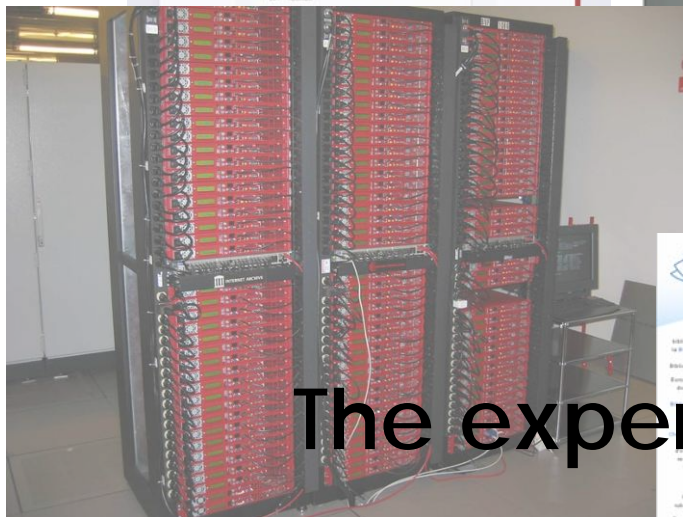


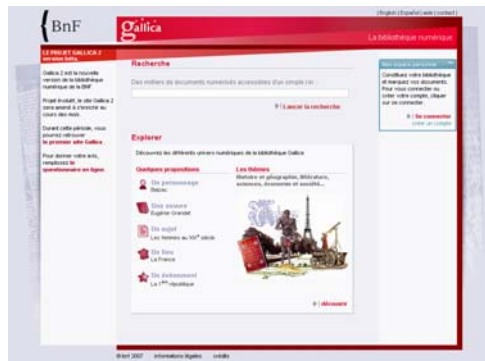


Dynamic management of digital rights for long-term preservation



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



- « 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 over time 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 »

- **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 - unpublished works (manuscripts, archives) under specific rules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**

