

InterPARES Project

International Research on Permanent Authentic Records in Electronic Systems

Authenticity Task Force
Template for Analysis

DRAFT

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1. Documentary Form

Definition: The rules of representation according to which the content of a record, its administrative and documentary context, and its authority are communicated. Documentary form possesses both extrinsic and intrinsic elements.

1.1 Extrinsic Elements of Documentary Form

Definition: The elements of a record that constitute its external appearance.

1.1.1 Presentation Features

Definition: A set of perceivable features (graphic, aural, visual), generated by means of encoding and program instructions, and capable, when used individually or in combination, to present a message to our senses.

1.1.1.A Overall Presentation

Definition: The record's overall information configuration, i.e., the manner in which the content is presented to the senses.

1.1.1.A.i Text

Definition: Words, numbers, or symbols.

1.1.1.A.ii Graphic

Definition: A representation of an object or outline of a figure, plan, or sketch by means of lines. A representation of an object formed by drawing.

1.1.1.A.iii. Image

Definition: An artificial imitation or representation of the external form of any object, or an optical appearance or counterpart of an object, such as is produced by rays of light, refracted as through a lens, or falling on a surface after passing through a small aperture. A subset of image is moving images which are visual images, with or without sound that, when viewed, present the illusion of motion.

1.1.1.A.iv Sound

Definition: Aural representation of words, music, or any other manifestation of sound.

1.1.1.A.v. Combination of More Than One of the Above

1.1.1.B. Specific Presentation Features

Definition: specific aspects of the record's formal presentation that are necessary for it to achieve the purpose for which it was created.

Examples: Specific presentation features might include but are not limited to the following:

- Special layouts
- Deliberately employed type fonts
- Deliberately employed colours
- hyperlinks
- graphic indication of attachments
- sample rate of sound files
- resolution of image files
- scales of maps

1.1.2 Electronic Signature

Definition: a digital mark having the function of a signature in, attached to, or logically associated with a record, which is used by a signatory to take responsibility or give consent to the content of that record, and which may be used to verify its authenticity.

1.1.2.A Electronic Seal

Definition: specific electronic means of authenticating a record or ensuring that it is only opened by the intended addressee. It is distinct type of electronic signature.

Example: An electronic seal might include but is not limited to the following:

- digital signature, i.e., an electronic signature based on public key cryptography.

1.1.2.A.i Authentication Certificate of Trusted Third Party (T.T.P.)

Definition: an attestation issued by a T.T.P. for the purpose of authenticating the ownership and characteristics of a public key. Such attestation appears in conjunction with the digital signature of the author of a record and is itself digitally signed by the T.T.P.

1.1.3 Digital time-stamp Issued by a Trusted Third Party (T.T.P.)

Definition: an attestation by a T.T.P. that a record was received at a particular point in time.

1.1.4 Special Signs

Definition: Symbols which identify one or more of the persons involved in the compilation, receipt, or execution of the record.

Examples: Special signs might include but are not limited to the following:

- digital watermarks
- organization crest
- personal logo
- originator identifier

1.2 Intrinsic Elements of Documentary Form

Definition: The elements of a record that convey the action in which the record participates and its immediate context.

1.2.1 Name of Author

Definition: Name of the physical or juridical person having the authority and capacity to issue the record or in whose name or by whose command the record has been issued.

Note: In traditional records, the name of the author typically appears as the name expressed in the letterhead (*entitling*), in the initial wording of the record (*superscription*), and/or at the bottom of the record (*subscription*). It may be the same name as that of the writer, and, with records that are electronically transmitted, may correspond to the name of the originator. However, the name of the author only validates the record when it has the function of an attestation.

1.2.2 Name of Originator

Definition: Name of the person assigned the electronic address in which the record has been generated and/or sent.

Note: When the name of the originator is different from the name of the author of the record, the law usually considers the originator's name as the indication of the person responsible for issuing the record.

1.2.3 Chronological Date

Definition: The chronological date is the date, and possibly the time, of the record included in the record by the author or the electronic system on the author's behalf in the course of its compilation.

