Title: Dynamic Case Weighting - Using the Data We Have to Manage the Courts

James E. McMillan, Principal Court Technology Consultant, National Center for State Courts USA and Hon. Carolyn E. Temin, Court of Common Pleas, Philadelphia, Pennsylvania, USA
jmcmillan@ncsc.org
cetemin@netzero.com

Abstract: Modern court case management systems contain a wealth of data that can be used not only for historical analysis but also to active case management. It is important to measure complexity so that case weights can be projected and adjusted to balance court case workload, anticipate case delays due to an increasingly difficult matter, and to determine jurisdictional and geographic caseload patterns. This paper explores the possible use current automated court case management system information to dynamically adjust the individual case weights and the total case weights for a judge, department, or court jurisdiction.

Keywords: courts, case management, complexity, weighting, workload

Heading: Modern court case management systems contain a wealth of data that can be used both for historical statistical description and active case management. In this paper we will propose that it is both important and possible to use these new systems to actively measure case complexity to allow courts to better manage their workload.

Current court caseload and work statistics measures quantitatively report the general productivity of the courts. These measures are most often simple case counts by category and time period. For example, the number of serious criminal cases filed, disposed, and pending. These case reports are in turn used by policy makers to evaluate and allocate the court's resources such as budget for judges, staff, and/or facilities. The problem is that current statistical reports are a rather "blunt instrument". They do not achieve the goal of adequately describing the court's workload since a case is a case is a case; each with equal value of work represented within their broad categories.

As a result, case weighting studies have been used by many courts to try to better quantify the courts real workload and hence the staffing and resource needs. Traditionally, these studies have been done via survey, statistical sampling, applying the "Delphi Method"[1], or combination. The studies are then used to support changes in judicial personnel position creation and/or organizational change. Most jurisdictions conduct these studies on a periodic basis because of the large amount of time and staff resources consumed by the data collection and correlation efforts.

This paper will briefly explore the potential of using already existing information contained in modern court case and document management systems to glean information that can e used to measure case complexity with the goal of providing a richer and more accurate representation of the court's workload for operational and policy action.

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[1] For a description of the Delphi method that was created by the Rand Corporation in 1968 see:
http://www.rand.org/pubs/papers/P3925/

Court Caseload Status Statistics[2]

Court statistics are traditionally compiled on a periodic basis; usually monthly and yearly. These reports (an example is shown below in Figure 1) list the count of cases pending at the beginning of the month. Next, the number of cases filed and disposed during the period is counted by case type (civil, criminal, domestic relations, administrative, etc.). The counts are then subtracted from the case pending report and the number of cases pending at the end of the month results. The result is a report that presents the court's caseload status with the count of cases pending at the beginning of the period, the number filed, the number completed, and the number remaining with the court at the end of the period. These types of reports are generically known as "snapshots" because they take a "picture" of a court's workload and disposition rate on a specific date or over a specific period of time. The National Center for State Courts[3] publication, *The State Court Guide to Statistical Reporting[4]* provides the guidance and recommendations for traditional court statistical reporting in the USA.

| | | ALL CASES ON FILE | | | |
| | | CASES FILED | | | |
CASE TYPE	PENDING 7/1/2006	ORIGINAL FILINGS	TRANSFER IN	TOTAL FILED	TOTAL ON FILE
FELONY	251	324	0	324	575
MISDEMEANOR	28	52	0	52	80
UNCLASSIFIED	0	10	0	10	10
L J COURT APPEAL	7	2	0	2	9
TOTAL CRIM	286	388	0	388	674

Figure 1: An example of a typical court statistical report from the State of Arizona Courts General Jurisdiction Statistical Report, 2007

So, why do we find this approach to be less than optimal? Our primary objection is that the traditional case counts do not accurately reflect the amount of work, or burden, that any single or group of cases may produce. An extreme example was reflected in a sidebar note to the article for the *Court Technology Bulletin* on the infamous O.J. Simpson criminal trial[5] It stated that during the time that it took to try the O.J. Simpson case, the Los Angeles Superior Court terminated more than 12,000 other criminal cases.. Nevertheless, statistically, the Simpson case was reported as only one (1) disposition despite the fact the courtroom and participants were often working six days per week for over one year.

