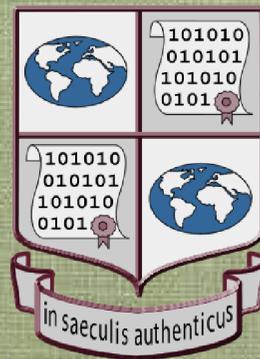# Digital Diplomatics
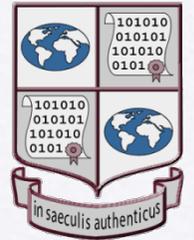
**Dr. Luciana Duranti**
InterPARES Project Director

Classic Diplomatics

Diplomatics is the study of individual records, of their genesis, inner constitution, and transmission, and of their relationships with the facts represented in them and with the person or organization producing them, for the purpose of understanding their nature and assessing their trustworthiness

Origin

Diplomatics was developed in France in the 17th century for the purpose of ascertaining the provenance and authenticity of records that attested to patrimonial rights, and later grew into a legal, historical and philological discipline, as it came to be used by lawyers to resolve disputes, by historians to interpret records, and by editors to publish medieval deeds and charters. It still encompasses primarily the study of medieval records.
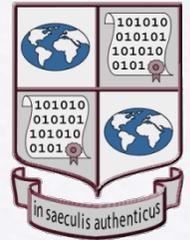
Archival Diplomatics
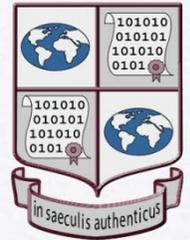
The integration of archival and diplomatic theory about the genesis, inner constitution, and transmission of records; and about their relationship with the facts represented in them, with other records produced in the course of the same function and activities, and with their creators.
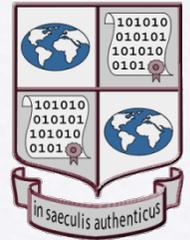
The Object of Archival Diplomatics

- **Record**: any document created (i.e., made or received and set aside for action or reference) by a physical or juridical person in the course of activity as an instrument and by-product of it

- **Document**: recorded information (i.e., information affixed to a medium in an objectified and syntactic form)

- **Information**: a message intended for communication across time and space

- **Data**: the smallest meaningful piece of information

The Uses of Archival Diplomatics
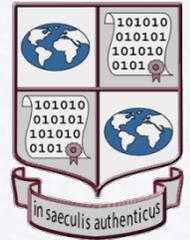
- **Retrospective**: to understand the nature and attributes of existing records and to assess their trustworthiness

- **Prospective**: to design documentary forms and procedures and to develop trusted record-making, recordkeeping and record preservation systems

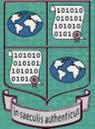# Outcomes of the Use of Archival Diplomatics in InterPARES
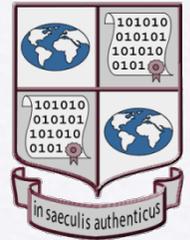
- A more nuanced concept of record, although still consistent with and within the boundaries of the traditional definition

- A more nuanced concept of trustworthiness, encompassing reliability, accuracy, authenticity and authentication

- A complex methodology of analysis that keeps into account all the context in which records are created
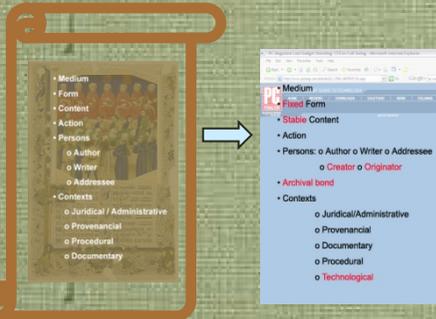
Archival Diplomatics of Digital Records

Dr. Luciana Duranti
The University of British Columbia

The Concept of Record

Digital Record Characteristics

- Medium
- Form
- Content
- Action
- Persons
  - Author
  - Writer
  - Addressee
- Contexts
  - Juridical / Administrative
  - Provenancial
  - Procedural
  - Documentary

- Medium
- **Fixed** Form
- **Stable** Content
- Action
- Persons: o Author o Writer o Addressee
  - o Creator o Originator
- Archival bond
- Contexts
  - o Juridical/Administrative
  - o Provenancial
  - o Documentary
  - o Procedural
  - o Technological

On the face Of the Record

Formal Elements

Attributes

Digital Components

Lifecycle of Digital Records
Phase 1: Records of the creator
Phase 2: Authentic copies of the records of the creator

Archival Diplomatics

The integration of archival and diplomatic theory about the genesis, inner constitution, and transmission of documents; and about their relationship with the facts represented in them, with other documents produced in the course of the same function and activities, and with their creators.