1.2.4 Name of Place of Origin of Record

Definition: The name of the geographic place where the record was generated, included in the content of the record by the author or the electronic system on the author's behalf.

1.2.5 Name of Addressee(s)

Definition: The name of the person(s) to whom the record is directed or for whom the record is intended.

Note: In traditional records this element corresponds to the *inscription* and usually occurs at the top of the record. With electronic mail records, the name of the addressee(s) continues to appear in the top portion of the record (i.e., in a header).

1.2.6 Name of Receiver(s)

Definition: The name of the person(s) to whom the record is copied for information purposes.

1.2.7 Indication of Action or Matter

Definition: The *subject* line(s) and/or the *title* at the top of the record.

1.2.8 Description of Action or Matter

Definition: Presentation of the ideal motivation (*preamble*) and the concrete reason (*exposition*) for the action as well as the action or matter itself (*disposition*).

1.2.9 Name of Writer

Definition: The name of the *person* having the authority and capacity to articulate the content of the record.

Note: In traditional records, the name of the writer usually appears at the bottom of the record and is typically constituted by the *subscription*. The name of the writer may be the same as the name of the author (and perhaps of the originator).

1.2.10 Corroboration

Definition: Explicit mention of the means used to validate the record.

Note: "to validate" means to make legally valid; to grant official sanction to by marking; to support or corroborate on a sound or authoritative basis.

1.2.11 Attestation

Definition: The written validation of a record by those who took part in the issuing of it (author, writer, countersigner) and by witnesses to the action or to the signing of the record.

Note: In traditional records, the attestations usually appear as *signatures* at the bottom of the record (the *eschatocol*). However, some records have the attestation in the protocol. For example, memoranda may be signed or initialled beside the *superscription*. With electronic records, such as electronic mail messages, the attestation appears in the header of the message.

1.2.12 Qualification of Signature

Definition: The mention of the title, capacity and/or address of the persons signing a record.

Note: Qualification of signature may follow either a *subscription* or a *superscription*.

2. Annotations

Definition: additions made to a record after it has been created.

2.1 Annotations Made in the Course of Executing the Record

Definition: Additions made to a record after it has been created as part of the formal execution phase of an administrative procedure.

Note: Normally this sort of annotation is used only for the authentication and registration of legal records whose form is required by law, e.g., the registration number added to a land deed by the land registry office, or the statement of the authenticity of the signatures in a will.

Examples: Such additions might include, but are not limited to the following:

- **Priority of Transmission**

Definition: Indication of the priority in which a record is to be transmitted.

- **Transmission Date, Time and/or Place.**

Definition: The *date*, *time*, and/or *place* when the record leaves the space in which it was generated.

Note: Transmission date, time and/or place is usually added by the electronic system.

- **Indication of Attachments**

Definition: Mention of autonomous items that have been linked inextricably to the record before transmission (i.e., added during its execution) in order for it to accomplish its purpose.

2.2 Annotations Made in the Course of Handling the Business Matter to which the Record Relates

Definition: additions made to the record in the course of handling the business matter in which the record participates and reflecting actions taken subsequent to the creation of the record for the purpose of handling the action or matter in which the record participates.

Such additions might include, but are not limited to the following:

- Received Date and Time
- Name of Handling Office
- Action taken
- Dates and Times of Further Action or Transmission

2.3 Annotations Made in the Course of Managing the Record for Records Management Purposes

Definition: additions made to a record for the purpose of handling the record itself and reflecting actions taken subsequent to the creation of the record for the purpose of managing it as part of the agency's records.

Such additions might include, but are not limited to the following:

- **Archival Date**

Definition: The date on which a record is officially incorporated into the creator's records.

- **Draft or Version Number**

Definition: The unique identifier assigned to sequential drafts or versions of the same record, added to the record when it is saved.

- **Record Item Identifier**

Definition: The progressive number of the record within the dossier or, in the absence of dossiers, within the specific class.

