U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
PB-290 695

Decision-Related Research on Technology Utilized by Local Government: Court Scheduling, Phase II Final Report. Volume I: Methodology, Accomplishments, Findings and Conclusions

Institute for Law and Social Research, Washington, DC

Prepared for

National Science Foundation, Washington, DC

Dec 78

DECISION-RELATED RESEARCH ON TECHNOLOGY UTILIZED BY LOCAL GOVERNMENT: COURT SCHEDULING

PHASE II FINAL REPORT

VOLUME I:

METHODOLOGY, ACCOMPLISHMENTS, FINDINGS AND CONCLUSIONS

DECEMBER 1978

Prepared by

INSLAW
Institute for Law and Social Research
1125 15th St., N.W., Washington, D.C. 20005

ASRA INFORMATION RESOURCES
NATIONAL SCIENCE FOUNDATION

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. NSF/RA-780457	2.	3. Recipient's Accession No. PB290695
4. Title and Subtitle: Decision-Related Research on Technology Utilized by Local Government: Court Scheduling, Phase II Final Report, Volume I: Methodology, Accomplishments, Findings and Conclusions			5. Report Date: December 1978 6.
7. Author(s)			8. Performing Organization Rept. No.
9. Performing Organization Name and Address: INSLAW, Institute for Law and Social Research, 1125 Fifteenth Street, N.W., Washington, D.C. 20005			10. Project/Task/Work Unit No. 11. Contract(C) or Grant(G) No. (C) (G) APR7420530
12. Sponsoring Organization Name and Address: Applied Science and Research Applications (ASRA), National Science Foundation, 1800 G Street, N.W., Washington, D.C. 20550			13. Type of Report & Period Covered 14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

Volume I of the court scheduling study, phase II, includes an overview of the entire project (including phase I) and task descriptions. The objective of phase II of the project is the development of transferable court scheduling packages with documentation relevant to administrators of courts, and to systems personnel. This was achieved by (1) laying the groundwork for the transfer of scheduling packages through continued development of aspects of the court scheduling model; (2) implementing some of the model's components (the scheduling packages) in pilot jurisdictions; and (3) documenting the transfer effort and disseminating the information. Tasks 1-4 generally are concerned with the management, calendaring, and data support components of the court-scheduling system, while tasks 5-7 covered the transfer of the components to selected pilot sites, and the preparation of appropriate document action for dissemination to other courts in the hopes that they would be encouraged to improve their respective court scheduling systems.

17. Document Analysis a. Descriptors

Local government
Courts of law
Legal services
Scheduling
Models
Planning

b. Identifiers/Open-Ended Terms

Court scheduling

c. COSATI Field/Group

18. Availability Statement: NTIS	19. Security Class (This Report)	21. No. of Pages: 25
	20. Security Class (This Page)	22. Price: A04-A01

(See ANSI-Z39.18) See Instructions on Reverse

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

DECISION-RELATED RESEARCH ON TECHNOLOGY UTILIZED BY LOCAL GOVERNMENT: COURT SCHEDULING

PHASE II FINAL REPORT

Volume I

Methodology, Accomplishments, Findings and Conclusions

December 1978

This material is based upon research supported by the National Science Foundation under Grant Number APR74-20530.

Any opinions, findings and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the National Science Foundation.

ia

PREFACE

This report was prepared by the Institute for Law and Social Research (INSLAW) to document the results of the second and final phase of a study entitled "Decision Related Research on Technology Utilized by Local Government: Court Scheduling." The research and preparation of the report were supported by the National Science Foundation's Division of Advanced Productivity Research and Technology, under Grant APR74-20530.

The first phase of our research consisted of a survey of the "state-of-the-art" of court scheduling, development of a comprehensive scheduling model, and identification of areas in need of further research and development.

In the second phase we sought to fill some of the identified void through research, development and technology transfer. The results of those efforts are described in this three-volume Final Report:

Volume I - Methodology, Accomplishments, Findings and Conclusions.

Includes an overview of the entire project as well as individual Phase II task descriptions.

Volume II - Research Papers.

Five papers describing findings and recommendations associated with the management component of the scheduling model. The papers address the value of greater predictability in scheduling, issues in scheduling management, systems analysis in a court, and a case study.

Volume III - Scheduling Software Description.

Documents the computer software developed as the data support component of the model scheduling system. Detailed program documentation is included along with a description of their interface with the host-file-maintenance system, Minicomputer PROMIS.

ACKNOWLEDGMENTS

This project spanned four years and, upon reflection, a large number of formal and informal contributors.

Our Advisory Board was quite active during Phase I in providing direction and responding to questions, ideas, and proposals. During Phase II, their review and support were more frequently on an individual basis as we worked with them or their court.

The Advisory Board consisted of Alvin Ash, Law Enforcement Assistance Administration, Washington, DC; S. Allen Friedman, Minneapolis, MN; L.M. Jacobs, Court Administrator, Wayne County Circuit Court, Detroit, MI; The Honorable Tim Murphy, Judge, Superior Court for the District of Columbia, Washington, DC; Larry P. Polansky, Deputy State Court Administrator, Philadelphia, PA; Albert Szal, Court Administrator, Superior Court, San Diego, CA; The Honorable James B. Zimmermann, Judge, Criminal District Court, Dallas, TX; and Ronald Witkowiak, District Court Administrator, Milwaukee, WI.

Additional contributions were made by Maureen Solomon, Court Management Consultant, Denver, CO; G. Thomas Munsterman, Bird Engineering, Vienna, VA; Sidney Brounstein, Silver Spring, MD; and Gary Oleson, Fairfax, VA.

Funding support, that sine qua non, was provided by the National Science Foundation. The Foundation's program manager, Art Konopka, provided additional support and insights into judicial administration. Project monitoring and evaluation were conducted by Philip Cooley and Quentin Lindsey of Research Triangle Institute.

Responsibility for the research and its products rests with INSLAW and the following members of its staff: Daniel Church, Joyce Deroy, William Falcon, William Hamilton, Jack Hausner, Etta Johnson, Chino Kearney, Frank Leahy, Dean Merrill, John Ours, Jean Shirhall, Michael Seidel, and Christine Worth.

Thomas F. Lane
Principal Investigator

TABLE OF CONTENTS

BACKGROUND

I

PHASE II IN PERSPECTIVE

Court scheduling is important to local governments if for no other reason than it costs money, and inefficient or ineffective scheduling costs more money, not to mention the social costs inflicted upon litigants and witnesses in the form of unwarranted delays and other frustrations that serve to lower the quality of justice.

The scheduling process involves planning and taking necessary steps so that the assembly of all participants in cases to be heard will occur at the proper times and places, given the resources and objectives of the court, the availability of the participants, and the requirements of due process.

The utilization pattern of all the court's resources--personnel, equipment, space--is determined by the scheduling system. If a resource is underutilized or is used for an inappropriate purpose (such as when judges sit idle or must perform the work of clerks and schedulers), the court's costs rise while effectiveness may decline.

Many factors impinge on the ability of courts to streamline the scheduling process--adherence to tradition, requirements of due process, the nature of adversary proceedings, and the like. Such factors may convince the scheduler that the changes needed for greater efficiency and effectiveness are beyond reach. However, Phase I research on court scheduling

technology led not only to the conclusion that beneficial change can occur but also to the view that efficiency and effectiveness should be improved.

Highlights of Phase I

A brief review of some of the salient findings and recommendations flowing from Phase I of the project will provide background necessary for a better understanding of the logic and rationale underlying Phase II tasks.

Of an estimated 17,000 courts in the nation--of which approximately 6,000 have two or more judges and 575, four or more--the Institute for Law and Social Research (INSLAW) obtained, during Phase I, information concerning 800 courts from various surveys, reference works, and its own investigations. Of the 800 courts reviewed, 200 were reported as having access to computers. But very few courts were found that operated automated systems to actually schedule cases, although 39 jurisdictions were reported in the process of developing that capacity.

A general conclusion of Phase I research is that court scheduling has made few advances despite the advent of computers and court administrators. Devoid of a conceptual framework of its own and without a role in the larger framework called court management, scheduling has been usually regarded as merely a clerical function.

Instead of modernizing scheduling, courts were found to have often employed questionable or inefficient practices to solve problems of congested dockets. For example, they have frequently resorted to fragmenting the calendar into manageable but inefficient pieces (e.g., separate calendars for motions, civil cases, felonies, misdemeanors, and traffic cases). Or, in response to crowded jails, they have speeded the processing of detained criminal defendants, which has often resulted in a large build-up of civil cases awaiting adjudication.