Although this case was somewhat of an aberration, it demonstrates, in an exaggerated manner, the way that lack of detailed information beyond a category such as "major felony" can distort the

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[2] This section contains excerpts from James McMillan's paper (one of the co-authors) titled: Status, Events, Weights & Measurement: Court Management Statistics in the BiH CMS presented at the CTC9 conference held in Seattle, Washington, USA in September, 2005.
[3] Information regarding the non-profit National Center for State Courts, USA can be found online at: http://www.ncsconline.org/
[4] http://www.ncsconline.org/D_Research/Statistical_Reporting/index.html
[5] Cirque du O.J., Court Technology Bulletin, July/August 1995, available online at: http://www.ncsconline.org/D_Tech/archive/bulletin/V07N04.HTM

"snapshot" of the court's (or an individual judge's) workload. This can result in potential serious implications to judicial systems. These implications may include the ability to compete for funding for operations, judicial and staff positions; optimal case assignment distribution; and procedural and organizational structural changes brought forth by extra-judicial politics. Further, the lack of details about case workload makes it nearly impossible to compare one jurisdiction to another. For example, a prosecutor in a jurisdiction routinely proceeds on multiple charges in major felony cases   while another limits indictments in those types of cases to the main charge, or is known to drop charges before trial.   The workload in the first jurisdiction will be greater than the second, but the case statistical reports will not reflect that workload since all major felony cases will be counted equally.

Judicial Case Weighting

In an effort to provide a deeper context to case statistical reports for planning and budget purposes, many court systems have created judicial case weighting programs. The Administrative Office of the US Courts (AO) notes in its 2003–2004 District Court Case-Weighting Study [6] the purpose of this work:

> "The AO will use the new case weights to compute weighted caseload statistics for the district courts. Weighted caseloads estimate the case-processing effort required by district judges to adjudicate the volume and mix of cases filed in their courts and help to identify the level of judicial resources needed by the courts to meet their caseload burden."

The report further explains:

> "Cases filed in the district courts require varying amounts of judicial work to process. At the time a case is filed, the best prediction of how much work will be required hinges on the nature of the case. Observers of the courts would agree, for example, that a judge is likely to spend more time processing a newly filed patent case than a newly filed student loan case. A number of case-specific factors can cause an individual patent or student loan case to depart from this pattern, but over a large number of cases, the general relationship holds true.

> Because different case types present different levels of burden, the mix of cases filed in a court is as important a factor in determining the amount of work required to process the court's caseload as is the number of cases. Case weights are a measure of the judicial work required by cases of different types. They indicate how much more or less time-consuming one type of case is compared to other cases."

The report further notes that the Administrative Office of the US Courts has performed weighted caseload studies for more than 30 years to provide a better description of court workload. One of the first weighted caseload studies in USA state courts was performed in 1977 by Dr. Dennis Metrick in the Philadelphia Court of Common Pleas.[7] Dr. Metrick notes on page 15 of the report:

> "Of all of the systems enumerated in this report, it is the opinion of the present author that case weighting presents the most direct and efficient methodology to determine judicial

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[6] http://bulk.resource.org/courts.gov/fjc/CaseWts0.pdf p.1
[7] Metrick, Dennis, Ph.D. (1977) *Pennsylvania Case Weight Study*. NCSC Library, Williamsburg, Virginia KFP 510.5 C65 M47, 1977

> manpower needs. However, most of the systems detailed in this study involve, to some degree at least, a costly and time consuming time study"

Therefore, the usefulness of weighted caseload studies has been endorsed over time by their continual use by the US Federal Courts and numerous State Courts[8]. But as Dr. Metrick notes, the cost and time to conduct such studies in the traditional manner are significant and were relatively rarely performed. However, because technology adoption by the courts has continued unabated for more than three decades as will be discussed in the next section; new datasets are now available that changes the dynamic of the problem.

Automated Case and Document Management Systems

The foundation of case complexity measurement lies in modern case and document management systems. Traditionally case management systems reflected the case registry/docket as a historical record and summary of the events and documents related to the court case. Case management systems also contain information regarding the defendants, parties, attorneys, and other participants. In the USA, the case management systems also contain considerable detail of data regarding financial obligations and payments ordered by the court.

Recent extensions of case management systems include embedded electronic image copies or e-filed original documents. The combinations of case information along with the case documents provide a rich data set from which the workload of the court can be derived. This sea-change is a result of the advances in information technology. In particular, technology advances in the reduction in the cost of digital storage, the increasing speed of computers, the support of better display graphics, and of course the Internet for communications.

