organisation and its environment. Constraints represent inter-alia the limits on the resources, such as finances, (skills of) staff. Constraints refer also to legislation and procedures in criminal justice which may set limitations and rules for the design of the new organisation and the new means of information.

Such and other factors mean that there is no one way forward. There are options and combinations of options, which are to be built into a set of scenarios. Each scenario should contain an analysis of the processes and steps necessary to achieve the future organisation, the projected costs in terms of finances and manpower, a time schedule and an analysis of the risks inherent in the scenario.

This step of strategic thinking requires considerable intellectual capacity to develop and analyse the alternative scenarios.

5.5.4 Needs Assessment and Strategy Planning Report

At the end of the study the Needs Assessment and Strategy should be submitted, written in plain language rather than in technical terms. It should be targeted at top and senior management. An executive summary should give all information required for decision-making. The statement could have the following outline:

- I. executive summary;
- II. introduction: Purpose of the study and organisational scope, including a concise statement of the problem under consideration;
- III. existing organisation and its environment:
 - overview of the existing organisation and its environment; and
 - analysis of the existing organisation;
- IV. future organisation direction: aims, objectives, structure, opportunities and role of information systems, imperatives and constraints;
- V. set of scenarios for the way forward: time scales, resourcing implications (finances and manpower), organisational and managerial implications, resulting priorities for different scenarios.

It is of the utmost importance that in the presentation of the statement all important features are covered in such a way as to guarantee that the reader is adequately informed.

6. Options for System Acquisition

The 1990s are and will continue to be a period of enormous opportunity and challenge for criminal justice administrators. Technological change in computers, software, and data communications will continue at the same rate or, more likely, at a faster rate than we have observed in recent years. Also, we can expect to see falling prices or at least, similar prices for products with greater capabilities.

As technology changes, the alternatives available for building information systems increase. In the past, criminal justice information systems resided, almost exclusively, on centralised computers with many terminals attached through telephone lines. All of the work was processed on the central system rather than at the user's site.

Today, the set of choices is far greater. Although the centralised system is still an option, other choices are more attractive in some situations. These include systems written for large personal computers, users connected by a local area network to a file server, or perhaps users connected by terminals to a local mini-computer that is in turn linked with a remote centralised system. While these are only a few of the possible alternatives, clearly the trend is to move the control and processing to the user while allowing the databases to reside almost anywhere.

Understanding the array of possibilities for developing information systems is difficult even in the developed world. For the developing world the challenges are even greater. The main ways to acquire systems are off-the-shelf solutions; technology transfer; customisation; and custom system.

Locating and obtaining an existing system is the least expensive way to automate¹. The likely sources of software are off-the-shelf solutions provided by commercial vendors or technology transfer from public domain sources, or from an agency similar to your own in another location. If you have a priority ranking of the functions that are needed, it is straightforward to determine the degree that the existing candidate systems (and there will usually be more than one) will satisfy your needs.

It is unlikely that any existing system will meet all your needs. If you can meet eighty per cent of your goals with an existing system, it will rarely be worth the time or cost to build a new one to gain the last twenty per cent.

Finally, it is important to see any existing system in operating before any decision is taken. Promotional literature about systems and glowing recommendations by managers who have purchased these systems are frequently tempered by talking to those who use the system on a daily basis.

¹ See "HEUNI Directory of Criminal Justice Information Systems", Heuni Publication Series No. 25 (R. Scherpenzeel, ed) Helsinki, Academic Bookstore, 1994, and Monsey, N.Y., Criminal Justice Press, 1994.

Modifying an existing system, has merit if an existing system is almost acceptable. If the system is offered commercially, the vendor may be interested in adding the functions that you need at an additional cost. It will usually be expensive since you will have to pay all costs for the changes but still far less costly than a ground up development. If the changes you require are widely applicable and will help the vendor sell additional copies of the software, a vendor may assume some of the costs.

If the functions are added by a vendor other than the one who developed the software or by your own staff, there are additional risks to consider. The resulting system may be incompatible with future upgrades to the commercial product and/or the vendor may also choose not to support your version of the software if another company or your organisation modifies it. Still, it is an option worth considering.