During INSLAW's Phase I visits to 30 carefully selected courts and its interviews with court personnel at all levels, interjurisdictional similarities in scheduling were noted--either in terms of functions that were performed or in terms of those that should have been performed. This permitted the development of a generally applicable blueprint, or model, of an efficient and effective court scheduling system (Exhibit I), which consists of three principal components:

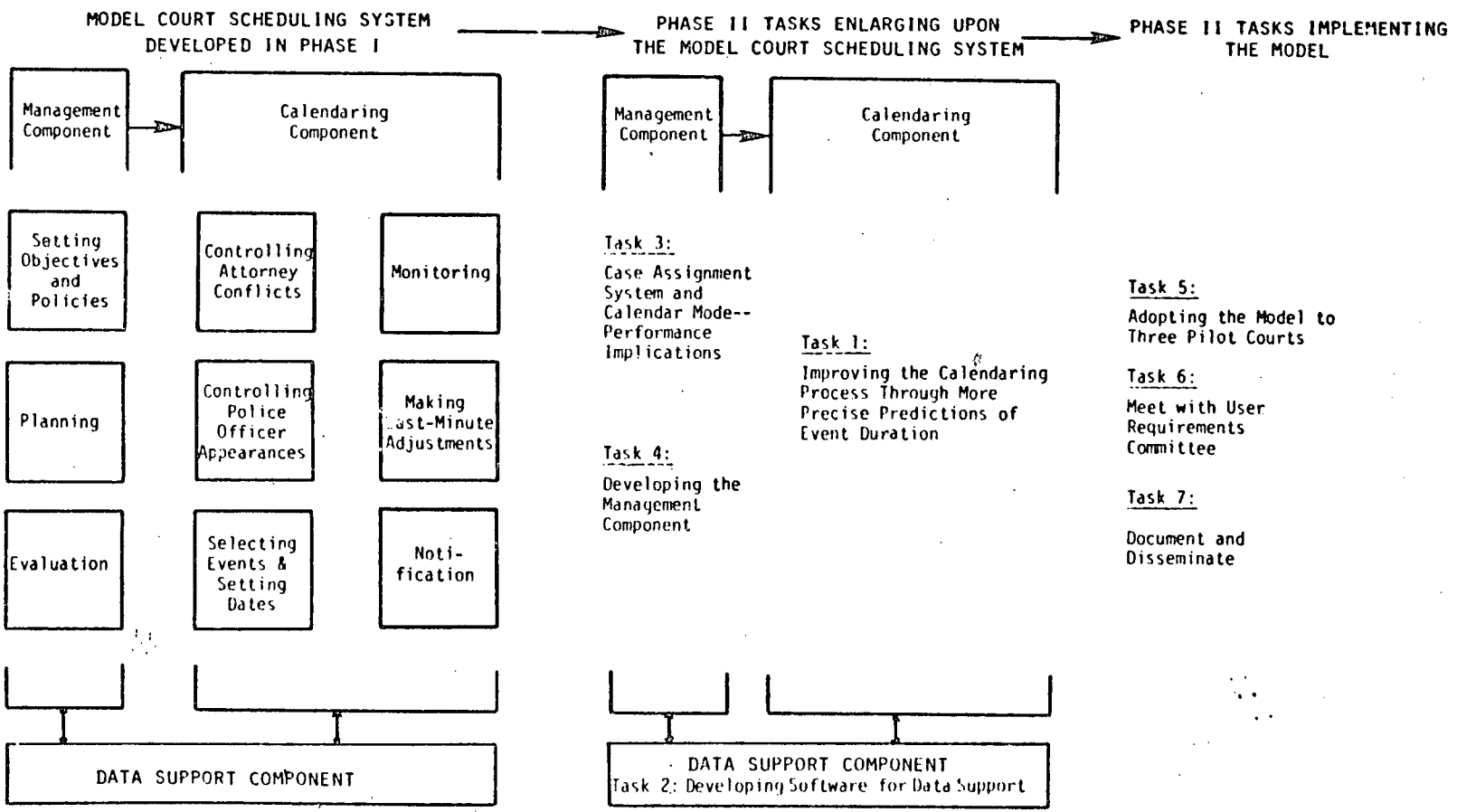
1. Calendaring component.* This component involves the scheduling system's day-to-day operations, which lead to the assignment of dates, times, and places to specific court events. Six principal functions comprise calendaring.

---

*The calendar consists of those events comprising the daily work load of the court, or any list of those events.

EXHIBIT 1

The Phase I Model Court Scheduling System and
Its Relationship to Phase II Tasks



Calendar monitoring maintains current information on the status of the calendar, the pending work load, and the scheduled commitment of resources as cases move through various stages of the judicial process. Setting events and dates involves matching court hearings with dates and times or vice versa. Controlling conflicts in attorney schedules is performed during the process of setting events and dates. Controlling police officer appearances strives to minimize court time and conflicts in the schedules of law enforcement personnel. Making last-minute adjustments in the calendar is a necessary function because the tendency for cases to be settled, dismissed, or continued on the day of a hearing or trial often leaves potentially costly gaps in the schedule. Notifying participants regarding the time and place of scheduled (or rescheduled) court events is an obvious calendaring essential.

2. Management component. An analysis of scheduling operations in courts caused INSLAW to conclude that calendaring cannot operate effectively as an independent system. Rather, calendaring's six functions must be executed and coordinated in a manner consistent with the court's overall goals and policies, which should be set by a managerial-level group of judges and the court administrator. Calendaring procedures and operations should be planned and evaluated only in the light of those goals and policies. Thus the management component of the court scheduling model is defined as the

process of establishing objectives and policies, and planning and evaluating scheduling procedures accordingly. Should scheduling procedures seek to maximize judge utilization or citizen and attorney convenience? To what extent should criminal cases receive priority over civil actions? If those at the managerial level do not supply answers to such questions, decisions at the calendaring level will constitute de facto policy, which may be highly inconsistent or otherwise unsatisfactory in the absence of management direction.

3. Data-support component. Both the management and calendaring components require an information system--automated or manual--to provide resource and case-tracking data.

Although Phase I research was unable to locate a court with an operational scheduling system that possessed all the functions and capabilities of the model above, a number of interesting scheduling practices were uncovered that corresponded to some of the model's functions and that might be of use to other jurisdictions. Furthermore, Phase I research concluded that courts can, and are more likely to, develop their scheduling systems on an incremental basis--that is, one function at a time--in contrast to attempting to incorporate all facets of the system in one fell swoop.

However, to provide for the orderly development or improvement of a court's present scheduling system on an incremental basis, an overall master plan must be prepared and a

logical sequence of tasks determined. Phase I research suggested that a jurisdiction desiring to strengthen its scheduling system through the incremental addition or revision of functions might begin by analyzing its present system and comparing it with the model previously described. Which of the model's functions are already performed satisfactorily? Which have been overlooked? Are some of the functions irrelevant because of special conditions or constraints under which a given court must operate?

At this point, the stage has been set for Phase II of the court scheduling project, where (1) research sheds additional light on the court scheduling model introduced in Phase I; (2) analytical approaches and computer software are developed to facilitate the implementation of the model's components; and (3) an effort is launched to bring the model to life in selected courts.

Evolution of Phase II Tasks

As noted in the Revised Phase II Research Plan, submitted to NSF on November 21, 1975, the goal of Phase II is "the development of transferable scheduling packages with documentation relevant to administrators of courts and to systems personnel." Applicable to civil and criminal case scheduling in courts of general and limited jurisdiction, the seven Phase II tasks sought to achieve this goal by, first, laying the groundwork for the transfer of scheduling packages through continued

development of aspects of the court scheduling model introduced in Phase I and, second, (a) implementing at least some of the model's components or functions--the "scheduling packages"--in pilot jurisdictions and (b) documenting the transfer effort and other Phase II work and disseminating this information (see Exhibit I).

The strategy or rationale underlying the above approach is that the court community would be much more receptive to adopting improved scheduling methods if those methods first proved themselves in an operational setting--such as provided by the pilot courts--in contrast to merely existing on paper and perhaps regarded as unreliable theory.

Four of the seven Phase II tasks delve more deeply into the three components of the court scheduling model than was possible during Phase I. The four tasks (Numbers 1 through 4) serve to fulfill the promises made in the NSF-INSLAW Guide to Court Scheduling (based on and published subsequent to Phase I), which stated that future work would "enlarge upon the scheduling system model" and would result in a "more complete, documented court scheduling system that is automated and transferable" (pages 1 and 4).

The management component is addressed by the following tasks of Phase II:

- Task 3. The research plan (November 1975) stated that a model of the judicial process would be developed and

utilized to predict costs under three alternative case assignment systems: master, individual, and hybrid. However, a reevaluation--including a peer review--of this task led to the conclusion that it was premature in view of the present status of most court scheduling systems. Therefore, at a September 1976 meeting with NSF, INSLAW received approval to change the task, which ultimately involved examining the impact on scheduling policy and on court participants of alternative case assignment systems (master, individual, and hybrid), and alternative calendaring modes (date-certain and continuous).

. Task 4. As reflected by the November 1975 research plan and by the NSF-INSLAW conference in September 1976, Task 4 focused on further development of the management component (including preparation of an implementation guide), with emphasis on the identification of court objectives and of trade-offs associated with alternative scheduling policies (such as those related to continuances, allocation of judicial resources, and resolution of scheduling conflicts).