Additionally, improved case management designs that track case process task assignments and completion by organization and judicial/staff assignment provide a rich set of workflow data that can be analyzed for performance. For example, if a judge/staff team is required by rule to complete a document within a certain number of days, the system can make that assignment and track whether it was completed. In addition, since the document is electronic it can be later analyzed for size (number of pages) and content (for example the number of legal citations made).

It must also be noted that there are two types of electronic documents used by courts. These documents can be characterized as first "smart" documents such as PDF[9] that can be read and hence searched by a computer and second, "dumb" image documents that can only be read or processed by a person since they are a "picture" of the document. [10]The goal of any modern case and document

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[8] The NCSC has conducted weighted caseload studies in 21 states from 1997 through 2008 to assist in determining judicial and staffing needs. See:
http://www.ncsconline.org/WC/CourTopics/FAQs.asp?topic=WorkLd
[9] Portable Document Format as defined originally by Adobe Corporation but which has become an international electronic document standard. For additional information see:
http://en.wikipedia.org/wiki/PDF
[10] Image documents can be converted to computer readable format by Optical Character Recognition (OCR) programs but this is a time consuming operation that does not yield perfect.

management system is to maximize the percentage of smart documents so that they can be more easily used by information systems technology for rapid searching, categorization, and display manipulation to maximize usefulness.

As the result of task and event, judicial and staff assignment and smart document data, a rich set of information is now available for use in determining the complexity of the cases heard and by extension, the ability to create better workload projections for judges and courts.

Our Proposal

We propose that it's possible use current automated court case and document management system information to dynamically create and adjust individual case weights as matters progress. Once this is done, it is possible to, calculate the total actual and projected case weights for a judge, department, or court jurisdiction. The following factors have been identified by an international panel of judges as potential factors that are measurable. This paper will discuss these factors and the techniques that might be applied to develop automatic and dynamic case complexity weighting measures.

Please note that we are fully aware that if this type of system were to be implemented, individuals might try to manipulate the "total case weight" by adding new tasks that may not be necessary in order to inflate their workload report. Therefore, it will be necessary to create comparative process analysis from judge to judge and court to court to insure that the system is operating as defined by court rule and efficiently as defined by court managers.

Potential Measurement Factors

Case weighting factors are essentially measures of time. The more complex a case is, the more time it will consume to process and decide. The following list of data elements derived from the court case and document management systems could potentially be used as measures.

Criminal Cases:

1. *Number and seriousness of criminal charges* (for example, serious felony versus minor misdemeanor crimes in the USA). Charges made by police and prosecutors in criminal cases are often categorized as serious and minor. Case management systems contain both a list of charges allowed in the system (in order to improve data quality) and the level of seriousness. The systems also list all of the charges alleged by the police/prosecutor. By multiplying each charge with a seriousness factor, for example 3 for very serious, 2 for serious, and 1 or 0 for minor, and then summing the result, the weighted factor better reflects the amount of work required to dispose of that type of case.

2. *Number of criminal charges combined in one indictment or joined to be tried together.* In many instances multiple criminal cases are heard as one matter. The total of all of the charge weights (see 1 above) from all of the cases will be a better "picture" of the workload.

3. *Number of defendants.* The number of defendants involved in a case or joined cases will increase the case complexity. The number of Defendants will also usually determine the *number of attorneys* in the case, and this is also a factor.

4. *Criminal history of a defendant* (experienced versus first-offender) will increase the complexity of the case. In many states there are multiple offender statutes that come into play and as a result, the criminal defense will be more rigorous and time consuming in comparison to a minor, first-time offender.

5. *Number of documents submitted in evidence.* The count of both the number and size (the number of pages) of documents submitted to the court very often corresponds with increasing complexity. In addition the key is the actual complexity of the information in the documents. This measure is difficult to do at this time but research has and is being done in this area.

6. *Number of witnesses.* The number of witnesses identified by the police/prosecution and the defense will increase the complexity and time required to process the matter especially if it goes to trial. In civil law systems the number of witnesses called by the investigating judge will increase the amount of work that a case consumes.

7. *Witness availability.* This factor relates to whether witnesses are in custody, or are located far from the courthouse or may or may not be available to appear at the court.

8. *Number of relationships between defendants, victims, witnesses.* This is a difficult data point to collect. In criminal matters it is often declared which witnesses are appearing for which defendants. Some of this data may be available from law enforcement investigative systems. If so, then a relationship "count" from this data might be possible but likely not until after the case is completed due to evidentiary and privacy rules in most jurisdictions.