The final and most expensive option is to develop a new system either in-house or through an outside contractor. There are circumstances where this is the only option. For example, there may be critical functions that are needed in your organisation that are not found in existing software. There are other cases where the software does exist but will not run on your computer hardware or under your operating system. Frequently, a vendor will propose to make the changes necessary to move it to your computing environment. This can be a risky venture. There is no guarantee that the system will perform as it does in its native environment. In many cases, it may be cost effective and preferable to buy the recommended computer as well as the software. This is usually possible only if the application is isolated. That is, the application does not have to interact with other existing software or databases. It would not be a good solution if the application requires access to the database residing on the existing computer. Finally, original development may be the only option, if the existing system does fit current computing environment.

Computing and computers can be seductive. How many times have we seen a demonstration of some technology only to learn after purchase that it doesn't fit in our situation? We have made companies and consultants wealthy with our lack of foresight and planning. While planning can be tedious it is more likely to produce a system that is right for your organisation. There will be many cases where the result of planning is to suggest the purchase of an existing commercial solution. In other situations, a total systems development process may be indicated. In still other cases, a mixed solution may be the right one.

7. The Need for International Cooperation and Assistance

International cooperation carries a significant potential in assisting the countries in transition and developing countries in solving their problems in the introduction of information technology and in developing, analysing and using criminal justice information. First, these countries can learn from the successes and failures of those countries that have had the opportunity to focus on the upgrading of the criminal justice system by means of the introduction of computerisation in the criminal justice system, in responding to these problems, despite the differences that may exist in the cultural, economic, political and social background. Second, international cooperation provides a learning experience to both parties, the provider and the recipient of the assistance. Third, work in this field may help, for example, neighbouring countries in preventing and controlling crime that could otherwise cross national borders, or facilitate exchange of information for coordinated activities in preventing and combating transnational organised crime. Finally, in many countries the problems in this field are so vast that they exceed the capacity of the government to provide an effective response.

International cooperation involves a number of different actors. These include the United Nations, the Council of Europe, the European Union, inter-governmental and non-governmental organisations, individual governments, governmental agencies, national and even local professional and scientific associations, academic institutions, private enterprises and even individuals.

7.1 United Nations Assistance to Member States

The United Nations, and in particular the United Nations Crime Prevention and Criminal Justice Programme Network have been involved in rendering assistance in the field of computerisation of criminal justice operations and the development, analysis and policy use of criminal justice information.

As many countries in transition and developing countries begin to consider the introduction of computerisation in the various aspects of their criminal justice system and the furtherance of the development of criminal justice information for monitoring and policy purposes within the next ten years, there is an increasing need

for international assistance in the exchange of expertise, information and experiences. These countries can benefit from sharing knowledge and learning from the experience of countries that have proceeded further in computerisation, especially in such areas as identifying factors that are critical to planning and managing the development and implementation of computerised systems, and monitoring and managing criminal justice information.

The United Nations Crime Prevention and Criminal Justice Programme Network clearly can play a leading role in providing assistance to Member States that are embarking on the introduction of computerisation into their criminal justice system and furthering the efforts towards developing and monitoring criminal justice information.

A careful consideration of the nature and extent of activities that have been undertaken in the past few years suggests that the technical cooperation and assistance programme of the United Nations Crime Prevention and Criminal Justice Programme Network has had a successful and promising start. From the activities being carried out a series of priority issues for international cooperation and assistance for the next years have emerged.

The first priority issue is strengthening of the technical cooperation infrastructure of the United Nations Crime Prevention and Criminal Justice Programme.

In order to strengthen the technical cooperation infrastructure, the Economic and Social Council, on the recommendation of the Commission on Crime Prevention and Criminal Justice in its fifth session, Vienna, 21 - 31 May 1966, in its resolution 1996/11 of 23 July 1996 adopted an "Action Plan on International Cooperation and Assistance with regard to Statistical and Computerised Application in the Management of the Criminal Justice System".

7.1.1 Advisory Steering Committee

The action plan envisages that an Advisory Steering Committee will be set up, administered by the Secretary-General in close coordination with the institutes comprising the United Nations Crime Prevention and Criminal Justice Programme Network, which would be responsible for reviewing and assessing the technical cooperation and assistance programme, and giving advice to the Secretary-General on the activities of the programme both as to further policy development as well as to operational activities, as well as informing Member States of funds and services available from various donors in the governmental, intergovernmental, non-governmental and private sectors, and informing such donors of the needs of Member States for assistance.