The following Phase II research pertained to the calendaring component of the court scheduling model:

. Task 1. The revised research plan (November 1975) noted that this task would involve an analysis of existing data to determine the utility to schedulers of using event weights when predicting event duration. However, after Phase I commenced, key agencies that had previously approved access to their data had to reverse their decisions. Data

from other sources were reviewed but rejected as unsatisfactory for the purpose of this task. Furthermore, the resources allocated to Task 1 were never sufficient for INSLAW to undertake a data-collection effort. This led to INSLAW's use of simulation techniques to gain greater insight into the nature and extent of the benefits that were expected to result if schedulers--in conjunction with their calendaring responsibility of assigning appropriate dates and times to upcoming court events--were able to predict event durations more precisely. The simulation model used in this task also was applicable to Task 3, discussed above.

Further development of the model's data-support component was also addressed by Phase II:

. Task 2. The ultimate goal of this task, as indicated by the November 1975 research plan, pertains to the development of an automated and transferable data-support component, with particular emphasis on incorporating the calendar-monitoring capabilities of an existing case-tracking system.

Management, calendaring, and data-support components have been further developed and sufficiently generalized by Tasks 1-4 for adaptation by the court community, the remaining three Phase II tasks encompassed (a) the effort to transfer those components, in part or in full, to selected pilot sites and (b) the preparation of appropriate documentation for dissemination to other courts in the expectation that they would

thereby feel encouraged to improve their respective court scheduling systems. Tasks designed to achieve this are as follows:

- Task 5. The research plan states that the transfer and evaluation of scheduling system modules in pilot courts--the objective of this task--"reflects Phase I findings that implementation (and transfer) will not take place in the court environment without some initial catalyst. The project staff proposes to fill the role of catalyst by working with a group of pilot courts.... The court community can carry on with further development of scheduling systems once a record of successful transfer has been established." Explained later, reorganizations in the pilot courts--unexpected by them and INSLAW--prevented complete achievement of this task within the period covered by the grant.

- Task 6. Specifying continued meetings with the User Requirements Committee established in Phase I, this task also involved circulation of materials to committee members to obtain feedback on the validity and utility of research results and developmental efforts.

- Task 7. This, the final task, involved preparation of reports documenting Phase II efforts and included dissemination of the results of the project to potential users (judges, systems analysts, scheduling clerks, court administrators, and the like). Thus, the task was designed to place relevant, well-documented packages of software and methods

for improving court scheduling into the hands of decision makers at the local level, thereby enhancing the prospects for technology transfer.

One of the items constituting Task 7 documentation is this report, Volume 1 of the Phase II Final Report. The balance of this report is organized as follows:

1. Tasks (as revised) enlarging upon the management, calendaring, and data-support components of the court scheduling model developed during Phase I are discussed in terms of methodology, accomplishments, and findings.

2. Those tasks relating to transferring and implementing portions of the court scheduling model in pilot courts (including documentation and dissemination efforts) are treated next, again in terms of methodology, accomplishments, and findings.

3. The final section of Volume I presents conclusions based on Phase II findings.

The 5 remaining items of documentation comprise Volume II of the Phase II Final Report. They pertain to aspects of Tasks 1 through 5 and constitute the raw material with which to prepare Part II of the Guide to Court Scheduling, whose publication is dependent on additional funding inasmuch as Part I of the Guide was financed from Phase II monies instead of being funded as an independent project as originally planned. More specifically, Volume II includes monographs that

(a) provide additional details on the utility of more precise predictions of event duration (Task 1) and on the performance implications of decisions concerning the selection of a case assignment system and calendar mode (Task 3); (b) describe the information system supporting the calendaring component (Task 2); (c) explore issues relating to court-scheduling management (Task 4); (d) outline the role of systems analysis in the development of the management component (Task 4); and (e) present case studies on the technology-transfer process in the pilot courts (Task 5).

TASKS PERTAINING TO THE FURTHER DEVELOPMENT OF THE COURT SCHEDULING MODEL'S THREE COMPONENTS

CONTINUED DEVELOPMENT OF THE MANAGEMENT COMPONENT

Both Task 3 (as revised) and Task 4 enlarge upon the management component of the court scheduling model introduced in Phase I.

Task 3: Performance Implications of Selecting a Case Assignment System and Calendar Mode

To what extent do policy decisions regarding the selection of a case assignment system* and calendar mode** affect court scheduling performance? More specifically, which type of case assignment system is better able to compensate for schedulers' lack of precision when estimating or predicting the duration of upcoming court events? What are the relative merits of alternative case assignment systems and calendar modes in terms of such measures of court scheduling performance as judge utilization, waiting time for participants, completed events, overscheduled events, and carry-overs? Those are the central questions addressed by Task 3 research.

The three major types of case assignment systems are (1) the master calendar, where each court even associated with a given case is assigned to the first available judge regardless of who heard previous events of that case; (2) the individual calendar, where all events of a case are heard by the same

---

*Case assignment system: the process by which cases or events are assigned to judges.

**Calendar mode: the procedure governing the selection of a date for a given court event.

judge; and (3) the hybrid system, which incorporates aspects of the previous two approaches.* Two principal calendar modes were analyzed: the date-certain (day-certain) mode calls for the selection of a definite appearance date well in advance of the event, while cases under the continuous mode are not assigned specific dates in advance but are placed in a queue and will be heard on a date determined by the rate at which cases ahead of them are processed.

Methodology

In the absence of suitable empirical data, the questions posed above were addressed through the construction and utilization of a digital computer simulation model--a mathematical representation of the case scheduling system. This simulation model, which was also used for Task 1 research (discussed in Chapter III), provided a framework in which modifications of the scheduling system were tested relatively quickly and inexpensively.

A nonanalytical problem-solving technique, the simulation model generated numerical results for alternative scheduling system designs. (For example, the model was designed to reflect several levels of variability in the estimated duration of scheduled court events and to indicate how well a given case assignment

*Task 3 focused principally on the first two case assignment systems. Implications of Task 3 findings for the hybrid system are discussed in Chapter VI.

system or calendar mode accommodated these variability or uncertainty levels in terms of the performance measures mentioned previously.

The mean values of event duration were two, three, six, and twelve hours. The standard deviation of the event duration distribution served as the measure of variability--or the degree of uncertainty--of expected event duration. Different degrees of uncertainty were simulated by varying the standard deviation. Three levels of uncertainty were incorporated into the model: a standard deviation equal to the mean value of event duration, equal to one and one-half times the mean, and equal to twice the mean. The underlying distribution of event duration was assumed to be hyperexponential, an assumption supported by a previous analysis of federal time-study data.

Essentially, the simulation model is a simplified version of the scheduling system where some of the calendaring and management functions were dealt with implicitly or taken as given. By definition, the simulation technique analyzes the quantifiable aspects of the court scheduling model but is unable to take into account psychological and other human factors, such as the dedication and commitment of judges and administrators. Despite its simplicity, the simulation model satisfactorily addressed the question at issue: How is the performance of the scheduling system

influenced by alternative case assignment systems and calendar modes?*

Accomplishments and findings

Case assignment. Assuming a date-certain calendar mode, a six-judge master calendar--in contrast to an individual calendar--case assignment system displayed far greater ability to offset degrees of uncertainty encountered by schedulers when predicting event durations; when the six-judge master calendar was compared with the ten-judge arrangement, the latter offered only marginal improvement. These findings held for a number of scheduling performance measures. For example, in terms of judge utilization (percentage of time a judge is busy hearing cases during a six-hour day), a typical finding showed the individual calendar producing an 81 percent utilization rate; the six-judge master calendar, a 92 percent rate; and the ten-judge master calendar , a 93 percent rate.

Similarly, in terms of waiting time** encountered by litigants and witnesses, a representative finding indicates a 3.2-hour wait under the individual calendar; 2.73 hours under the six-judge master calendar; and 2.65 hours under the ten-judge master calendar. The reason for such a finding is not difficult to comprehend. Suppose an event is assigned to

---

* Considerably more detail about the simulation methodology is contained in the Volume II monographs entitled "Improving the Calendaring Process Through More Precise Predictions of Event Duration," and "Performance Implications of Selecting a Case Assignment System and Calendar Mode."

**Given that wait was incurred.

Judge A in a court where the individual calendar is used. Assume the judge is currently hearing another case, while Judge B is idle. Under a master calendar, Judge B would be available to hear the event pending before Judge A; under the individual calendar, the event would remain in the waiting queue until Judge A is free.

The percentage of events completed on the day they were scheduled is much higher under the six-judge master calendar than under the individual calendar. A typical simulation finding indicated that 93 and 94 percent of the events were completed under the six- and ten-judge master calendars, respectively, whereas the individual calendar resulted in an 80 percent completion rate.

When overscheduling (percent of events not heard on their assigned date) is used as a performance measure, the simulation model again suggests the superiority of the master calendar.* Simulating different degrees of event-duration uncertainty, the model generally indicated a difference of 13 or more percentage points between the the overscheduling rate associated with the individual calendar and that achieved by the master calendar. For example, according to one analysis the individual-calendar approach resulted in an overscheduling rate of 20 percent; the six-judge master calendar,

---

*Obviously, an inverse relationship exists between the completion and overscheduling rates: the larger the percentage of completions, the smaller the percentage of overscheduled events. Due to carry-overs (events in progress at the day's end), the relationship is not perfect.