9. *The complexity of relationships between defendants, victims, and witnesses.* This is likely to be a rather subjective measure but one that might be estimated by the judge, case manager, or staff attorney in the court. This information may also be obtained from family services departments or pre-trial investigators. Again, this data may not be available during the case because of statute or court rule. However, it is likely that the data may not be available until after the case is decided and it is obtained from the sentencing investigation or by analyzing the witnesses and evidence presented.

10. *Number of exhibits* (documents, photographs and other items) submitted. This is a count that can be derived from the court case management system or, in the future, from an online trial management system such as those used in complex civil litigation in the USA and Australia.

11. *Jurisdictional issues.* If the case involves jurisdictional issues those documents will be submitted to the court, identified, and registered. At that point the system can either note that issues exist and add the appropriate weight or ask for a sliding scale (1-5) estimate as to the complexity of the issues.

12. *Court/Jurisdiction case time history*[11] (for example, the time from filing to disposition). The measure would be developed from statistical analysis over a relatively long time period. The time history can be applied as a base case weighting factor at the time the case is initiated. It should however not be viewed as a "self fulfilling prophecy" but as a comparative measure between courts and homogenized on a jurisdictional level. Over time, as additional data is collected these time history weights can and will be adjusted to reflect changes in law and procedures.

13. *Attorney work history.* This measure can be derived by cross referencing the case time history measure described above with key individual participants. This means that the court will have to devise means of collecting data on individual attorneys and whether they are likely to speed up or slow down the disposition of a case. This is, to a large extent a subjective measure that can be collected from requiring Judges, over a period of time, to review and make assessments of individual counsel who appear before them. This factor can only be measured with regard to attorneys who regularly appear before the same court. It will be easier to measure this in criminal cases where the same prosecutors routinely appear before the court and the defense bar is also usually made up of well-known local attorneys. If there is a significant deviation (faster or slower per case type/charges) then the case weighting factor can be adjusted.

14. *Interpreter required.* If a language interpreter or interpreters are required for a case, and the interpretation is consecutive rather than simultaneous, then the case will take more time. Many courts in "Europe and elsewhere are now equipped to do simultaneous translation, but this is still rare in the United States.

15. *Document translation required.* Similarly if document language interpretation is required, additional time and cost will be required and will add to the case weight. Such a factor could be identified when an original document is filed with the court along with a certified interpretation. This factor will add to the workload of the court administration – but not to the actual work of the trial judge. It should be noted that comment applies in jurisdictions where this is the responsibility of the attorneys rather than the court it will affect time, but not effort.

16. *Multiple Judge Tribunal required (versus a single judge).* If more than one judge is involved in a matter such as a tribunal or appellate matter, then that often adds both time and cost to process the case. This factor would likely only come into play if the multiple-judge hearing was an extraordinary event. In Civil Law countries where multiple judges are standard, this factor would not increase the normal case weight.

17. *Jury Trial.* In the USA, the process of a jury trial consumes a significant amount of judicial, staff, attorney, citizen juror, and facility resources. Such a factor would be identified in the case management system by a registry event that would "bump" the case weight total as determined by a table related to the criminal charges in the matter.

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[11] This measure is described in more detail as part of the National Center for State Courts CourTools performance measures at:
http://www.ncsconline.org/D_Research/CourTools/Images/courtools_measure3.pdf

18. *Courtroom availability.* Some jurisdictions do not have a separate courtroom for each judge or court panel. This can be an issue in delaying trials thus creating more work for judges, staff, and participants to reschedule.

19. *Self-Represented defendants.* Persons inexperienced in court proceedings require additional time to explain and guide their participation. This slows court operations. The Self-Represented defendant factor can be identified either by document if the court requires that a person representing themselves must declare that fact or, by the absence of an attorney associated with the case in the CMS.

20. *Systemic problems.* Technical problems such as an unavailable court reporter or technology unavailability can cause case delays and thus place an additional work burden on the court to either move to a backup system or reschedule.

21. *Novel legal issues.* Judges can easily note in the CMS whether novel legal issues are involved in a matter brought before them.

22. *Expert witnesses.* The fact that experts are required in a civil law system for a criminal matter will likely add considerable time and cost to the completion of the matter. The weighting factor can be adjusted to the amount of time estimated for the expert to complete their work.

23. *Number of expert witnesses.* In a common law system, expert witnesses are declared by the participants. The number of experts will correspondingly add to the case workload and time that the judge must take to oversee deposition or testimony.

24. *Number of issues requiring expert testimony.* In addition to the number of expert witnesses, the numbers of issues that are addressed by the experts add complexity and thus workload to the case.