Retrospective Use

Prospective Use

Genesis of the Digital Records
Workflow: actio et conscriptio

- Initiative
- Inquiry
- Consultation
- Deliberation
- Deliberation Control
- Execution

Dynamic and Interactive Records
Stable Content
Fixed Documentary Form
Bounded Variability

Functions of Records
Probative/Dispositive
Supporting/Narrative
Instructive/Enabling

Categories of Records
- Manifested:
- Stored:
} Form, Content, and Composition Data

Status of Transmission
Draft
Original
Authenticated original
Copy (e.g., authentic copy)

Application: Research Projects
UBC Project (1994 - 1997)
InterPARES 1 (1999 - 2001)
InterPARES 2 (2002 – 2006)
InterPARES 3 (in application)

The Concept of Trustworthiness

Reliability

The trustworthiness of a record as a statement of fact. It exists when a record can stand for the fact it is about.

Accuracy

The degree to which data, information, documents or records are precise, correct, truthful, free of error or distortion, or pertinent to the matter.

Authenticity

- identity
- integrity

The trustworthiness of a record as a record; i.e., the quality of a record that is what it purports to be and that is free from tampering or corruption.
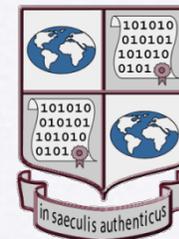
Digital Signature

Signature Is Valid

Signer: Darth Maul, dmaul@att.com
CSP: Microsoft Base Cryptographic Provider v1.0
Hash Algorithm: sha1

Certificate Information:

AT&T Corp., Business Name - 0010311118-000081, Darth Maul, dmaul@att.com

AT&T Corp., AT&T ACES Business Representative CA

Metadata
Identity Metadata
Integrity Metadata

✓ As a Means of Authentication

Authenticity Requirements
Benchmark Requirements
Baseline Requirements
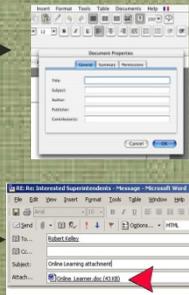
Luciana Duranti
Email: luciana@interchange.nbc.ca
www.interpares.org

# Digital Record Characteristics (identified in InterPARES 1)

- **Medium**: necessary part of the technological context, not of the record

- **Stable Content and Fixed Form**

- **Archival Bond**: explicit linkages to other records inside or outside the system

- **Five Necessary Persons**: author, writer, originator, addressee, and creator

- **Act**: an action in which the records participates or which the record supports

- **Five Necessary Contexts**: juridical-administrative, provenancial, procedural, documentary, technological

Digital Record Characteristics (cont.)
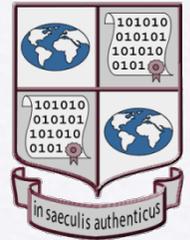
- **Formal Elements**: a constituent part of the record documentary form as shown on its face (intrinsic or extrinsic)

- **Metadata**: the attributes of the records that demonstrate its identity and integrity (authenticity)

- **Digital Components**: entities that either contain one or more records or are contained in the record and require a specific preservation measure

Status of Transmission or Degree of Perfection
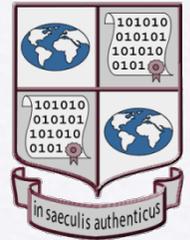
With paper records: draft, original, copy (simple, imitative, authentic, in form of original, vidimus). With digital records:

- **Original**: the first received record (the first complete effective record). The record saved to the system before being transmitted across time or space is a **complete draft**

- Retrieving the record creates **copies in the form of original**

- **Inserts**=vidimus

- **Authenticated records**

- **Authentic copies**

Stored and Manifested Records (identified in InterPARES 2)
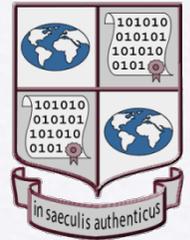
- **Stored record**: the digital component(s) used in re-producing one or more than one record, which include the data to be processed in order to manifest the record (content data and form data) and the rules for processing the data, including those enabling variations (composition data)

- **Manifested record**: the visualization or materialization of the record in a form suitable for presentation to a person or system. Sometimes, it does not have a corresponding stored record, but is re-created from fixed content data when a user's action associates them with specific form data and composition data (e.g. a record produced from a relational database)

Types of Digital Records
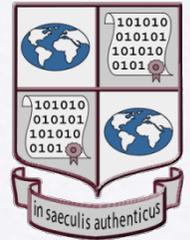
Static: They do not provide possibilities for changing their manifest content or form beyond opening, closing and navigating: e-mail, reports, sound recordings, motion video, snapshots of web pages