7 percent; and the ten-judge master calendar, 6 percent. In terms of the absolute number of cases, more are overscheduled under the master calendar but the rate of overscheduling declines significantly.

Events still in progress at the day's end, or carry-overs, tend to increase somewhat when the master calendar is used. A representative simulation finding indicates 8 percent of the scheduled events are carried over to the next workday under the individual calendar; 9 percent and 10 percent under the six- and ten-judge master calendars, respectively. We submit, however, that many of the events carried over under a master calendar would not have been reached under an individual calendar and would have been labeled as overscheduled.

Calendar mode. The simulation model analyzed the performance implications of two calendar modes:

- Date-certain. Given an expected event duration and resource availability, a number of specifically identified cases are scheduled for adjudication each day.

- Continous. A number of cases are scheduled for a specific week. During the week, events are heard as cases ahead in the queue are completed. Litigants are allowed one hour* from notification to the beginning of the case; in effect, their waiting time is zero.

*Although the one-hour period was fixed in this analysis, it need not necessarily be. The actual time required to appear could be a random variable.

To the extent that benefits are found to accrue to a court that schedules on a weekly (continuous) rather than on a daily (day-certain) basis, the explanation is similar to that offered for advantages derived when judicial resources are "pooled" under the master calendar, in contrast to the individual calendar approach. Basically, the law of large numbers is at work. Simply stated, this means that fluctuations in event durations are more easily accommodated during a week's time than within a six-hour day. For instance, should each event scheduled for a particular day (day-certain) consume only a portion of its allotted time, judges would not be fully utilized that day. Under weekly scheduling (continuous), however, participants in next event in the queue are notified and the case is started.

To analyze the trade-offs involved in selecting one or the other calendar mode, three simulation models were employed: one represented the date-certain mode, and the remaining two corresponded to versions of the continuous mode. The "adjusted version" took into account the hour allotted between events to notify litigants; the "unadjusted version" did not. The unadjusted version of the continuous mode assumes that, at some point during the week, litigants in each case are notified that their event is to be heard "soon" and that they will be ready as soon as a judge is free. As a result, the unadjusted version serves--for

purposes of comparison--as an upper bound on judge utilization since free time for judges would be a function only of fluctuations in event durations.*

What are the relative merits of the foregoing calendar-mode alternatives?

In terms of judge utilization, the unadjusted version of the continuous mode outperforms the other two alternatives, as expected. When the mean duration of events is three hours, the date-certain procedure better utilizes judge time than does the continuous adjusted version. The date-certain approach operating in conjunction with an individual calendar resulted in a judge-utilization rate of 79 percent, in contrast to 78 and 88 percent, respectively, for the adjusted and unadjusted versions of the continuous mode. Under the six-judge master calendar the respective utilization rates were 91, 80, and 94 percent; under the ten-judge master calendar, 93, 81, and 96 percent. The greater the number of judges, the more advantageous in terms of judge utility the date-certain procedure becomes in this simulation.**

When the mean duration of events is increased to six hours from three hours, the adjusted continuous mode outperforms the date-certain approach when there are three or fewer judges,

---

*Two mean levels of event duration were considered--three and six hours; three measures of event-duration variability were analyzed for each duration level.

**Assumes a standard deviation (measure of event-duration variability or uncertainty) equal to the mean event duration.

but the latter does somewhat better when four or more judges are available.* This suggests that, in courts with less than four judges, scheduling performance in terms of judge utilization is influenced more by the positive aspects of weekly scheduling than by the problem of the one-hour delay between events.

The impact of the one-hour notification period associated with the adjusted version is much less when the mean event duration is six rather than three hours. For example, judge utilization under the adjusted version came within six percentage points of the utilization rate of the unadjusted mode (which represents the upper bound) at all levels of event-duration uncertainty--in contrast to the ten to fifteen percentage-point difference when the mean event duration was three hours. One explanation, of course, is that the six-hour mean event duration and the judge workday are identical.

As previously mentioned, litigant waiting time is zero under both versions of the continuous mode. Depending on assumptions regarding case assignment system and event-duration mean and uncertainty, waiting time under the date-certain mode could vary greatly.

An evaluation of calendar modes in terms of event completion rates indicates that the date-certain mode consistently outperforms the adjusted version when expected event

*Assumes a standard deviation (measure of event-duration variability or uncertainty) equal to the mean event duration.

duration is three hours, especially as the number of judges increases: 79 and 78 percent, respectively, under the individual calendar; 94 and 81 percent under the ten-judge master calendar. When the expected mean event duration is increased to six hours, the adjusted version performs slightly better than the date-certain mode for systems with three or fewer judges; the reverse is true when there are four or more judges. Under all conditions simulated, the unadjusted version of the continuous mode resulted in a higher completion rate (76 to 97 percent) than the other two calendaring alternatives.

When examined in terms of overscheduling rates, the relative performance of the three calendaring alternatives was essentially identical to the above findings with reference to completion rates.

As for carry-overs, fewer resulted when the date-certain approach was used. However, many carry-over cases that occurred under either version of the continuous mode would never have been started under the date-certain procedures.

According to the foregoing simulation findings, therefore, the key trade-offs involved in the selection of calendar mode depend upon the number of judges assigned (1, 6 or 10) and the event duration (three or six hours).

As the simulation findings demonstrate, decisions regarding calendar mode and case assignment system have major implications for the performance of the court scheduling system. Timely and accurate identification of these implications and

the related trade-offs calls for the systematic application of a method by which a court's management group can unearth the information needed for such analyses. The development of such a methodology is among the areas addressed by Task 4.*

Task 4: Developing the Management Component of the Scheduling System

Building upon the management component introduced in Phase I, Task 4 directs itself to the development of a methodology to help judges and court administrators form overall court objectives and, consistent with those objectives, frame scheduling policies and identify the associated trade-offs and performance measures. In addition to providing a basis for managing the scheduling process, the products of this task also serve to make scheduling policies more visible and rational for the court community.

Methodology

Task 4 methodology involved a variety of approaches. Experience gained from Phase I research was reviewed and analyzed. Analyses of selected courts were conducted. Conferences were held with, and questionnaires distributed to, judges. Finally, simulation models were utilized to illustrate the trade-offs involved in scheduling-policy decisions and to estimate the performance levels resulting from different policy decisions.

---

*Additional details about the accomplishments and findings of Task 3 are contained in the Volume II monographs.

Accomplishments and findings

Task 4 achievements can be divided into four categories, which correspond to the four steps described for the task in the revised research plan (November 1975).

First, quantifiable measures of court performance related to scheduling were identified. This was achieved through analysis of Phase I experience and through interaction with the three courts participating in the transfer of scheduling modules (see Chapter V). Among the performance measures are (1) the expected number of cases trailed or continued because of overscheduling or unavailability of resources, (2) judge utilization or the percentage of available bench time actually used for case processing, and (3) utilization of other court resources, including attorneys, witnesses, litigants, and support personnel.

Of course, the specific values assigned to a given performance measure (for example, the percentage applicable to judge utilization) must reflect overall court objectives, which judges are primarily responsible for setting. INSLAW's role in this regard was to act as a catalyst and to raise issues for discussion. Judges were encouraged to specify goals and objectives and to identify the type of information they felt would be required for effective management. This was done, for example, through a conference with judges of the Wayne County Circuit Court. A questionnaire was distributed to the conferees in an attempt to stimulate consideration and formation of overall court objectives and

goals. Among the questions:

. What are maximum civil case ages beyond which special action should take place to speed up a disposition?

. In the trade-off between judge time and the convenience of attorneys, litigants, and witnesses, what should the scheduling system strive to achieve?

. Should the court strive to promulgate a well-structured continuance policy?

Second, the performance measures identified above were used to assess the impact or trade-offs of various--and often conflicting--court objectives. Models were developed to illustrate the trade-offs involved and to estimate the performance levels resulting from different policy decisions.

One such model, which explored the performance trade-offs associated with the selection of a case assignment system and calendar mode, has already been described in conjunction with the discussion of Task 3.

Another model examined the issue of allocation of judicial resources. Courts must decide how many judges to assign to their various departments, such as criminal and civil. Policymakers should determine such allocations in the context of court objectives. However, these objectives may conflict, and a trade-off among objectives often must be explored.

For example, the administrator of a court hearing both civil and criminal cases may face a decision regarding the number of judges to allocate to each department. The

allocation could be made so that the processing time for both civil and criminal cases would be equal. However, since society places a great deal of importance on the disposition of criminal cases, the allocation could be such that the processing time for criminal cases is minimized, which would leave very few resources for the civil area. From the administrator's point of view, neither of these objectives may be appropriate. Rather, the proper allocation may lie somewhere between the two objectives.

In practice, the application of a single allocation objective will result in allocations with consequences that are unacceptable; this is so for reasons that cannot be easily captured in a mathematical model. Rather than the optimization of a single well-defined criterion, the court administrator's decision requires the integration of several often conflicting objectives.