Civil Cases:

1. *Amount in dispute.* Very often the greater the amount in dispute the greater the case complexity. Courts should look at the originating dispute pleas as well as the court's history in awards in order to determine an appropriate weighting factor for this element.

2. *Subject matter.* Courts would identify the type of civil disputes in question. The more disputed issues, the more complex the case.

3. *Number of parties.* More parties: more complexity.

4. *Self-represented parties.* As in criminal cases, the CMS should identify whether a party or both parties are self-represented and adjust the complexity factor and time allotment accordingly.

5. *Number of relationships between defendants, victims, witnesses.* This may be one of the more difficult factors to quantify in standard civil litigation. However, in family or domestic relations related litigation the relationships should be enumerated. This is often difficult for the CMS to capture. However, work has been done to map these relationships using the XML data description language using the USA federal government's National

Information Exchange Model.[12]   Again, this information may or may not be available during the case. However, it may be able to derive this data once the case is completed and potentially to create metrics based upon a court's and jurisdiction history. In other words, this possible measure may be of use in comparing jurisdictions.

6. *Complexity of relationships between parties and others.* Again, this is one of the more difficult elements to quantify. Clearly, the greater the complexity of relationships the greater the complexity of the case. The XML model may be of some assistance here, but this may have to be a factor that a judge or court staff member would quantify based upon experience over time.

7. *Number of documents submitted to the court.* The number and size of the documents submitted to the court denote case complexity.

8. *Number of exhibits submitted to the court.* This is the count of exhibits and size of document exhibits. The greater the number, the more complex the case and the higher the weighting factor.

9. *Novel legal issues.* As in criminal cases, a judge will have to decide if this factor comes into play to add to the complexity of the matter. One possibility is that a process could be created where a judge submits a case for anonymous review by their peers and a vote is made on the appropriate weight.

10. *Court/Jurisdiction case time history*[13] (for example, the time from filing to disposition). The measure would be developed from statistical analysis over a relatively long time period. The time history can be applied as a base case weighting factor at the time the case is initiated. It should however not be viewed as a "self fulfilling prophecy" but as a comparative measure between courts and homogenized on a jurisdictional level. The data can be used to indicate. Over time, as additional data is collected these time history weights can and will be adjusted to reflect changes in law and procedures.

11. *Party history.* This is the count of how many times and their frequency of a party as a litigant. This may be a positive and a negative. Frequent users of the court are often the most efficient such as those parties (such as utility companies) seeking to collect money from non-payers. But this factor may also increase work for the court if a party is difficult.

12. *Counsel history.* Very similar to party history. This may have a positive or a negative impact upon the court's workload.

13. *Interpreter required.* If a language interpreter or interpreters are required for a case, and simultaneous translation is not available, the case will take more time.

14. *Document translation required.* Similarly if document language interpretation is required, additional time and cost will be required and will add to the case weight. Such a factor could be identified when an original document is filed with the court along with a certified interpretation.

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[12] The National Information Exchange Model project website is located at: http://www.niem.gov/
[13] This measure is described in more detail as part of the National Center for State Courts CourTools performance measures at:
http://www.ncsconline.org/D_Research/CourTools/Images/courtools_measure3.pdf

15. *Jury trial.* In USA state and federal courts once a jury trial begins, it consumes a significant amount of judicial, staff, attorney, citizen juror, and facility resources. Such a factor would be identified in the case management system by a registry event that would "bump" the case weight total as determined by a table related to the criminal charges in the matter.

16. *Experts required.* The fact that experts are required in a civil law system for civil case matter will often add considerable time and cost to the completion of the matter. The weighting factor can be adjusted to the amount of time estimated for the expert to complete their work.

17. *Number of expert witnesses.* In a common law system, expert witnesses are declared by the parties. The number of experts will correspondingly add to the case workload and time that the judge must take to oversee deposition or testimony.

18. *Number of issues requiring expert testimony.* In addition to the number of expert witnesses, the numbers of issues that are addressed by the experts add complexity and thus workload to the case.

19. *Party financial capability.* The ability of a party to meet financial obligations either because of court fees or post-trial requirements can lead to additional case complexity. For example, if litigants return to the court time and again for orders to compel payment in a domestic relations matter, then that adds to the court workload. Similarly if there is a party with what is known in the USA as "deep pockets" it may add to the case complexity since they have more resources to continue with the action.

