Dynamic management of digital rights for long-term preservation

The expert system approach
• digitization programs
  – mass digitization for Gallica (open in 1997) and the European Digital Library (now 100,000 items per year)
  – digitization for preservation programs
• web archives
• administrative and technical documents produced by the library
SPAR

• «Système de Préservation et d’Archivage Réparti» (distributed system for preservation and archiving)

• **Hardware**
  - Sun StorageTek™ Disk (fast access) + tape Library (preservation)
  - Two storage sites

• **Software**
  - High level requirements
    • Full compliance to OAIS
    • Use of metadata standards: METS, PREMIS, DC, MIX, ODRL
    • Dimensioned up to 1150 terabytes in 2010
    • Several workflows
  - currently in the procurement process
**Digital rights issues**

- Digital content is very easy to obtain, duplicate, distribute, without any loss in quality.
- Digital rights management, a way to control access and use.
- Long-term preservation involves managing changes overtime in digital rights.
- Static vs dynamic management
  - How to manage automatically
    - The access to works that enter the public domain?
    - The end or changes in contracts between rights holders and the Library?
- A solution may consist in developing a specific « expert system »
Different kinds of rights

• **Copyright law**
  - A work enters the public domain 70 years after the author’s death
  - ...

• **Legal deposit law**
  - Authorized access for accredited persons to digital versions of works entered by legal deposit (only inside the Library)

• **Privacy**
  - restricted access / special authorizations to access photographs representing identifiable persons
  - unpublished works (manuscripts, archives) under specific rules
  - ...

• **Trademark and fair competition rules**
The expert system

• a computer program able to undertake and complete, within a specific field of knowledge, logical reasoning usually undertaken by humans

• Two main components:
  – The **knowledge base**
    • Facts base
    • Rules base
  – The **inference engine**
The knowledge base

• **Facts Base**
  - Rights Metadata
    • One RM file associated to each digital object
  - Default use parameters
    • Defined for each Access Context, if no Contract
  - Contracts
    • Applicable to a specific set of digital objects

• **Rules Base**
  - Decision trees

• **New facts**
  - Licenses, the resulting file
Choosing the «right path»

- The user asks for a Digital Object
- Calculating the Access Statute
- Applying the Decision tree On Rights Metadata
  - Contract=yes
  - Contract=no
- Getting the Contract
  - A License is generated
  - Getting the Default Use Parameters
Example of Rights Metadata

<?xml version="1.0" encoding="UTF-8"?>
<RightsMD>
  <Entity type="printed_text" level="group" EntityID="ark:/12148/bpt6k106131j/" EntityRecordID="FRBNF31126252">
    <contract statute="no"/>
    <monograph statute="yes"/>
    <periodical statute="no"/>
    <collectiveWork statute="no"/>
    <juridicalDecision statute="no"/>
    <entryMode>legal deposit</entryMode>
    <publicationDate statute="true">1875</publicationDate>
    <authority>
      <author deadForFrance="no" recordID="FRBNF119200941">
        <name>Poe, Edgar Allan</name>
        <deathDate>1849</deathDate>
        <role code="0070">author</role>
      </author>
      <author deadForFrance="no" recordID="FRBNF119141311">
        <name>Mallarmé, Stéphane</name>
        <deathDate>1898</deathDate>
        <role code="0680">translator</role>
      </author>
      <author deadForFrance="no" recordID="FRBNF121059939">
        <name>Manet, Édouard</name>
        <deathDate>1883</deathDate>
        <role code="0440">illustrator</role>
      </author>
      <nonIdentifiedAuthor statute="no"/>
      <unknownDeathDate statute="no"/>
      <lastAuthorDeathDate>1898</lastAuthorDeathDate>
    </authority>
  </Entity>
</RightsMD>
The decision trees

Defined following the type of documents, with respect to the French law:

- Printed text
- Manuscripts
- Still images
- Moving images
- Sound recordings
- Software, databases
- Administrative and technical documents produced by the library
Example of Decision Tree