The philosophy behind the model is that preference for one allocation criterion over another is, in effect, a managerial decision that must be based on an analysis of the consequences resulting from employing that criterion or objective. The model is, therefore, designed to allow the decision maker to examine allocations that result from a wide range of criteria by varying a single parameter. The administrator's judgment can then be added to the output displayed by the model in integrating the complex factors involved in equity, efficiency, and feasibility. The administrator, not the model,

decides what constitutes an equitable balance of resources. The model only displays the best allocation for a given criterion.*

As can be surmised from the preceding paragraphs, the issue of trade-offs--their recognition and resolution--is critical and must be faced explicitly if a court is to develop an effective management component for its scheduling system. An analysis of data from the Wayne County Circuit Court forcefully illustrates this point. This analysis, covering the period of January through October 1976, explores some of the trade-offs associated with the policy decisions regarding the number of civil cases to schedule for trial.

For example, the study found that, as the number of cases scheduled for trial increased, the number of trials begun also increased but not at a constant rate. There appeared to be an upper bound--probably more closely related to the number of judges available than to the number of cases scheduled--for the number of trials that can be commenced. The data seem to suggest that trial efficiency may even have dropped as a large number of cases were scheduled; that is, as more time was required for administrative matters, less time became available for trial.

Also explored was the relationship between the number of cases scheduled and the number of settlements prior to trial.

---

*The model is described more fully in Volume III.

As the number of cases scheduled for trial increased, the number of settlements rose dramatically, which supports the theory that the threat of trial induces settlements. Thus, the disposition rate increased, and the court backlog decreased, without the necessity of adding resources to the court.

However, the foregoing desirable consequences (more trials started and more pretrial settlements) of increasing the number of scheduled cases are achieved only at the price of an increased number of adjournments. The data reveal that, as the size of the calendar increased, only some of the additional cases were settled prior to trial. The remainder had to be adjourned and rescheduled for another day, thereby requiring the gathered participants to reassemble on a future date.

Given the above findings, establishing policy regarding calendar size is not a straightforward process but involves a trade-off between disposition rate and litigant convenience. Should the court strive to maximize the former or the latter, or should policy regarding calendar size reflect a compromise objective whereby a balance is struck between court productivity and participant convenience? Trade-off issues such as this are effectively addressed in a court with a well-developed management component.*

However, the identification and resolution of those issues depends on the collection and analysis of appropriate data,

---

*These issues are explored in more detail by the Volume II monograph entitled "Issues in Scheduling Management."

which brings us to the third step for Task 4; that is, the development of a court-oriented methodology for the use of systems analysis in order to surface or make explicit the trade-offs or other ramifications often involved in policy decisions. Systems analysis has been defined as a strategy of analysis (rather than a single method or technique) that can help decision makers select a course of action after a thorough investigation of a given problem. Such an investigation would include development of conceptual and quantitative models or descriptions of court operations and the indentification and comparison of objectives and alternatives.

A step-by-step methodology for conducting court-related systems analyses is contained in the Volume II monograph "How to Conduct a Systems Analysis in your Court." It describes in detail the key elements or phases of systems analysis, including the collection of quantitative data pertaining to case load, resource availability, scheduling policy, case processing, and disposition types and rates. Through systems analysis, key parameters can be estimated, such as the number of cases pending at each processing stage, desirable time limits for each stage, court capacity (number of cases the court can hear within the time allowed), backlog (cases in excess of court capacity), probability of scheduled events actually occurring, and estimated event duration. Knowledge of these and other parameters is essential not only to a sound management component but also to an effective data-support component, as noted later.

The fourth and final step or subtask of Task 4 pertains to the preparation of a management component implementation guide, which is based on the findings and products of Steps 1 through 3 above and is designed for judges, administrators, and schedulers. This guide is found in Volume III.

III

IMPROVING THE CALENDARING PROCESS THROUGH MORE PRECISE PREDICTIONS OF EVENT DURATION (TASK 1)

As noted in the previous chapter, one of the key scheduling parameters that can be estimated through systems analysis is expected event duration. Traditionally, the duration of court events has been regarded as a function of case type. However, a recent judicial time study funded by the Federal Judicial Center concluded that case type is not a satisfactory predictor of event duration due to a high level of variation within case-type categories.*

Task 1 (as revised) was designed to illustrate the nature and extent of the benefits for court schedulers of any procedure that results in more accurate predictions of event duration. Intuition and common sense suggest, of course, that courts would benefit from more precise estimates of event duration. For example, if the expected duration of court events were three hours and if this always corresponded to the actual length of events (that is, variability did not exist), twelve events could be scheduled for six judges working a six-hour day without over-scheduling or idle time for judges occurring. Obviously, such a perfectly efficient scheduling system does not exist. This ideal court, however, does suggest some important factors of the scheduling process and their relationship:

$$\text{Number of events scheduled} = \frac{\text{number of judges available} \times \text{hours in workday} \times \text{number of days in time-frame}}{\text{expected event duration}}$$

---

*The 1969-70 Federal District Court Time Study, A Report to the Federal Judicial Center by the Statistical Reporting Service of the U.S. Department of Agriculture and the Department of Agriculture Graduate School, 1971.

Because of the relationships apparent in the above scheduling equation, courts should maintain accurate and current data about expected durations of events. Failure to do this can impair the performance of the court scheduling system due to excessive uncertainty about expected event duration. To what extent, and in what areas, is performance impaired by uncertainty of event duration? That is the central question addressed by Task 1.

Methodology

The foregoing scheduling equation can be incorporated into a simulation model. Such a model was constructed and is the same one as employed in Task 3 (Chapter II). Through the introduction of uncertainty regarding expected event duration, the model predicts the impact of this uncertainty on scheduling performance as measured by judge utilization, waiting time, events completed, cases overscheduled, and carry-overs. A date-certain calendar mode is assumed for various levels of judge availability.*

Accomplishments and findings

As a general observation, use of the model suggests a direct relationship between event-duration uncertainty and system performance: when information about event duration is reduced by introducing event variability (uncertainty) into the model, system performance declines. Based on the

*Additional details on the methodology are found in the discussion of Task 3 in Chapter II and in the Volume II monograph entitled "Improving the Calendaring Process Through More Precise Prediction of Event Duration."

various performance measures noted above, noticeable increases in system performance are attained with additional data (reduced variability) about event duration.

In terms of the performance measure of judge utilization rate, for example, it declines to 88 percent from 92 percent as event duration becomes more uncertain,* assuming a six-judge master calendar and a mean event duration of two hours. Under an individual calendar case assignment system, the rate drops to 74 percent from 81 percent.

Waiting time experienced by the litigants is slightly reduced as predictions of event duration become more accurate.

Similarly, the more uncertain the predictions of event duration, the lower the completion rate. For example, with one judge available and an average event duration of six hours, 76 percent of the events are completed at day's end when the uncertainty factor is relatively low. On the other hand, only 68 percent of the events are completed when event-duration uncertainty is relatively high.

Regarding cases overscheduled, the rate increases by about four percentage points under the individual calendar when greater event-duration uncertainty is introduced; by about seven percentage points, under the six- or ten-judge master calendar.

---

*"More uncertain" in the sense that the standard deviation of a given event duration distribution is increased to two times the mean duration from a value equal to the mean.

Generally, as event-duration uncertainty increases, the percentage of events carried over to the next working day rises by about three or four percentage points.

In short, simulation results strongly suggest that the benefits associated with additional information, and thus less uncertainty, about event duration can be well worth the extra effort involved.*

*For additional details about the findings, see the Volume II monograph entitled "Improving the Calendaring Process."

IV

PROVIDING AN AUTOMATED DATA-SUPPORT COMPONENT (TASK 2)

To develop computer software that is sensitive both to the data-support needs of court schedulers and to the managerial objectives of court administrators is the purpose of Task 2. The proposed nucleus of such a data-support component was a calendar-monitoring capability derived from an existing case-tracking system. Although a number of transferable modules (computer programs or manual procedures designed to perform one or more scheduling functions) were identified during Phase I, they required integration and coordination so that they could be supported by an automated case-tracking system.

As observed during Phase I, most of the automated case-tracking systems in the courts fell short of processing data into usable reports for schedulers and other officials. Task 2 specified the development of software capable of processing case-tracking data and of generating--in accordance with court-supplied parameters--such reports as attorney and police officer schedules, court schedules, and inventories of events awaiting scheduling.

Methodology

Task 2 involved a seven-step methodology. Step 1 called for a review and refinement of data elements available in both civil and criminal automated case-tracking systems. Steps 2 and 3 involved, respectively, the review of calendaring outputs with potential users and the identification of court-supplied parameters necessary to produce the outputs.

The final four steps of the methodology involved: (1) designing record contents and file structures; (2) writing program specifications to ensure transferability of the software; (3) reviewing specifications with the User Requirements Committee, and (4) programming, testing, and documenting the automated data-support system.

Accomplishments and findings

Task 2 work resulted in a transferable automated data-support component whose software permits computerized assistance--including case tracking--to court schedulers as well as to those responsible for the overall management of a court. The design of the component is also sufficiently flexible to accommodate the criminal or civil data needs of most trial courts of five or more judges regardless of whether the master, individual, or hybrid case assignment system is used.