- **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

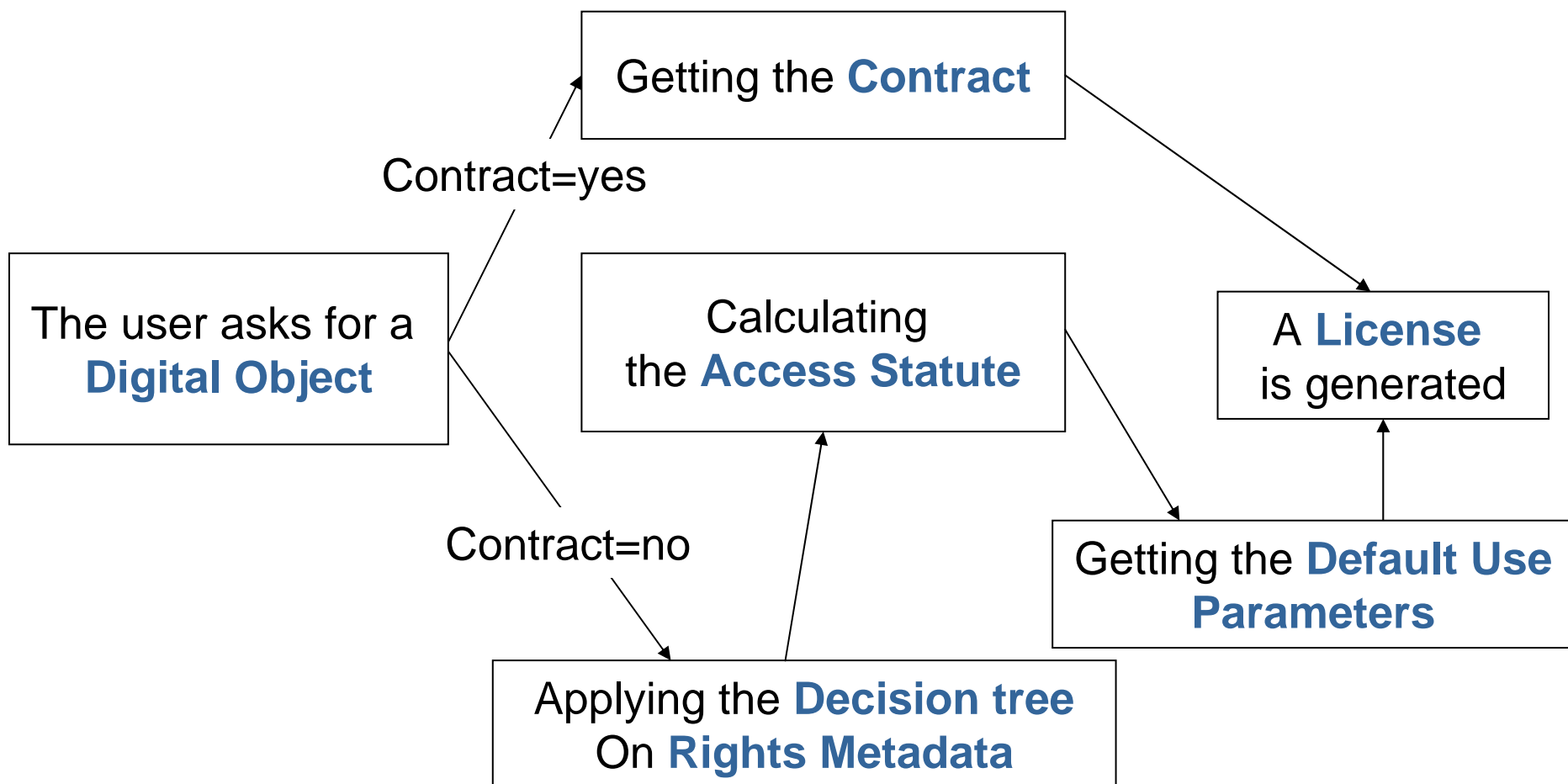
- **Rules Base**

- Decision trees

- **New facts**

- Licenses, the resulting file

Choosing the « right path »

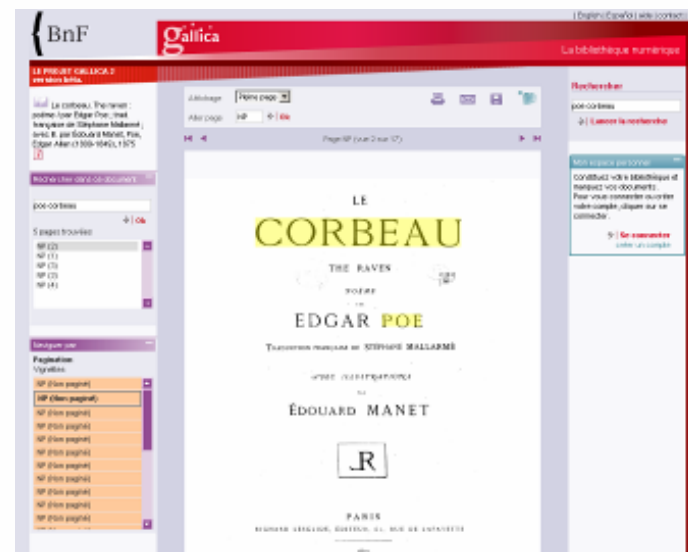



```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<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>
```

