InterPARES 2 Project
International Research on Permanent Authentic Records in Electronic Systems

# Overview

# Case Study 21:
# Electronic Filing System (EFS)
# of the Supreme Court of Singapore

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**The Creator Context / Activity**
Creator: Supreme Court of Singapore
Creator type: Government focus / Public sphere (central or federal administration)

Juridical context: Prior to Singapore's independence in 1965, the judicial system was controlled by Britain. Following independence in 1965, the system merged with that of Malaysia from 1963 to 1969. In 1969, the Supreme Court of Judicature Act re-established the Supreme Court of Singapore, which is comprised of the High Court, the Court of Appeal and the Court of Criminal Appeal. In 1993, the Court of Appeal and Court of Criminal Appeal were consolidated into a single Court of Appeal for both civil and criminal appeals.

Legislation specific to the (electronic) filing of bankruptcy documents includes:

- Bankruptcy Act, 1995
- Bankruptcy Act (Commencement) Notification, 1995. Also known as Bankruptcy Rules.
- Electronic Transaction Act, 1999 (provides legislative framework for implementing e-services within government).

It should be noted that there is no privacy law in Singapore. Law firms who want to consult the records must seek court approval to be granted access.

Activity: The electronic processing, registering, maintenance and preservation of bankruptcy records by the Supreme Court (filing of bankruptcy petitions and summons in chambers bankruptcy). The EFS enables law firms to electronically sign and submit their legal records to the courts online and to serve records to other firms electronically. The system is a fully electronic civil registry for both the Supreme and the Subordinate Courts.

Specific activities include:

- Filing bankruptcy petitions
- Checking the documentary form of the petitions
- Checking that business procedures adhere to the legislation governing bankruptcy

- Forwarding sealed and signed petitions to law firms
- Filing summons
- Documenting that a petition was served to a debtor
- Conducting hearings and recording these proceedings
- Recovering court fees
- Publishing lists of bankrupts (on paper & scanned)

The activity may be seen in the context of a **nascent business practice**. While the underlying actions of the activity have traditionally been carried out with paper documents on-site, the use of technology for remote use in the current project is innovative. This statement is validated in the recognitions that the Supreme Court has received: the National Infocomm Award for innovative use of technology in 1999 and the Managing Information Strategies Innovation Award and the e-Asia Award in the E-business category in 2003 for the implementation of the electronic filing system (the focus of this case study).

However, there have been some **problems** related to this nascent business practice. In addition to increased time spent scanning records and increased litigation cost resulting from of the imposition of filing fees, the system has also met with some human resistance. "Most judges and lawyers preferred to print and rely on hard copies of the documents during trials and hearings as they felt it was more efficient due to the 'dynamic process of a trial' and also because of 'instability and intermittent slowness of the system.'" (FR 2)

An improvement committee observed that the benefits of the system ""need to be balanced against the additional costs and processing time required for filing" and that there is a need to resolve "technical latency and system instability problems."" (FR 22) Efforts were undertaken to correct these issues. One interviewee of this case study commented that "the EFS is constantly developing," which is a reflection of the court's efforts to incorporate comments from its customers to develop better features for the EFS. Another interviewee states, "There is a constant review and improvement of the EFS to ensure that it caters to the constant needs of the Bench, the Bar and the litigants. The review of technical and usability issues are a constant process to ensure that the system stays ahead of its time in providing the Singapore civil litigation system with a reliable and efficient system for the exchange and archiving of court documents." (FR 22)

**Nature of Partnership**

One could say that the system is a partnership between the Supreme Court, various law firms and the service bureau. "Each law firm has an account that is maintained by the Service Provider (CrimsonLogic) at its Data Centre." (FR 17) "The service bureau acts as a gateway between the law firm's front-end module and the courts' application system. For instance, it ensures that fees are electronically computed and routes records to the respective court's registries." (FR 9)

"External users are defined as staff outside of the Insolvency Section under the Legal Directorate and law firms." (FR 25) There is also an Information Office, which provides IT support and plans the overall strategy and direction of IT related matters in the Court. In addition, various departments have either a management or supervisory/oversight role to play in the system. The violation log is closely monitored by the System Administrator, the financial audit log by the

Finance Section staff and the systems logs by the Facilities Management team, who will alert the Computer Information Systems Department in the event of any abnormal activity. The digital certificates are issued by the Certificate Authority, which is operated by the Supreme Court, although a proposal has been made to outsource certificate issuance and management.

**Bureaucratic/Organizational Structure**
The Supreme Court is organized into five separate departments or directorates: Legal, Disciplinary Committee Secretariat, Corporate Services, Computer Information Systems Department and Corporate Planning. A Chief Justice heads the institution. Under the Chief Justice are judges and judicial commissioners, the Registrar, the Deputy Registrar, senior assistant registrars, assistant registrars and law clerks. The bankruptcy proceedings that this case study focuses on are under the purview of the Insolvency Section of the Legal Directorate.