- **Dossier Identifier**

Definition: The identifier for the dossier in which the record belongs.

Note: It may be constituted by the name of a person or organization, a symbol, a progressive number, a date, or a specific topic within the class's general subject.

- **Class Code**

Definition: The code of the class to which the record belongs, as it appears in the classification scheme, thus connecting it to other records in the same class.

- **Registration Number**

Definition: The consecutive number added to each incoming or outgoing record in the protocol register, which connects it to previous and subsequent records made or received by the creator.

- **Name of Creator**

Definition: The name of the *person* in whose archival fonds the record exists.

3. Medium

Definition: The physical carrier of the message.

Note: The medium is considered an essential component of the record inasmuch as a record does not exist until it has been affixed to a physical carrier.

4. Context

Definition: The framework of action in which the record participates.

4.1 Juridical-Administrative Context

Definition: The legal and organizational system in which the creating body belongs.

Note: Indicators of juridical-administrative context are laws, regulations, etc.

4.2 Provenancial Context

Definition: The creating body, its mandate, structure, and functions.

Note: Indicators of provenancial context are organizational charts, annual reports, the classification scheme, etc.

4.3 Procedural Context

Definition: The business procedure in the course of which the record is created.

Note: In some organizations, the business procedures are integrated with documentary procedures. Indicators of procedural context are workflow rules, codes of administrative procedure, classification schemes, etc.

4.4 Documentary Context

Definition: The fonds to which the record belongs and its internal structure.

Note: Indicators of documentary context are classification schemes, record inventories, indexes, registers, etc.

4.5 Technological Context

Definition: The characteristics of the technical components of the electronic system in which the record is created.

4.5.A. Hardware

4.5.A.i. Storage

Definition: The medium that stores data in the system.

4.5.A.i.a. Main Memory (a.k.a. primary memory)

Note: This type of storage is fast, different parts of it can be accessed randomly (rather than sequentially) and directly by the CPU/Microprocessor. Thus, for a process to run or a file to be accessed, it must be loaded, at least partially, into the main memory. Main memory is provided via integrated circuit chips and does not involve mechanical movements. It is "volatile" in that its contents will be lost when a computer system is shut down.

Example: Random Access Memory (RAM), cache memory

4.5.A.i.b. Secondary Storage (a.k.a. secondary memory)

Note: This type of storage is slower than main memory and is cheaper. It involves mechanical parts and movements that contribute to its low speed of access. It is non-volatile in that

shutting down the system will not result in loss of data on the secondary storage. Compared to magnetic tapes, secondary storage devices are randomly accessible.

Examples: hard disks, magnetic or optical disks, CD ROM's, DVD's.

4.5.A.i.c. Tertiary Storage

Note: This type of storage is sequentially accessible only, and is used for long-term file preservation.

Examples: magnetic and digital tapes.

4.5.A.i.d. Storage for Security/Recovery Purposes

Note: This type of storage is used as a protective measure against the possibility of catastrophic loss. It tends to be overwritten at regular intervals and is not intended to serve the purpose of long-term file preservation.

Examples: magnetic and digital tapes.

4.5.A.ii. CPU/Microprocessor

Definition: The primary resource for job/instruction execution.

Note: This resource can be broken down further into its own sub-systems (e.g., registers and logic units). Its speed of executing instructions is considerably higher than the speed of accessing main memory. It interfaces directly with main memory, so a record must be loaded into main memory from secondary or tertiary storage before it can be readable.

4.5.A.iii. Network

Definition: The primary source of communication between systems or components thereof.

Note: Network encompasses its own types of hardware, software and architectures.

4.5.A.iv. Peripheral Devices

Examples: Mouse, monitor, keyboard, printer.

4.5.A.v. Architecture

Definition: The configuration of hardware components and their interfaces.

Examples: CPU architecture, mother board architecture, system architecture (i.e., serial, pipelined, parallel, distributed, client-server), Network architecture.