Example of Rights Metadata



```
</Entity>
```

```
</RightsMD>
```

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

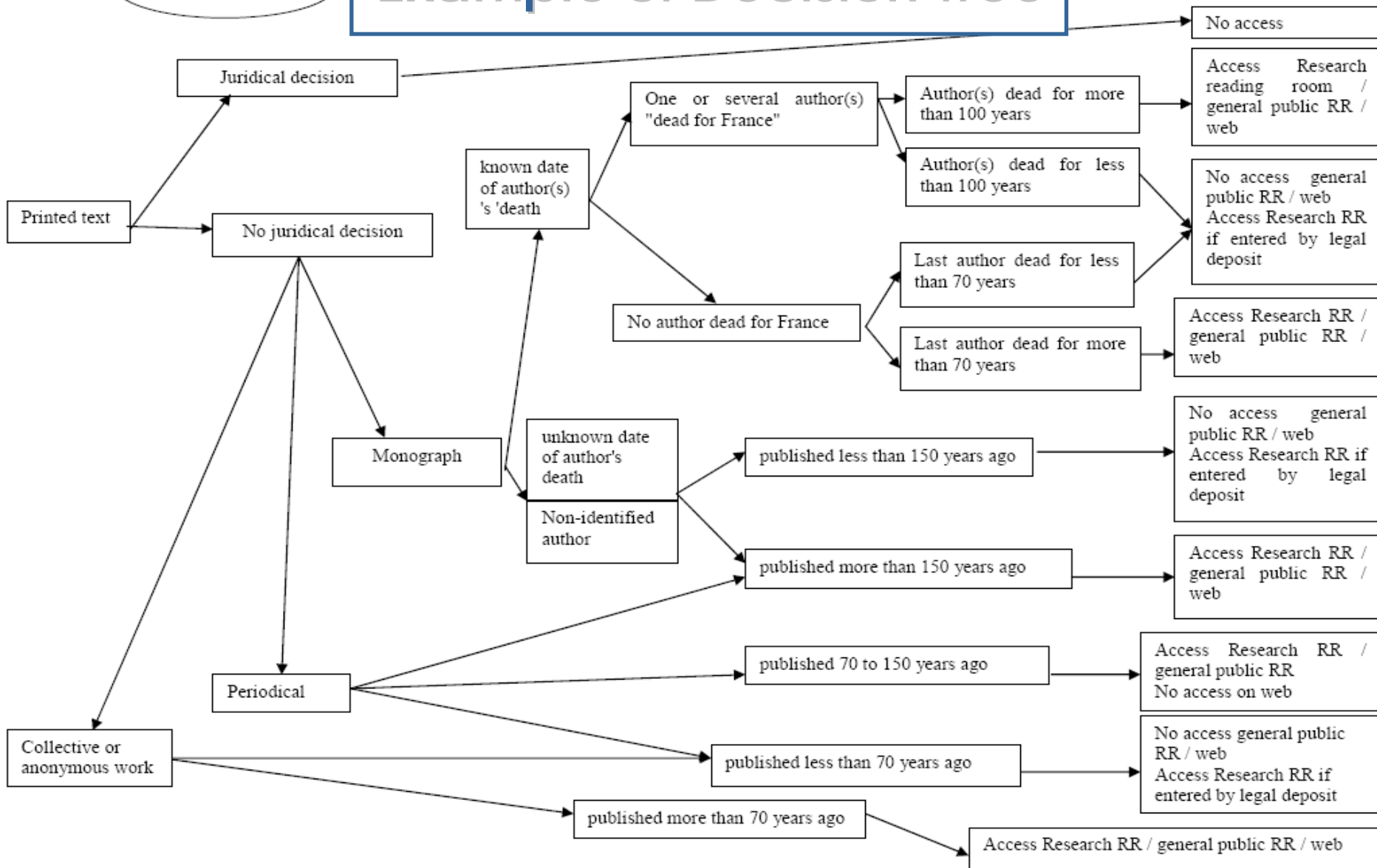


BnF, Mandragore, Français 148, fol. 16v-17

Example of Decision Tree

Printed text

"Access statuses"



Access context & 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

Default use parameters for web access

```
<?xml version="1.0" encoding="UTF-8"?>
<o-ex:rights xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
xmlns:enc="http://www.w3.org/2001/04/xmlenc#" xmlns:o-
dd="http://odrl.net/1.1/ODRL-DD" xmlns:o-ex="http://odrl.net/1.1/ODRL-EX"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://odrl.net/1.1/ODRL-DD http://odrl.net/1.1/ODRL-DD-
11.xsd">
  <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>
```