**Digital Entities Studied**
The digital entity being studied is the Supreme Court of Singapore's Electronic Filing System, including two types of electronic records:[1]

1) Databases (Oracle, Filenet) to store documentary templates
2) PDF files

"Both the PDF record and the documentary template are the digital entities that constitute part of the recordkeeping system." (FR 27) In addition, the system includes digital certificates, though these are not included in the digital entities studied in this case study, since they are used for the transmission of records and are not an integral component of the record, as their primary purpose is to identify the filing party.

**Documentary Practices Observed**
The EFS is an integrated workflow online system, which closely mirrors the paper-based system.

Records creation and Maintenance
With regards to **guidelines** or manuals, juridical regulations of the court govern the business processes and documentary forms of the records. The Bankruptcy Section of the Supreme Court has created an internal procedure manual and workflow chart on the process of filing bankruptcy petitions. In addition, the Bankruptcy Act (Commencement) Notification of 1995 details the necessary documentary forms of records related to bankruptcy proceedings. There is also a prescribed documentary template allowing law firms to enter information on their cases.

Whenever a transaction is made between the law firm's front-end module and the court's system (or between law firms who file court records to each other), both parties are alerted of the existence of **new records** generated through their in-trays.

A **unique**, persistent **identifier**—the file reference number—is assigned to each case. This file reference number is based on the date a petition was lodged. For example, the case number B2/2004 denotes that this was the second bankruptcy case handled by the court in the year 2004. The digital certificates issued and managed by the system have a unique Certificate Control

[1] The case study characterization states that there are three forms of digital entities: "the law firm's front end system, digital certificates and the Court's internal application system manifested in the form of PDF documents, HTML Web pages, XML, Oracle and Filenet Databases." (p. 2) However, it seems that systems do not meet the definition for digital entities as "any aggregation of data," presented in the InterPARES Terminology Database.

Number (serial number of the certificate). The **naming conventions** of the records created under EFS are clearly stated under the Bankruptcy Rules and Act as well as in the registry's internal workflow.

To **organize** records, there exists a uniform classification scheme comprising all Supreme Court cases. "The internal business processes and the juridical regulations laid down by the courts govern the organization of the digital entities of the EFS" (FR 16) To make organization easier and more intuitive in the electronic system, "the file classification of bankruptcy records in the EFS mirrors its previous paper-based filing system, with some modifications." (FR 9) In the traditional paper environment, the record profile of the case file comprised the case number and the name of the debtor. The EFS bankruptcy case file comprises not only these elements, but also the name of petitioner, case status (pending or concluded) and the bankruptcy status (bankruptcy order, adjourned or withdrawn).

The term "**metadata**" is rarely used in the final report. Instead, it is sometimes referred to as a "prescribed set of information" (FR 20) or most frequently a "documentary template," which acts "as the record profile." (FR 23) "The front end module allows law firms to enter relevant metadata elements using a prescribed documentary template (in HTML), and to attach the corresponding supporting records, which are in PDF." (FR 17) Metadata elements that the law film has to enter include the firm's file reference number; party details, including the party type (i.e., whether the firm is representing the creditor or debtor), the name of the parties, address of the parties and the name of the solicitor. "The fields of the documentary template are controlled to ensure consistency and accuracy of information and this explains why there is a drop-down menu for some of the data elements." (FR 26) The schemas for the documentary templates are based on the workflow and juridical requirements of the court.

With regards to **capturing** the digital entities, it is assumed that when the final report speaks of submissions by law firms to the Court, that this process is equated with the EFS capturing the submissions/records in question. The final report notes that "the EFS captures both the metadata of the record and the actual record itself." (FR 20) It is assumed that the "record" referred to here is the PDF document, while the metadata is what is entered via the Web-based application and is referred to in the final report as the "documentary template."

There is no **changing** or modifying records in the system except under explicit, approved conditions. "Once the records are filed and information is entered onto the documentary template by the law firms, the court cannot amend the information, hence protecting the integrity of the record. In cases where there are errors on the part of the court in accepting or rejecting the records submitted by law firms, such errors cannot be overwritten by the registry staff and approval from Director/Computer Information Systems Department is required." (FR 23)

There is a **tracking** function for actions/transactions made in the system. "The system is able to keep track of submissions made to the court." (FR 17) In addition, The EFS maintains audit logs, which keep track of all transactions. There is a transaction log, a financial audit log and a violation log. The transaction log maintains all changes to the digital entities in the system such as changes to documentary templates and deletion of records and annotations. The financial audit log maintains changes made to the payment of fees made to the court, while the violation log

keeps all changes to the digital entities in the system, such as changes to templates and deletion of documents. The violation log also keeps track of unsuccessful (and potentially malicious) attempts to use functions.