Juridical decision

- No juridical decision
  - Known date of author(s) 'death'
    - One or several author(s) 'dead for France'
      - Author(s) dead for more than 100 years
        - Access Research reading room / general public RR / web
      - Author(s) dead for less than 100 years
        - No access general public RR / web
        - Access Research RR if entered by legal deposit
    - Last author dead for less than 70 years
      - Access Research RR / general public RR / web
    - No author dead for France
      - Access Research RR / general public RR / web
  - Unknown date of author(s) 'death'
    - Non-identified author
      - Published less than 150 years ago
        - Access Research RR / general public RR
        - No access on web
      - Published more than 150 years ago
        - Access Research RR / general public RR / web
        - No access general public RR / web
        - Access Research RR if entered by legal deposit
    - Published 70 to 150 years ago
      - Access Research RR / general public RR
      - No access on web
    - Published less than 70 years ago
      - Access Research RR / general public RR / web
      - No access general public RR / web
      - Access Research RR if entered by legal deposit
    - Published more than 70 years ago
      - Access Research RR / general public RR / web
      - No access general public RR / web
      - Access Research RR if entered by legal deposit

- Monograph
  - Published less than 150 years ago
    - Access Research RR / general public RR
    - No access on web
  - Published more than 150 years ago
    - Access Research RR / general public RR / web
    - No access general public RR / web
    - Access Research RR if entered by legal deposit

- Periodical
  - Published 70 to 150 years ago
    - Access Research RR / general public RR
    - No access on web
  - Published less than 70 years ago
    - Access Research RR / general public RR / web
    - No access general public RR / web
    - Access Research RR if entered by legal deposit
  - Published more than 70 years ago
    - Access Research RR / general public RR / web
    - No access general public RR / web
    - Access Research RR if entered by legal deposit

- Collective or anonymous work
  - Published less than 70 years ago
    - Access Research RR / general public RR / web
    - No access general public RR / web
    - Access Research RR if entered by legal deposit
  - Published more than 70 years ago
    - Access Research RR / general public RR / web
    - No access general public RR / web
    - Access Research RR if entered by legal deposit

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Access contexts & default use parameters

• **Access Contexts**
  - General public reading rooms
  - Restricted-access reading rooms («research »)
  - Web users
  - ...

• **Default Use Parameters**
  - Defined for each Access Context
  - Encoded using the ODRL standard

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<?xml version="1.0" encoding="UTF-8"?>
  <o-ex:party>
    <o-ex:context>
      <o-dd:uid>urn:accessContext:web</o-dd:uid>
    </o-ex:context>
  </o-ex:party>
  <o-ex:permission>
    <o-dd:display>
      <o-ex:constraint>
        <o-dd:quality o-ex:type="resolution">
          <o-ex:context>
            <o-dd:uid>1024*1452</o-dd:uid>
          </o-ex:context>
        </o-dd:quality>
      </o-ex:constraint>
      <o-dd:display/>
      <o-dd:print/>
      <o-dd:save/>
    </o-ex:permission>
  </o-ex:rights>
The License

• Using Access Status and Default Use parameters, the Rights Management Module generates a new file, called « License »

• This file contains all the actions that the end user can do on the document

• Encoded using the ODRL standard
«Contracts» are specific files applicable to a predefined set of documents
- agreements between rights holders and the Library to liberate access

- Encoded using the ODRL standard
- A Contract file contains both Access Status and Use Parameters
Example of Contract (fictive)
Rights management in SPAR

Rights mgnt module

- Retrieves rights info.
- Calculates access status
- Generates the License

Archival Information Package

Access module

- Use parameters
- Decision trees
- Contracts
- Rights metadata

Solon

Data administration

License

Archival Information Package

Archival Information Package

Dissemination Information Package
Conclusion

• Strong difference between
  - « rights metadata » (descriptive metadata,)
  - and « License » (permissions) \( \Rightarrow \) possible interoperability

• Tight collaboration between
  - Juridical experts
  - Digital preservation experts
  - Collections managers
  - Information system engineers
Some useful studies...


• Digital rights and asset management: access and preservation forum by the Digital Preservation Coalition, October 2006
  - http://www.dpconline.org/graphics/events/0610dramforum.html

• The Management of Rights in the Digital Environment: Lessons from Legal A.I., Alan Cunningham, 18th BILETA conference, April 2003
  - http://www.bileta.ac.uk/Document%20Library/1/The%20Management%20of%20Rights%20in%20the%20Digital%20Environment%20%20Lessons%20from%20Legal%20A.I.pdf