



InterPARES 2 Project

International Research on Permanent Authentic Records in Electronic Systems

Domain 3 Research Questions

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

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1. **What types of entities does the diplomatic analysis identify in this case study? (i.e., records, publications, data, etc.)**

The diplomatic analysis identifies all digital entities resulting from the filing of bankruptcy petitions and summons in chambers bankruptcy to be records.

- 1a. **If there are no records, should there be records? If not, why not?**

Not applicable.

- 1b. **If there should be records, what kinds of records should be created to satisfy the creator's needs (as defined by an archivist)?**

Not applicable.

- 1c. **What characteristics of records (as defined by an archivist) are missing yet necessary to preserve these entities?**

Not applicable.

2. **Are the entities reliable? If not, why not?**

A high degree of control is exercised over the creation of the entities. Specifically, the rules of Court, *Bankruptcy Act* and the Practice Directions control their creation and maintenance. A certain file format and documentary form must be strictly adhered to in order to ensure their admissibility in a Court of law. In addition, an access control matrix directs who creates or has access to the entities according to job responsibilities within the Court. Only law firms and Court users who possess a smart card can create and access entities in the EFS. Once the entities are entered by the law firm, they cannot be altered by the Court.

3. Are the entities accurate? If not, why not?

The entities are highly accurate. Because accuracy is integral to the effective functioning of the Court, it is ensured throughout the EFS in a number of ways. The data entered into the EFS is considered to be accurate because it is only entered by those authorized to do so. It is entered both as metadata in a documentary template and as a scanned PDF, which are checked against each other by Registry staff to make sure their content matches. The proceedings of bankruptcy hearings are also verified by judicial officers to ensure their accuracy before they are released.

4. To what degree can the entities be presumed to be authentic, and why?

The Singapore Supreme Court is highly motivated to ensure that all records within the EFS are authentic, as their level of authenticity directly influences the weight they are given by the Judge/Juridical Officer. Therefore, the Court goes to great lengths to ensure that the digital entities within the EFS remain uncorrupted. It conducts a periodic scan to check for vulnerabilities in the EFS Web site by employing the IDA (a government agency) to attempt to hack into the system. A Public Key Infrastructure (PKI) also guaranties authenticity by enabling the signing and encryption of records, while a Secure Socket Layer and hardware encryptors ensure secure record transmission between law firms and the Court.

Benchmark Requirements Supporting the Production of Authentic Copies of Electronic Records (these apply to the creator):

1. Capture of identity and integrity metadata

The identity of the entities is assured by the presence of the following attributes:

- **Names of persons concurring in the formation of the record:**

As stated in the diplomatic analysis, “many records are generated in the action of conducting a bankruptcy petition, each of which has its own three persons depending on the phase of the procedure in which it participates.” It is mandated by law and by the Court that all necessary people are represented on every record. Name of the action or matter: the entities participate in the assessment and collection of taxes, and are by-products of this action.

- **Names of action or matter:**

The action in which the records participate consists of administering bankruptcy proceedings.

- **Date(s) of creation and transmission, that is:**

- **chronological date:** The Bankruptcy Act (1995) specifies that the chronological date be included in the statutory demand, the bankruptcy petition, its accompanying affidavit, and the bankruptcy order. It is mandatory that law firms enter the date the case was first created into the documentary template. The hearing list and report also include the chronological date. The digital certificate includes its effective date and expiry date.