- 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

```
<?xml version="1.0" encoding="UTF-8"?>
<o-ex:rights xmlns:ds="http://www.w3.org/2000/09/xmldsig#" xmlns:enc="http://www.w3.org/2001/04/xmlenc#" xmlns:o-
dd="http://odrl.net/1.1/ODRL-DD" xmlns:o-ex="http://odrl.net/1.1/ODRL-EX" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://odrl.net/1.1/ODRL-DD http://odrl.net/1.1/ODRL-DD-11.xsd">
  <o-ex:agreement>
    <o-ex:context>
      <o-dd:uid>urn:license:20070425:ark:/12148/bpt6k213599h</o-dd:uid>
      <o-dd:pLocation>Bibliothèque nationale de France, Paris</o-dd:pLocation>
      <o-dd:remark>License generated by SPAR (BnF)</o-dd:remark>
    </o-ex:context>
    <o-ex:asset>
      <o-ex:context>
        <o-dd:uid>ark:/12148/bpt6k213599h</o-dd:uid>
      </o-ex:context>
    </o-ex:asset>
    <o-ex:permission>
      <o-ex:context>
        <o-dd:name>urn:accessContext:web</o-dd:name>
      </o-ex:context>
      <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:party>
      <o-ex:context>
        <o-dd:uid>urn:accessContext:web</o-dd:uid>
      </o-ex:context>
    </o-ex:party>
  </o-ex:agreement>
</o-ex:rights>
```