This flexibility is achieved in the software by means of a parameter file that provides the analytical basis upon which the scheduling programs operate. A simple change to the parameter file enables, for example, the scheduler to gain access to different categories of data, such as case aging criteria, police officer's shift, or attributes identifying cases for priority scheduling. The parameter file allows each court to adjust the system, within the overall scheduling capabilities chosen by the system designers, to meet local needs and special conditions. As discussed previously in connection with Task 4 (Chapter II), the type of information for inclusion in the

parameter file should reflect the finding of a prior systems analysis and policy-setting session.

In addition to parameters, the computerized system maintains records on litigants, attorneys, police officers, cases, causes of action/charges, scheduled events, events, and docket entries. Additional records and processing are available for such court and prosecution functions as docketing, case weighting, and bonding and sentencing guidelines.

Supporting the informational needs of the calendaring and management components of the model court scheduling system, the automated data component generates numerous displays and reports that provide facts for:

1. Controlling the appearances of attorneys and police officers in order to avoid conflicts among the former and consolidate hearings for the latter.

2. Monitoring the status of the calendar by constantly comparing resources required (as indicated by cases set) to resources available (judges).

3. Selecting the cases to be scheduled by identifying their progress and whether backlogged.

4. Generating notices in an economical and timely manner.

5. Monitoring and evaluating scheduling performance.

The foundation on which the automated data-support component rests is Minicomputer PROMIS. Developed by INSLAW and designated as an Exemplary Project by the Law Enforcement Assistance Administration, PROMIS has been transferred--or

is actively under consideration for transfer--in over 90 local and state courts serving about one-third of the nation's population and enables prosecutors and courts to exert positive control over their work loads.

Formerly compatible with only large-scale computers, PROMIS has been recently adapted for use on minicomputers, a trait that is highly desirable for an on-line automated scheduling system as well. Written for efficient operation in conjunction with any computer that supports ANSI COBOL, Mini PROMIS can, therefore, be run on the hardware of a wide range of manufacturers. This enhances its transferability as does the actual and projected use of PROMIS in scores of jurisdictions.

For all of those reasons, Minicomputer PROMIS software was selected to drive the court scheduling system.* Mini PROMIS has an interactive program that "walks through the system" allowing users to add, change, and delete records, information and labels to suit local needs. The ease with which Mini PROMIS may be tailored gives it sufficient flexibility to schedule civil as well as criminal cases and to present court officials with a panoply of output options.

In adapting Mini PROMIS to a given court scheduling system,

---

*Mini PROMIS software as enhanced can be utilized (1) as a stand-alone criminal case-tracking and scheduling system, (2) as a stand-alone scheduling system (civil and criminal), or (3) as as a scheduling enhancement to an existing case-tracking system (civil and/or criminal). The latter option represents the greatest complexity as the two systems must interact to minimize redundant data entry and to maintain the accuracy of both data bases.

users must complete three steps:

1. Review the case-tracking options of Mini PROMIS and determine which features and data to retain. For example, a court may decide that it is not interested in acquiring a case/crime ranking capability and will drop the data elements supporting it.

2. Identify file maintenance capabilities that are required and insure they are not diminished.

3. Enhance Mini PROMIS for scheduling by adding data elements to existing records, developing a user-oriented scheduling parameter file, and adding the necessary index, work files, and processing programs.

Volume III, Court Scheduling System, describes the design and capabilities of Mini PROMIS in greater detail.

ENCOURAGING THE COURT COMMUNITY TO IMPLEMENT THE SCHEDULING MODEL

V

BRINGING THE SCHEDULING MODEL TO LIFE

The court scheduling model having been enlarged upon by Tasks 1-4, the balance of Phase II addressed itself to encouraging and helping jurisdictions convert the concept into practice. To achieve this objective, INSLAW sought to implement aspects of the model in three pilot courts (Task 5), worked closely with individuals in the User Requirements Committee (Task 6), and took steps to document and disseminate the results of developmental and research efforts (Task 7).

Task 5: Adapting the Model to Three Pilot Courts

Consistent with the Phase II research plan (November 1975) and the NSF-INSLAW revisions of September 1976, the goal of Task 5 was to implement facets of the court scheduling model in pilot jurisdictions (resource courts) and to encourage other potential users (transfer courts) to follow the example of the pilot or resource courts, but with less individual attention from INSLAW. Through this "pump priming" strategy, the court scheduling model would gradually find operational acceptance within the court community.

Methodology

Criteria governing the selection of pilot courts included such factors as a strong administrative structure, a cooperative and willing climate, and interest in improving scheduling operations, availability of scheduling data for analysis by INSLAW, and a willingness to provide such court resources as

personnel with analytical ability to assign to the project and, in most cases, data processing capability.

Several courts meeting those criteria were listed in the revised research plan. Due to a turnover in court administrators subsequent to formulation of the plan, however, the number of potential pilot courts was narrowed to three: Hennepin County (Minneapolis) Municipal Court, Milwaukee County Circuit Court, and the Wayne County (Detroit) Circuit Court.

To help implement aspects of the court scheduling model at the pilot sites, INSLAW pursued a multistep methodology:

1. Analyzing current scheduling operations, including statistical analysis and an examination of procedures and organization.

2. Assisting courts to define objectives, with emphasis on the identification of trade-offs and their consequences and control.

3. Helping plan for the implementation of court-set objectives, such as by developing a methodology for the allocation of judges and demonstrating how the selection of calendar mode and case assignment system can affect court performance.

4. Developing implementation or work plans to provide for a smooth transition from old to new scheduling procedures and for an informed and involved court support staff. Implicit in the development of work plans were decisions regarding (a) the selection of scheduling methods or procedures identified in other courts during Phase I for transfer to the pilot jurisdictions and (b) the level at which the transfer should

occur--that is, whether it should be at the conceptual, detailed design, or program code level. Also implicit in the implementation process was the need to accommodate or adapt the court scheduling model to differences in operating conditions at each pilot site. Such differences could relate to court size (cases scheduled by event type, number of judges), data support (case-tracking system, computer operating system scheduling procedures) and various constraints dictated by statute or policy.

5. Testing and evaluating the transferred scheduling methods.

6. Documenting the implementation to serve the information needs of judges, court administrators, scheduling clerks and data processing technicians.

In view of the interruption of the implementation process by unforeseen external factors (discussed later), the transfers did not proceed far enough during the period of the grant to warrant application of some of the methodology. The interruptions also precluded substantial progress in interesting transfer courts to adapt the scheduling improvements planned for the pilot courts.

Accomplishments and findings--Hennepin County Municipal Court

A court of limited jurisdiction, Hennepin County (Minneapolis) Municipal Court adjudicates cases involving misdemeanors, traffic offenses, small claims, landlord-tenant disputes, and civil actions up to $6,000. INSLAW's involvement focused on the criminal cases, which were assigned through a master calendar.

After a round of visitations to the court by INSLAW analysts--who observed operations, collected data, and talked with court personnel--a work plan was developed, which was approved by court officials.* Two interdependent tasks were specified by the work plan: (1) improve the scheduling of court and jury trials in order to minimize unnecessary continuances attributable to police officers and to reduce police personnel overtime necessitated by poorly scheduled trial appearances; (2) develop a method for the allocation of judicial resources.

However, Task 1 soon had to be revised as the result of subsequent discussions with prosecutors and police officials. Despite earlier statements it had received to the contrary, INSLAW found that court appearances were not a major cause of overtime for police officers. Furthermore, unlike most other police departments, the one in Minneapolis does not have predictable day-off patterns: officers, in effect, negotiate their days off for each month with their immediate supervisors.

After discussing these findings with the court administrator, INSLAW and the court decided to design and implement a "conflict free" scheduling module (including an assumption about the participation of the Hennepin County District Court); descriptions of how the system would operate for all parties affected (police, judges, attorneys, etc.); data elements required; and a series of questions or unresolved issues that

---

*The full text of the work plan is contained in the Volume II case study of the implementation effort at Hennepin County Municipal Court.

needed to be addressed in the future.

The preliminary design was discussed with court personnel and, as appropriate, revised. Data were collected so that one general software package would serve both criminal and noncriminal systems regardless of the case assignment method used. (The data also included information about the District Court, which had reached a preliminary decision to participate in the project.)

At this point, however, Task 1 was interrupted because, to the surprise of all, the Municipal Court was merged into the District Court. The completed systems analysis was, therefore, invalidated and installation of the "conflict free" scheduling system precluded.

The District Court is currently interested in a comprehensive case-tracking system with scheduling capabilities, but funding is not yet available. Whether the court decides to develop its own system or to use Mini PROMIS with scheduling enhancements remains to be seen.

Completion of the second task, development of a method for the allocation of judicial resources, was not affected by the merger, however. The objective of the task was to provide a rational method by which judicial resources can be allocated to such functions as traffic hearings, general assignment pool, and the like. Policymakers in the courts are quite often confronted with the problem of allocating scarce judicial resources in order to satisfy a broad range of objectives, which often conflict. This model is intended as an aid

in evaluating the trade-offs involved in allocation decisions and has been described in Chapter II's section on Task 4 of Phase II.*

Accomplishments and findings--Milwaukee County Circuit Court

The Milwaukee County Circuit Court hears both civil and criminal (felony) cases. INSLAW focused on the Criminal Bench, which utilized the individual calendar case assignment system.