- **received date:** The date and time that the records are filed into the EFS system are captured as an automatically generated annotation made by the Court.
 - **archival date:** An archival date is not specified in the final report.
 - **transmission date:** A transmission date is not specified in the final report.
 - **Expression of an archival bond:**
The entities possess an archival bond with all other entities created in other phases involved in administering a bankruptcy petition because all are necessary for the case to proceed. An archival bond also exists between case files that are numbered consecutively and stored together by the Court. All actions within the ROS are date/time stamped automatically.
 - **Indication of attachments:**
The final report does not specify whether attachments exist or are indicated.
 - **Name of handling office:**
Records submitted to Court must include the phrase “IN THE HIGH COURT OF THE REPUBLIC OF SINGAPORE” below the title of every document.
 - **Name of office of primary responsibility:**
The Supreme Court of Singapore is included in every document (see above).
 - **Indications of types of annotations added to the record:**
Annotations made by the Court include the date and time of hearing upon confirmation of a decision made by the Assistant Registrar or Registrar; and the case number, document number system, and date and time of filing that are automatically generated by the system.
 - **Indication of technical modifications:**
It is not known what or if any indication of technical modifications is given.
2. **Enforcement of access privileges**
The EFS access control matrix strictly enforces access to the entities by identifying the names, roles and access rights of action officers based on their job competency. External users such as law firms can view a case file, but must file a praecipe for the approval of the Court to obtain extracts of the entities.
 3. **Protection against loss and corruption**
Daily and weekly backups of data are stored in an offsite location to ensure full restoration of the EFS if it fails. In addition, audit trails document all actions and transactions within the EFS through transaction logs, financial logs, and violation logs.
 4. **Protection against media and technology obsolescence**
Digital certificates are reissued every three years. Every time PDF records are created in the EFS, they are stored on three optical disks: one is stored in a

jukebox, one is taken off-site at the end of the week, and one is taken off-site when it is full. Technology upgrades are also regularly undertaken to guard against technological obsolescence, which includes migrating existing technology to a newer platform.

5. **Established documentary forms**

The documentary forms of all entities within the Court's internal workflow application system are strictly controlled by law and by the Court's Practice Directions. Extrinsic elements specified include the physical medium, alignment and formatting, electronic seal, and annotations. Intrinsic elements are also specified, but vary from record to record depending on their associated procedural, juridical-administrative and documentary contexts. The business process and the documentary forms of the entities are integrated by determining their nature based on each constituent action.

6. **Ability to authenticate records**

An assertion of authentication is made throughout every procedure in which the entities participate by the affixation of the Court's electronic seal and/or stamp, and/or the Registrar's signature.

7. **Procedures in place to identify the authoritative record**

The documentary template and the PDF documents submitted by the law firms are considered to be records by the Supreme Court. The retention of the records is decided by both the creator and National Archives.

8. **Procedures in place to properly document removal and transfer of records from the creator's originating system**

Thus far, records have not been removed from the originating system.

Baseline Requirements Supporting the Production of Authentic Copies of Electronic Records (these apply to the preserver):

Not applicable.

5. **For what purpose(s) are the entities to be preserved?**

The entities need to be preserved in order for the creator to adequately fulfill its business function and serve its customers.

6. **Has the feasibility of preservation been explored?**

Yes, the feasibility of preservation has been explored. However, because the EFS is viewed as being current no formal long-term preservation strategy has been developed.

6a. If yes, what elements and components need to be preserved?

All entities deemed to be essential records by the Supreme Court need to be preserved. These include the records where receiving and adjudication orders are not rescinded or annulled.

7. Which preservation strategies might most usefully be applied, and what are their strengths and weaknesses, including costs and degree of technical difficulty?

Currently, the Court attempts to envisage what the new technology will be before the technology being employed becomes obsolete so that it can be migrated without loss of data. It has also explored outsourcing the Certification Authority function to prevent obsolescence. In addition, a 1996 management of court records report recommended that all court records be stored on microfilms.

7a. Which alternative preservation strategies might be applied? What are their strengths and weaknesses, including costs and degree of technical difficulty?

The following alternative preservation strategies could be applied to the EFS digital entities. It is difficult to estimate the cost and degree of technical difficulty such a project would entail:

B1. Use of standards

B1.2. Encapsulation

B2. Technology preservation

B2.3. Software re-engineering

B2.4. Viewers and conversion at the point of access

B2.5. Emulation

8. What additional information does the preserver need to know to facilitate appraisal and preservation?

No additional information needs to be known.

8a. If required information is missing, where should it come from and how should it be made manifest?

Not applicable.

9. Are there any policies in place that affect preservation?

No

9a. Are there any policies in place that present obstacles to preservation?

Not applicable.

9b. Are there any policies that would need to be put in place to facilitate appraisal and preservation?

Policies relating to the assignation of value to the entities; and policies relating to the transfer, maintenance, and reproduction of the entities need to be put in place.