Recordkeeping and Preservation

The Supreme Court Registry is responsible for the processing, registration and custody of records. The court's workflow and recordkeeping systems operate together using Visual basic, Oracle database and Filenet document management system.

The court uses Filenet, a **document management system** that indexes and stores the PDF files sent by the law firms. "The court's application system manages all incoming submissions by the law firms as well as outgoing replies by the court." (FR 19) The system includes the "record register," which is essentially an index of documents within the case file. In the traditional paper environment, the register includes the record profile of the various types of documents related to the case, the document number and date the documents were filed. In EFS, the record register exists in the form of a sub-directory. Compared to the paper based system, the EFS record register has an additional record profile: the originator of the document (the person who created the record).

A jukebox **stores** and maintains the PDF records submitted by the law firm, while the information on the documentary template that is entered by the law firms and subsequently added by the court is stored using Oracle database. The PDF files in the jukebox are on optical disks that are Write Once, Read Many Times (WORM), to ensure that information is not alterable. Multiple **backup** copies of records are made to ensure conservation of the digital entities. The same records are stored on three separate disks: one on-site to facilitate online access to information, a second backup is made at the end of each week and stored off-site and a third disk is stored off-site once the second disk is full.

The only apparent **preservation strategy** consists of **migrating** technology to a newer platform. There is no other directive for the long-term preservation of records in the EFS. "The Court recognizes that there is a need to address the long-term preservation of electronic records, although there is currently no strategy in place because the Court views the system to be fairly current." (FR 34) A 1996 report on the management of Court records (written prior to implementation of the EFS) recommends microfilm as the permanent storage medium for Court records. The same report categorizes the various types of case records as essential and non-essential records. "Non-essential bankruptcy records are those records in which no bankruptcy petition is issued. Such records are to be kept for a one-year period. Essential records for bankruptcy cases are those records where receiving and adjudication orders are not made rescinded or annulled." (FR 29) No retention period is specified in the final report for essential records.

For users within the Court, **access** rights to the EFS are based on job roles and competencies. Only registered EFS users who have a smart card obtained by the Supreme Court may file petitions using the EFS.

The creator is aware that the type of operating system and Web browser will affect the rendering and interaction of the digital entities and thus affect the content, structure and context of the

record. Nonetheless, the system is heavily **dependant** on Windows software. "Law firms have been advised to use Windows operating systems and to regularly update with the latest patches from Microsoft as the application system cannot run on other platforms such as Linux. The compatible Web browser to act on and view the records should be Internet Explorer 5 and above." (FR 15) To deal with technological **obsolescence**, one option that has been considered is outsourcing the management of digital certificates to a licensing certification authority so that certificates will be protected from this threat. In addition, "The Court preserves its digital entities by **migrating** the technology deployed onto a newer platform. For example, the Court has changed the storage media for both the jukeboxes and backup tapes due to technology obsolescence." (FR 28)

**Accuracy, Authenticity and Reliability**

"Both law firms and courts have a responsibility and interest in ensuring the accuracy, reliability and authenticity of records to fulfill their mandated functions." (FR 34)

Accuracy

The gateway application system performs validations on law firm submissions. In addition, the processing of case files by the Supreme Court includes "a series of validation checks such as: determining whether the record is submitted in the right format, ensuring that the record is dated and signed, checking the party details by comparing both the PDF record and template." (FR 21) These checks presumably validate the accuracy and therefore the receivability of the submissions.

"The fields of the documentary template are controlled to ensure consistency and accuracy of information and this explains why there is a drop down menu for some of the data elements." (FR 26)

Authenticity

To ensure the authenticity of the records when they are transmitted over space, the EFS system has a Public Key Infrastructure to digitally sign and encrypt records created through the EFS. Hardware encryptors ensure the secure transmission of records between the EFS service provider and the Court. Solicitors at participating law firms are given smart cards, which they can use to encrypt their records before submitting them electronically to the Court. Even if the records are not encrypted at the law firm's end, the presence of a Secure Sockets Layer between the law firm and EFS Service Provider's server ensures that records are transmitted securely to the courts.

There are a number of protective countermeasures in place, such as the use of a firewall, anti-virus software and intrusive detection systems to protect the application and confidentiality of information. The EFS is also periodically subjected to hacking by IDA, a government agency, to highlight any vulnerabilities. To date, results have indicated that there are no vulnerabilities.

Reliability

"The record creator's authenticity and authority are ensured through the provision of an access control matrix, which identifies the names and various roles of the action officers as well as their access rights." (FR 23)