After a tour of the court, interviews with court personnel and representatives of the District Attorney, and collection of of data, a work plan** was drafted, which specified the respective roles of INSLAW and the court in developing the scheduling products beneficial to the court and transferable to other courts operating under similar constraints. The work plan outlined three tasks, which were approved by the court.

The first task was to analyze existing scheduling operations and functions. In the course of this task, data describing the operation of the court, the volume and nature of the case load, and the resources available to the court to process its work load were collected. Whenever possible, an attempt was made to synthesize anecdotal, descriptive information with quantitative data in order to draw a complete picture of the processes and interactions associated with scheduling.

---

*Additional details about the implementation effort in the Hennepin County Municipal Court are contained in the Volume II case study of that court.

**See the Milwaukee case history in Volume II for work plan details

More specifically, completion of Task 1 involved the following steps:

1. Document the court's existing scheduling procedures.

2. Define the scheduling requirements of representative individual judges, a step particularly necessary since the Criminal Division operated under an individual calendar.

3. Document scheduling interrelationships with other justice agencies.

4. Determine sources of available automated and nonautomated data.*

Development of a management component for the court's scheduling system was the second task contained in the work plan. This involved identification of court priorities and the development of methods by which those priorities can be related to scheduling. Completion of the task entailed a six-step process:

1. Establish court priorities and objectives.

2. Identify performance measures that will help determine whether the operations of the court are in keeping with its objectives.

3. Develop a proposed scheduling organization designed to facilitate the flow of information necessary to implement and periodically evaluate scheduling-related objectives.

---

*Three additional steps were specified by the research plan: collection and preparation of data in machine-readable form (not completed because of the lack of data from Milwaukee's automated information system); analysis of data (not completed because of a determination that the step was not needed); consultation on the results of the data analysis (not completed).

4. Design and develop specifications for a scheduling evaluation report.

5. Review the evaluation report's specifications with judges.

6. Develop software for the evaluation reports.*

Because each judge is responsible for the cases assigned to him by the clerk's office at filing and schedules his work load accordingly, the foregoing six steps had to have a caseflow-management orientation to identify backlogs and conflicts in scheduling.** To identify backlogs, INSLAW defined the critical stages in the processing of a case, time standards applicable to each stage, and the capacity of the court to process cases within the established time frames.

Applied to the flow of pending cases assigned to an individual judge, those definitions allow for the production of a statistical report that indicates the number of cases in each stage (for comparison to the courts capacity), their average duration in that stage (for comparison to the time standard), their expected age at final disposition, the number of cases in the stage that already exceed the time limit, and the number expected to exceed the limit at the court's present rate of processing them.

---

*A seventh step, the preparation of training materials, was not completed due to the project's interruption, discussed later.

**Backlog: cases in excess of the court's capacity to dispose of them within a specified time limit.

When the judge has a list of cases for scheduling, they should be scheduled in as conflict-free a manner as possible. Thus another element in our scheduling approach for Milwaukee County was to provide the capability to identify schedule conflicts among the participants. The tool for this is a display indicating the participants, their roles in the case (judge, attorneys, witnesses, etc.), contact information, shifts for police officers, and vacation schedule for persons submitting them to the court. Upon request, the system will indicate any scheduled court activity for case participants, starting with a given date, one week at a time.

The third and final task called for by the work plan is the transfer to Milwaukee of the automated calendar management technique of the Dallas Criminal Court, a technique that, in addition to minimizing the possibility of delay and its use as a defense tactic, identifies court objectives, defines measures of performance, and supplies a process for achieving objectives.* The Dallas approach was expanded and transferred to Milwaukee at the conceptual level during the development of the management component, described above. The applicable Dallas software was not transferred inasmuch as an entirely different approach was taken--Mini PROMIS (see Chapter IV).

---

*More details about the Dallas Court's calendar management technique are contained in the NSF-INSLAW Guide to Court Scheduling, pp. 22-25.

Five steps remained before the calendar manangement technique would be operational: preparing procedures and designing forms; programming and testing; preparing scheduling sites; orienting judges and support personnel about scheduling system capabilities; implementing the scheduling system, monitoring its use, and evaluating performance. These steps--and thus Tasks 2 and 3--were not completed within the grant period because the continuation of federal funding for data processing development, which the court shared with other agencies, was unexpectedly terminated in fall 1977. The county will support the data processing system but, for the time being, only at its present operational level, thereby excluding immediate implementation of a scheduling enhancement. When the county reorganizes and rebudgets this function, consideration of court scheduling improvements will be resumed.*

Accomplishments and findings--Wayne County Circuit Court

Both civil and criminal (felony) cases are heard by the Wayne County (Detroit) Circuit Court, which operates under a hybrid-master calendar system for civil and on a master assignment for criminal. Since the large civil case load of Wayne County (58,000 pending cases) was one of the factors contributing to its selection as a pilot court, INSLAW placed emphasis on potential improvements in scheduling the civil business of the court.

*See the Volume II case study of the Milwaukee County Circuit Court for more details about the implementation effort.

Developed with the cooperation of the court, a work plan* called for the completion of three tasks: (1) introduction of automated assistance into the assignment clerk's office; (2) analysis of court operations, and (3) the development of a management component for the court's scheduling system. These are interdependent tasks. Results of the Task 2 analysis were utilized for the Task 3 development of a management component, which, in turn, provided scheduling parameters (how many cases to overset,** for example) for subsequent improvements in the operations of the assignment office and supplied management information for the chief judge and court administrator.

The first task, introducing automated assistance into the assignment clerk's office, had as its objective the extension of the court's data processing capability to the civil side of the assignment clerk's office, which would result in automated generation of notices, collection of calendaring information, and the capability to print out calendars and schedules. Achievement of this objective would utilize the court's existing computer capacity at modest cost while substantially

---

*The full text of the work plan is an attachment to the Wayne County case study in Volume II.

**Oversetting is the process of scheduling more events than the court can handle on a given day on the presumption that some events will fall out because of settlements, continuances, dismissals, and the like.

decreasing the clerical burden. The work plan specified eleven steps for the completion of Task 1:

1. Document the information requirements of the assignment office.

2. Design information and paper flows compatible with computer assistance for the assignment office.

3. Estimate cost and time savings applicable to the proposed design. (Potential savings in person-hours per year was estimated at $6,975).

4. Write procedures to support the new design.

5. Design forms.

6. Develop software specifications.*

7. Program.* The system is programmed to keep a record of all necessary court scheduling information by case; identify potential scheduling conflicts between the various participants of a case; monitor the overall status of events scheduled for the next ten weeks; provide a listing of all cases scheduled for a given date; furnish management with an overview of the total number of cases pending at each stage of the judicial process; and produce notices to attorneys of upcoming events.

8. Prepare site and test system.

9. Train operating clerks and orient administrative and judicial personnel.

10. Implement and fine tune.

---

*Mini PROMIS (see Chapter IV).

11. Complete documentation.

All except the last three steps were completed within the grant period. In fall 1977, the implementation effort was unexpectedly interrupted because the Judicial Data Center under the State Court Administrator of the Supreme Court ordered the statewide standardization of case tracking. This forced the Wayne County Circuit Court to forego, at least temporarily, both the tracking system on which the scheduling modifications were based and the grant that would have supplied programming support. However, as the result of subsequent discussions with state officials, the path now seems clear for Wayne County Circuit Court to resume the project. In addition, the Detroit Recorder's Court has expressed interest in exploring the applicability of the scheduling system.

Completion of the second task of the work plan, analysis of court scheduling, was not affected by the project's interruption. This task was designed so that scheduling-related operations and case flow would be described quantitatively. To achieve this, the following steps were completed:

- Determination of available automated and nonautomated data.
- Specification of data requirements for court analysis, including case flow, court activity, calendaring, and case load.
- Preparation of data in machine-readable form.
- Analysis of data.
- Consultation on the results of the data analysis.

The third task described in the work plan, development of a management component, required identification of appropriate measures of scheduling performance and development of methods by which the trade-offs associated with scheduling decisions can be quantified and studied. The first two steps of the task entailed involving the judiciary* in specifying court priorities and objectives and identifying measures of performance to serve as bench marks for evaluating whether court objectives have been attained.

The remaining four steps were related to the formation of a management component consistent with the prior discussions with judges and other court personnel:

1. Quantification of trade-offs involved in meeting court objectives.*

2. Development of software specifications for management reports.

3. Development of software for management reports by the court.

4. Preparation of training materials (not completed because of the project's interruption, discussed earlier).

A full account of the efforts related to the three work-plan tasks is contained in the Volume II case study of the Wayne County Circuit Court.

---

*See the related discussion in the section of Chapter II pertaining to Task 4 of Phase II.