Such a steering committee would seek to maximise the utility of existing resources in order to reduce duplication and even competition for scarce funds. In a period of increasing requests for assistance and scarce financial resources, it is of utmost importance to promote efficient cooperation within the United Nations Crime Prevention and Criminal Justice Programme, on the one hand, and with donor and recipient entities, on the other. Such coordination would ensure high quality in the delivery of expert advice and operational activities, and rational pooling together of existing resources and capacities.

7.1.2 Permanent Cadre of Experts

The action plan also envisages the establishment of a permanent cadre of experts in charge of the practical implementation of technical cooperation activities (see pg. 12 Varna presentation an inhoud resolutie zelf).

7.1.3 Roster of Experts, Organisations and Resource Materials

Additional components of an infrastructure for international cooperation include the development and maintenance of an updated roster of individuals and organisations, as well as the establishment of resource materials on cooperation activities undertaken by the United Nations and other international agencies. Several important activities have been accomplished in this direction. The European Institute for Crime Prevention and Control (HEUNI) has launched a clearing house project on technical cooperation activities in Central and Eastern Europe. Further, reference is made to the Directory of Computerised Criminal Justice Information Systems, published

by HEUNI in 1995². The Directory is a valuable reference for Member States to quickly determine which countries in their region or elsewhere have developed a system that may address their own needs. It is intended that this Directory will be maintained on a continuing basis. A second edition is scheduled for publication in the autumn of 1997. Publication of the second edition on Internet as well is under consideration.

7.1.4 Needs Assessments

An important component element of the technical cooperation of the action plan is expert advice to Member States in the initial phase of introducing computerisation in the criminal justice administration in carrying out an assessment of needs for computerisation. The European Institute for Crime Prevention and Control (HEUNI) and the United Nations Interregional Crime and Justice Research Institute (UNICRI), in particular, has developed models for needs assessment tailored to the needs of countries in transition and developing countries, i.e. for determining the type of assistance that could be provided to national projects on the computerisation of criminal justice management.

7.1.5 Training and Education

A second major component element of the technical cooperation programme is training. Education and training is a major element in the introduction of computerisation into the criminal justice system and the development and use of criminal justice information.

Here, too, the United Nations Crime Prevention and Criminal Justice Programme Network can play a leading role in providing such training. The European Institute for Crime Prevention and Control (HEUNI) has developed a design for training seminars tailored to senior criminal justice officials, to acquaint them with the process of computerisation, and with their role in this process. The United Nations Interregional Crime and Justice Research Institute (UNICRI) has gained experience in training in research methodology and development, management and policy uses of criminal justice information, both the official statistics and those derived from victimisation surveys. The United Nations Asia and Far East Institute for the Prevention of Crime and the Treatment of Offenders (UNAFEI) is to be commended for its ongoing commitment to organising workshops on the introduction of computerisation in the administration of criminal justice. The experience gained by HEUNI, UNICRI and UNAFEI in developing and conducting training seminars might serve as a solid base for further work.

7.2 Conclusions

One of the most important challenges for the United Nations Crime Prevention and Criminal Justice Programme Network technical cooperation activities in the field of computerisation and development of criminal justice information is to build and maintain the institutional capacity of the programme to respond to requests from Member States for assistance in this field.

Future activities require more funding, more planning and more coordination within the United Nations Crime Prevention and Criminal Justice Programme itself, as well as cooperation with other United Nations entities, intergovernmental, governmental and non-governmental organisations and the private sector.

Suggestions as to the components of the infrastructure of the Crime Prevention and Criminal Justice Programme in the area of criminal justice information and computerisation are directed towards increasing the programme capacity for effectively and efficiently planning, coordinating, funding, executing and evaluating. Only then a systematic structure of international cooperation and assistance to Member States become a reality.

² HEUNI Publication Series No. 27 (R. Scherpenzeel, ed.), Helsinki: Academic Bookstore, 1995, and Monsey, N.Y.: Criminal Justice Press, 1995