Interactive: They present variable content, form, or both, and the rules governing the content and form of presentation may be either fixed or variable

Interactive Entities
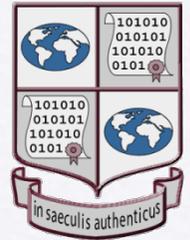
- **Not-dynamic**: the rules governing the presentation of content and form do not vary, and the content presented each time is selected from a fixed store of data. Ex. Interactive web pages, online catalogs, records enabling performances—they are records

- **Dynamic**: the rules governing the presentation of content and form may vary—they are potential records

Interactive Record
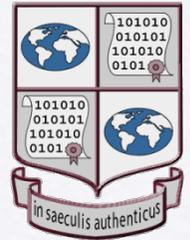
Fixed Form:

- if its binary content is stored so that the message it conveys can be rendered with the same documentary presentation it had on the screen when first saved (different digital presentation: Word to .pdf)

- if the same content can be presented on the screen in several different ways in a limited series of possibilities: we have a different documentary presentation of the same stored record having stable content and fixed form (e.g. statistical data viewed as a pie chart, a bar chart, or a table)

Interactive Record (cont.)
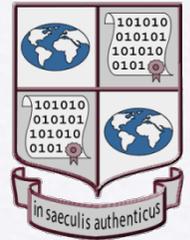
- **Stable Content**: the data and the message in the record are unchanged and unchangeable, meaning that data cannot be overwritten, altered, deleted or added to

- **Bounded Variability**: when changes to the form are limited and controlled by fixed rules, so that the same query or interaction always generates the same result, and we have different views of different subsets of content, due to the intention of the author or to different operating systems or applications

Interactive Potential Records
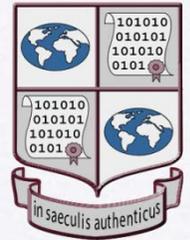
- Entities where the variation is due to data that change frequently (the design permits updating, replacement or alterations; allows data collection from users or about user interactions or actions; or uses these data to determine subsequent presentations)

- Entities where the variation is due to data received from external sources and not stored within the system (VanMap)

Interactive Potential Records
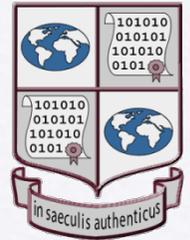
- Entities produced in dynamic computing applications that select different sets of rules to produce documents, depending on user input, sources of content data, and characteristic of content (weather sites)

- Entities produced by evolutionary computing where the software generating them can change autonomously (scheduling and modeling of financial markets; edutainment sites)

Records Functions
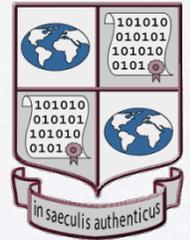
- *Ad substantiam* and *ad probationem* (dispositive, e.g., contracts; probative, e.g., registries=legal records)

- **Supporting**: generated to be used in the course of multiple activities as a source of information (e.g., GIS)

- **Narrative**: generated as an instrument of communication but not required by the juridical system (e.g., most e-mails, reports, web sites)

Records Functions
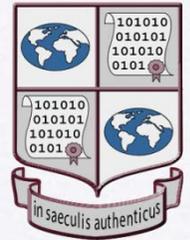
- **Instructive**: delineate the form in which external data are to be presented (e.g., scores, scripts, regulations, manuals of procedure, instructions for filling out forms)

- **Enabling**: enable performance of artworks (software patches), execution of business transactions (interacting business applications), conduct of experiments (a workflow generated and used to carry out an experiment of which it is instrument, byproduct and residue), analysis of observational data (interpreting software), etc.
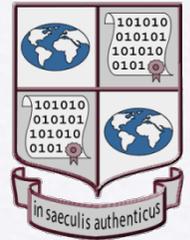
Workflow of Digital Records
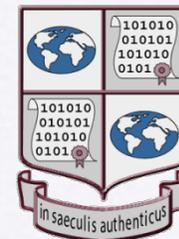
Integration of *actio* and *conscriptio* (moment of action and moment of its documentation)

- Initiative (e.g. application)

- Inquiry (e.g. collection of data)

- Consultation (e.g. minutes)

- Deliberation (e.g. order)

- Deliberation Control (e.g. approval)

- Execution (e.g. registration)

New Concept of Records Life-Cycle

Based on the recognition that re-productions and re-creations of digital records

- if made by the creator in the course of and for the purposes of its business, are **records of the creator**, while

- if made by the preserver in the course and for the purposes of archival functions, are **authentic copies of the records of the creator**

Digital Records Life-Cycle
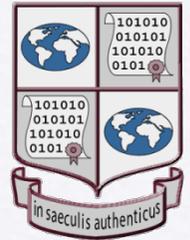
It comprises **two phases** related to the status of transmission of the record (i.e. degree of perfection: whether draft, original or copy)

Phase 1: **Records of the creator**: the re-productions and re-creations behave and have to be treated as originals every time they are used and acted upon

Phase 2: **Authentic copies of the records of the creator**: they cannot be treated as originals because the creator has never used or acted upon them after re-production, which is made for preservation purposes.