Task 6: Meet with User Requirements Committee

Established during Phase I, the User Requirements Committee experienced some turnover during Phase II inasmuch as court personnel moved to new positions and additional courts became interested in the court scheduling project. Active members of the committee were the Honorable Tim Murphy, Judge, Superior Court, Washington, D.C.; The Honorable James B. Zimmermann, Judge, Dallas Criminal Court; Mr. Alvin Ash, LEAA-designated representative and systems specialist, System Development Division, LEAA; Mr. S. Allen Friedman, Court Administrator, Hennepin County (Minneapolis) Municipal Court; Mr. L. M. Jacobs, Court Administrator, Wayne County (Detroit) Circuit Court; Mr. Ron Witkowiak, Court Administrator, Milwaukee County Circuit Court; Mr. Albert H. Szal, former Court Administrator, Prince George's County Court (Maryland); and Mr. Larry P. Polansky, formerly Chief Deputy Court Administrator, Philadelphia Court of Common Pleas, and now Deputy State Court Administrator (Pennsylvania).

Methodology

To obtain feedback on the validity and utility of research and developmental efforts and thereby to inspire confidence in the soundness of the project by potential transfer courts, meetings were held with the committee or with individual members, as appropriate, to coincide with significant task milestones.

Accomplishments and findings

The committee as a whole met with INSLAW only once during Phase II. Many other meetings were held with individual committee members, primarily because so many represented pilot courts. As the implementation work progressed at different rates in the pilot courts; it became obvious that individual meetings would be more productive than group sessions.

INSLAW met several times each with representatives of the pilot courts to discuss aspects of the implementation efforts, to determine responsibilities in the transfer progress, and to demonstrate software.

Committee members commented on the soundness and usefulness of the research and development results--especially those relating to the calendaring and management components--thereby maximizing the chances that project results would be broadly applicable to the court community. Committee members were also expected to assist in the ongoing dissemination efforts of Task 7.

Task 7: Document and Disseminate

To encourage and facilitate the transfer of scheduling modules from pilot courts to other jurisdictions, the revised research plan called for documentation and dissemination of the project's results.

Methodology

A three-step methodology was developed for Task 7:

1. Prepare reports documenting Tasks 1-5 in a manner suitable for judges, systems analysts, scheduling clerks, and court planners.

2. Maintain contact with courts identified during Phase I as employing, or about to employ, automated information systems.

3. Disseminate the results of the project through the Guide to Court Scheduling, seminars, conferences, and other means.

Accomplishments and findings

Because of the interruptions suffered by all three pilot courts, some documentation had to be deferred and dissemination on the scale originally comtemplated seemed premature.

However, several reports documented the projects; these reports comprise Volumes I and II of the Phase II Final Report and include system and programs documentation, a management guide and descriptions of methodologies among other material.

Inasmuch as Mini PROMIS was selected as the software for the automated data-support component of the court scheduling model, continuing contact with courts previously identified employing automated information systems no longer proved essential although this was by no means ignored.

In addition to publicity generated by members of the User Requirements Committee on behalf of the project, dissemination of results included distribution of approximately 4,000 copies of the Guide to Court Scheduling, including its dissemination to judges at the National College of the State Judiciary. INSLAW also addressed the 1977 annual meeting of the National Association of Trial Court Administrators; the overall approach of the project was described and Mini PROMIS was demonstrated. A presentation before the National Center for State Courts is planned.

THE PROJECT IN RETROSPECT

VI. GENERAL CONCLUSIONS AND OBSERVATIONS

The major conclusions emanating from Phase II efforts relate to three primary areas: the overriding importance of the management component; the fundamental need for data collection and analysis; and the strategy underlying the transfer process.

First Things First: The Management Component

A critical conclusion stemming from Phase II efforts is that court scheduling problems must be addressed at the management level before they can be solved at the operational level. Automated scheduling systems have many potential benefits for court users, but lack of adequate management by the judiciary results in software used for clerical matters only and perhaps in the creation of de facto and conflicting policy by operating personnel.

Though some members of the judiciary may be skeptical about the feasibility of improving scheduling procedures, many courts using a comprehensive approach to scheduling systems realize more efficient court operations. A court interested in such a system must not rush into it. Rather, a court must weigh and measure the relative advantages of various scheduling possibilities in light of its own needs and objectives. Decisions about these matters should not be relegated to lower levels of court administration, as now commonly occurs, but ought to be made by a management group of judges and the court administrator, who explicitly identify, evaluate, and resolve trade-offs necessitated by competing goals.

Consistent with this managerial framework and direction, a scheduling system can be designed and implemented by operating personnel. In effect, the goals, objectives, priorities, and policies of the management group are thereby imbedded in the operational fabric of the court. This promotes both consistency and continuity of goals despite personnel turnover.

In the absence of management-set objectives, a court could well be led astray by ersatz solutions and label grabbing. For example, without first establishing goals and determining how alternative case assignment systems may reinforce or contradict those goals, a court might succumb to the tendency of rushing into a decision on the basis of an emotional reaction engendered by the controversy surrounding the individual and master calendar case assignment systems. Rather than an either/or decision by the court based on the label of "master" or "individual" calendar, goals and priorities may dictate the incorporation of worthwhile features of both case assignment systems--that is, the selection of a hybrid arrangement.

Indeed, most case assignment systems are of the hybrid variety. Even a strict individual or master calendar assignment system may be modified to accommodate unusual circumstances. For example, under an individual calendar approach, events in queue behind a particularly complex and lengthy case may be shifted to other judges in light of speedy trial or other judicial goals.

Similarly, one need not abandon a master calendar to obtain

judge accountability nor to prevent judge shopping.

Thus "decision by label" is inappropriate. The preferable approach to the implementation of scheduling systems is to first determine goals given available resources, case characteristics, and participant-related constraints. Once this is done, criteria will have been established against which to evaluate options regarding assignment system, calendar mode, continuance policy, and other aspects of the scheduling system.

Data Collection and Analysis

The foundation of an effective management component of a court scheduling system is adequate and timely information. As the National Advisory Commission on Criminal Justice Standards and Goals concluded, "Official judgement in criminal justice as in other policy areas is not likely to be sounder than the available facts. Unfortunately, the information needed to support official judgement has too often been absent in many jurisdictions."*

Translated into operational terms, management's need for information requires the periodic application of systems analysis, which results in a quantitative description of what a court actually does. Collection and analysis of such information is necessary both for evaluating subsequent changed operations in light of those objectives. Day-to-day general perceptions of

---

*National Advisory Commission on Criminal Justice Standards and Goals, Criminal Justice System (Washington: Government Printing Office, 1973), p. 2.

the performance of a scheduling system do not necessarily coincide with the empirical evidence.

One of the many areas where data collection and analysis can make a significant contribution pertains to the development of reliable predictors of event duration for use in scheduling. Existing event-weighting procedures are based on data that, while statistically valid, are too general and superficial for use in a court scheduling system. Required are data that are more discrete. Assiduous collection and analysis of detailed quantitative data about its own performance will help a court develop more effective predictors of event duration.

Though perhaps self-evident, the observation bears repeating that, without information, priorities are almost impossible to determine, feedback from operations is sketchy at best, and policies determined more by intuition than by substantive analysis. In words attributed to Lord Kelvin, the noted British physicist, "When you can measure what you are speaking about and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager, unsatisfactory kind."

To obtain the "numbers," however, improved interagency or intracourt cooperation may be necessary. For instance in one of the pilot courts, personnel had never met with representatives of the police department, even though both were involved in court events requiring scheduling. Similarly, judges and

data processing personnel in the same court often do not communicate about areas of mutual concern. Because the implementation of a scheduling system requires involvement of the entire court, judges need to understand automated data processing as a managerial tool though not its mechanics. The court administrator, therefore, should promote coordination and cooperation among those possessing needed expertise: judges as policy-makers and data-processing and other operating personnel as implementers.

The Strategy of Technology Transfer

A 1974 NSF-funded report refers to a "complex 'brokerage process'" that serves as "the catalyst to help match the needs [of local government and commercial users] to the technologies."* A major recommendation of the report calls for shifting from a strategy of simply telling potential users about promising technologies to one of actually transferring technical information into ultimate uses. Such an approach was followed during Phase II by INSLAW, which functioned as broker and catalyst with respect to transferring scheduling technology to the various pilot courts.

That the transfer process was not completed in the pilot courts within the grant period is the fault neither of the scheduling technology nor of the transfer strategy. What the

*National Academy of Engineering, Technology Transfer and Utilization (Washington: National Science Foundation, 1974), p. 9.

Phase II experience does indicate is that a moving target is difficult to hit. As noted earlier, the pilot courts were subjected to unexpected reorganizations and other problems at critical points in the transfer process. The result was forced delay, not lack of interest, by the courts in implementing the scheduling system. For example, the Wayne County Circuit Court seems ready to resume the transfer process in the near future. Moreover, the efforts of the pilot courts have motivated other jurisdictions to express interest in the scheduling technology.

In brief, the project's approach to technology transfer remains a most effective one. But neither it nor any other approach is immune from the type of externally imposed obstacles that confronted the pilot courts.

END

DATE

FILMED

4-27-79

NTIS