4.5.B. Software

4.5.B.i. Operating System

Definition: The system which manages, controls, protects and facilitates the use of hardware resources in the electronic system.

Note The following can be identified as functions and main modules of an operating system: process management (scheduling, switching, deadlock management, memory management, secondary storage management, storage scheme (data mapping), disk scheduling, virtual memory, management, file system (distributed, file format, directories), interrupt handling, user interface, device and network interface. The way an operating system is configured (parameterized), may affect certain aspects of data and files in the system. For example, there may be a limit imposed on the size of a data file.

4.5.B.ii. System Software

Definition: Software that creates an environment for application programs to be created, executed and maintained, typically through system calls to the operating system.

Note: System software is sometimes referred to as system utilities or system tools.

Examples: languages (machine language, high-level languages), compilers, interpreters and translators, coding (compression, encryption), system utilities (i.e. hard disk defragmentation tools, virus detectors, etc.)

4.5.B.iii. Network Software

Definition: network software manages networks and their resources in order to meet the communication requirements of one or more applications.

Examples: protocols, routing, and switching software.

4.5.B.iv. Application Software

Definition: Software that constitutes any type of program that is tailored to satisfy real-world needs and requirements.

Note: Application software varies widely in nature and complexity, as the range of applications using this type of software is quite diverse. Application software may be developed in-house by the organization that uses it, custom-made by another company or contractor for the organization that uses it, or purchased as an off-the-shelf package. It is important to know whether the software includes source code, documentation, and other components, in addition to the executables. As in the operating system, a set of parameters or characteristics may be associated with the application software whose values affect the number, format and size of the records that are handled.

Examples: Microsoft Word, Lotus 1-2-3, Netscape Communicator, Database Management (DBMS) software, Computer Aided Design (CAD) software.

4.5.C. Data

Definition: numbers, characters, images or other methods of recording which represent values that can be stored, processed, and transmitted by electronic systems.

4.5.C.i. File Structure

Definition: The relationship and organization of files within a system.

Note: File structure includes the directory structure of a file system. The physical structure and organization of files in a file system may also constitute an aspect of the file structure and data format. This can include the mapping of files onto disk blocks of each disk plate, and among a set of disks.

4.5.C.ii. Data Format/File Format

Definition: The organization of data within files. These are organizations that are usually designed to facilitate the storage, retrieval, processing, presentation and/or transmission of the data by software.

Note: Data format is concerned with the representation of each piece of data and the relationship between pieces of data. Within a file, it includes standardized data formats such as ASCII text, as well as proprietary file formats such as Microsoft's WORD97 and Adobe's PDF file formats. It also includes structures such as the tabular format of data files in a database management system, and the format (using tags) of data files used by mark-up languages.

Examples: Portable Document Format (PDF), Rich Text Format (RTF), ASCII text

4.5.D. System Models

Definition: system models are abstractions that represent the entities, activities and/or concepts in the system as well as their attributes, characteristics, and the functional relationship between them.

Note: "Functional relationship" refers to a relationship involving two or more entities/objects that is important to represent explicitly in order for the application to function correctly. System models contrast with data format and file structure in that they represent behavioural, procedural and/or functional aspects of a system or software application. They may, however, affect directly or indirectly the way files are conceived in an application and the way data are organized within the files in an application. A model is usually represented graphically (e.g., as in entity-relationship, object-hierarchy, data-flow, control-flow, and state-transition

diagrams). Modelling languages (e.g., IDEF, UML) and their associated software tools serve as aides in creating model specifications. The model usually becomes part of an application's requirements, specifications, and/or design document. Parts of the model can also be represented and used in an application's data dictionary.

Examples: entity-relationship models, object domain diagrams, IDEF(0) process models, UML use-case models, data-flow diagrams.

4.5.E. System Administration

Definition: System administration is a set of procedures that ensure correct, secure, reliable, and persistent operation of the system.

Examples: Providing access privileges, ensuring security, availability, reliability and integrity of the system over time, configuring the system, backing up files, system maintenance and upgrading hardware, software and storage systems.