Building the Measures and Conclusion

Dynamic case weighting based on factors listed above and those yet to be determined adds another "gauge" to the presiding judge and court manager's dashboard to measure the operation and workload. By measuring case complexity and adding as a measure to the usual case count, a judge's, court unit, and courts caseload can be better described. This information allows managers to better balance the case workload, better anticipate overall court delays due to a particularly difficult case or case matter, and to measure jurisdictional and geographic caseload patterns for resource adjustments. It also results in a better measure of individual judge productivity which is valuable in designing judicial accountability systems.

Already some applications of active case weighting are being developed. One example shown below in Figure 2 is from a new case management system being developed for the Judiciary in Indonesia. As shown below, the President Judge can see both the case count and the overall case weight for each judge. This court can choose to manually or automatically assign the case. The pending case has a weight of 70 units shown in the upper right corner. While each judge will have their case count incremented by one and add the full case weight to their total; in the future lesser weights may be assigned to the associate judges because their duties are less than the head judge.
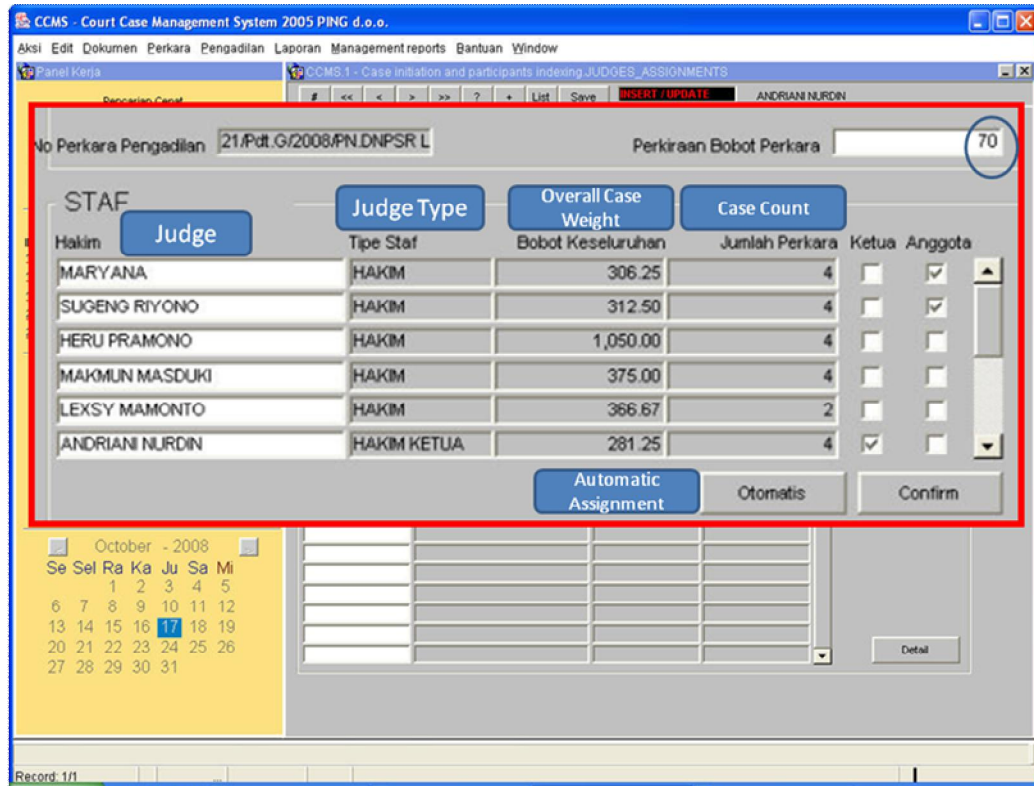
Figure 2: An example of how a case weight is used for judge assignment in a new case management system in Indonesia.

As noted above, the goal of this paper was to identify the potential measures that can be obtained from modern case and document management systems. Now the work begins. Considerable effort needs to be done to determine the proper weights for the various complexity factors. Consideration also needs to be given as to when these factors should be applied to the case type and even to the individual cases. We believe that this can be accomplished through a combination of data collection, short and long term statistical analysis and review by judges and case management experts. The actual numbers that are applied to each factor and, the distribution of the weighting factors will also have to be studied and adjusted between courts and court systems. In other words, which factors should have the greatest impact upon the total score? Should the number of charge counts and seriousness have the greatest weight in criminal matters or something else? And if so, how great should that weight be: 10%, 20%, more? Only time and analysis will answer these questions. But we believe that the effort is needed and will greatly benefit judicial systems in the future.