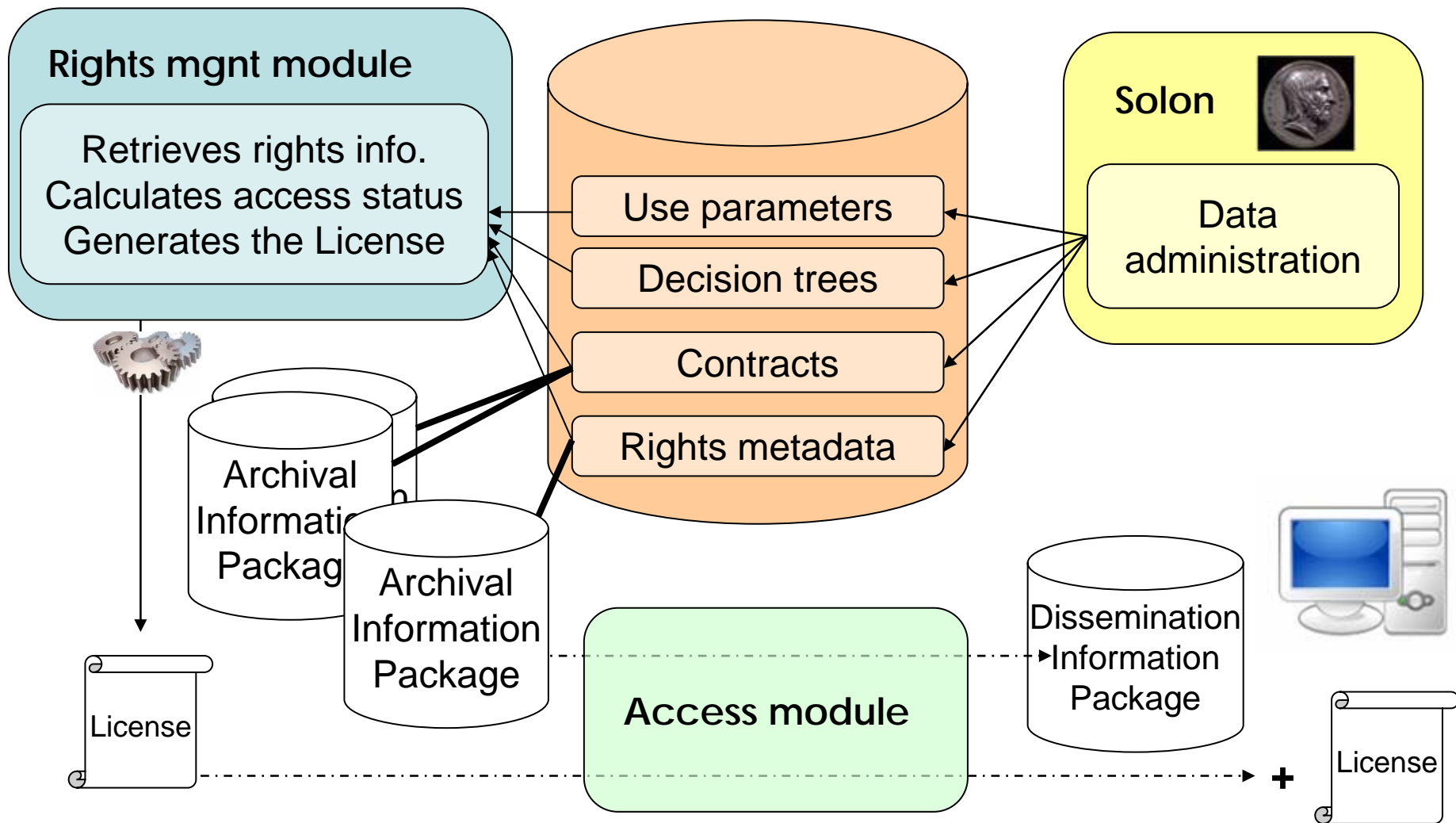
Example of License



- « 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


```
?xml version="1.0" encoding="UTF-8"?>
<o-ex:rights xmlns:ds="http://www.w3.org/2000/09/xmlsig#" xmlns:enc="http://www.w3.org/2001/04/xmlenc#" xmlns:odd="http://odrl.net/1.1/ODRL-DD" xmlns:o-ex="http://odrl.net/1.1/ODRL-EX"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://odrl.net/1.1/ODRL-DD
http://odrl.net/1.1/ODRL-DD-11.xsd">
  <o-ex:agreement>
    <o-ex:context>
      <o-dd:uid>urn:contract:1456852</o-dd:uid>
      <o-dd:pLocation>Bibliothèque nationale de France, Paris</o-dd:pLocation>
      <o-dd:remark>Contract n° 1456852 between BnF and "société Delta photos"</o-dd:remark>
    </o-ex:context>
    <o-dd:date><o-dd:fixed>2004-10-12</o-dd:fixed></o-dd:date>
  </o-ex:agreement>
  <o-ex:party>
    <o-ex:rightsholder>
      <o-ex:context>
        <o-dd:uid>[ID of "Delta photos corporation"</o-dd:uid>
        <o-dd:name>Delta photos</o-dd:name>
        <o-dd:pLocation>[address of rights holder]</o-dd:pLocation>
        <o-dd:role>[role of the rights holder]</o-dd:role>
      </o-ex:context>
    </o-ex:rightsholder>
  </o-ex:party>
  <o-ex:permission>
    <o-ex:constraint>
      <o-dd:datetime>
        <o-dd:start>2005-01-01T00:00:00</o-dd:start>
        <o-dd:end>2011-12-31T23:59:59</o-dd:end>
      </o-dd:datetime>
    </o-ex:constraint>
    <o-ex:context>
      <o-dd:name>urn:accessContext:Research</o-dd:name>
    </o-ex:context>
    <o-dd:display/>
  </o-ex:permission>
  <o-ex:permission>
    <o-ex:constraint>
      <o-dd:datetime>
        <o-dd:start>2005-01-01T00:00:00</o-dd:start>
        <o-dd:end>2011-12-31T23:59:59</o-dd:end>
      </o-dd:datetime>
    </o-ex:constraint>
    <o-ex:context>
      <o-dd:uid>urn:accessContext:generalPublic</o-dd:uid>
    </o-ex:context>
    <o-dd:display/>
  </o-ex:permission>
</o-ex:agreement>
</o-ex:rights>
```

Example of Contract (fictive)



- Strong difference between
 - « rights metadata » (descriptive metadata,)
 - and « License » (permissions) => possible interoperability
- Tight collaboration between
 - Juridical experts
 - Digital preservation experts
 - Collections managers
 - Information system engineers

Some useful studies...

- Rights in the PREMIS Data Model, A Report for the Library of Congress, Karen Coyle, December 2006
 - <http://www.loc.gov/standards/premis/Rights-in-the-PREMIS-Data-Model.pdf>
- 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>