As a Consequence…
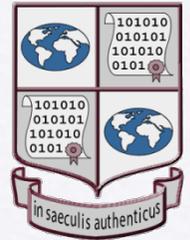
- The creator can decide at any given time to stabilize its own fluid entities and to give them the most useful, accessible, interoperable form, or the form that best serves its present and projected needs, and have as a result an entity that we can call "record of the creator"

- The preserver can only preserve what it receives from the creator by making an authentic copy of it, and has no right to stabilize it or alter its documentary form—only its digital presentation, or format

- Whether the record of the creator by it stabilized and its authentic copy made by the preserver are to be considered trustworthy depends on the context in which they are created and used

Trustworthiness
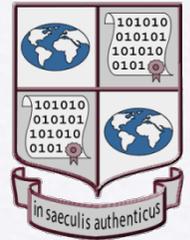
Reliability

The trustworthiness of a record as a statement of fact,

based on:

- the competence of its author
- the controls on its creation

Accuracy

The correctness and precision of a record's content

based on:

- the competence of its author
- the controls on content recording and transmission

Authenticity

The trustworthiness of a record to be what it purports to be, untampered with and uncorrupted

based on:

- identity
- integrity

Authenticity: Identity

The attributes of a record that characterize it as unique, and that distinguish it from other records.

Identity metadata:

•names of the 5 persons concurring in its creation

•date(s) and time(s) of issuing, creation and transmission

•the matter or action in which it participates

•the expression of its archival bond

•documentary form

•digital presentation

•the indication of any attachment(s)

•digital signature

•name of the person responsible for the record

Authenticity: Integrity
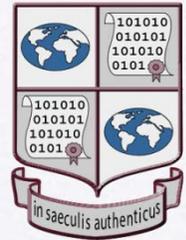
A record has integrity if the message it is meant to communicate in order to achieve its purpose is unaltered.

Integrity metadata:
- **name(s) of handling persons over time**
- **name of person responsible for keeping the record**
- **indication of annotations**
- **indication of technical changes**
- **indication of presence or removal of digital signature**
- **time of planned removal from the system**
- **time of transfer to a custodian**
- **time of planned deletion**
- **existence and location of duplicates outside the system**

Authentication
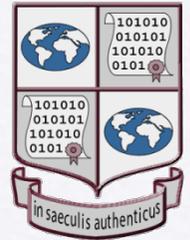
A means of declaring the authenticity of a record at one particular moment in time -- possibly without regard to other evidence of identity and integrity.

Example: the **digital signature**. Functionally equivalent to medieval seals (not signatures):

- verifies origin (identity)

- certifies intactness (integrity)

- makes record indisputable and incontestable (non-repudiation)

The analogy is not perfect, because the medieval seal was associated exclusively with a person, while the digital signature is associated with a given person and a specific record, and because the former is an expression of authority, while the latter is only a mathematical expression

Trusted Systems
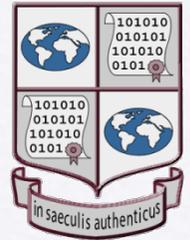
Rules, and tools and methods to implement rules, for

Making reliable and accurate records

- record-identity metadata schemes
- business and documentary procedures integrated in a workflow structure linked to classification schemes and filing plans
- specifications of record forms
- record-making access privileges

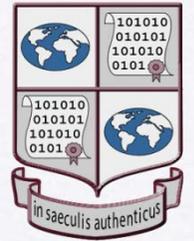## Maintaining and keeping authentic records

- record-integrity metadata schemes
- classification schemes and filing plans
- linked retention schedule
- registration system
- retrieval system
- record-keeping access privileges

Sources
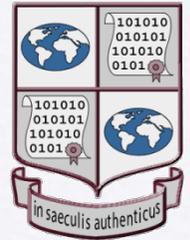
- L. Duranti and K. Thibodeau, "The Concept of Record in Interactive, Experiential and Dynamic Environments: the View of InterPARES," *Archival Science* 6 (2006): 13-68

- L. Duranti, "Pour une diplomatique des documents electroniques," *Bibliotheque de l'Ecole des chartes*, special issue on "Exportations de la diplomatique" (Paris: Ecole des chartes, 2004): 105-125

InterPARES Web Site

www.interpares.org