LegalRuleML TC

Monica Palmirani, CIRSFID, UniBO
Chair

Guido Governatori, NICTA, Australia
Chair

Tara Athan, Athan Services

Adam Wyner
Uni. Aberdeen
Secretary

Harold Boley, UNB

Adrian Paschkeke,
Uni. Berlin
Secretary
Outline

- Introduction to LegalRuleML
  - Motivations, Goals, Principles
  - Design principles
  - LegalRuleML main blocks: meta, context, rules
    - Legal Statements and References
    - Temporal Events and Temporal Situations
    - Deontic
    - Penalty and Reparation
    - Defeasible
    - Alternatives
    - Metadata (Authority, Jurisdiction, Actor, Figure, Roles)
- Future work
Motivating Example

National Consumer Credit Protection Act 2009: Section 29

(Prohibition on engaging in credit activities without a licence)

(1) A person must not engage in a credit activity unless the person holds a licence authorising the person to engage in the credit activity.

Civil penalty: 2,000 penalty units.

... Criminal penalty: 200 penalty units, or 2 years imprisonment, or both.
Motivations

- **Legal texts** are the privileged sources for norms, guidelines and rules that often feed different concrete Web applications.
  - Legislative documents, Contracts, Judgements

- Proper and expressive conceptual, machine readable models of norms
Goal

- The LegalRuleML TC, set up inside of OASIS at Jan 12, 2012 (www.oasis-open.org) with 25 members, aims to produce a rule language for the legal domain:
  - Based on the legal textual norms
  - Oriented to legal professionals
  - Compact integrated annotation
  - Logic-neutral
  - Flexible and extensible
RuleML Family of Sublanguages

- **RuleML**
  - **LegalRuleML**
    - **Deliberation**
      - **HOL**
      - **FOL**
    - **Consumer**
    - **Reaction**
      - **KR**
      - **ECAP**
      - **CEP**
    - **Derivation**
      - **Fact**
      - **Query**
      - **Hornlog**
      - **Datalog**
      - **Trigger (EA)**
      - **Production (CA)**
        - **Extension**
        - **subClassOf**
        - **Overlaps**
        - **Syntactic specialization of**
Main Requirements

- Support for modelling different types of statements:
  - Constitutive rules (e.g. definitions)
  - Prescriptive rules (e.g. obligation, permission, etc.)
  - Facts …

- Implement isomorphism [Bench-Capon and Coenen, 1992]


- Model legal procedural rules
LegalRuleML Design Principles (1/2)

Multiple Semantic Annotations:

- A legal rule may have multiple semantic annotations where each annotation can represent a different legal interpretation.
- Each such annotation can appear in a separate annotation block as internal or external metadata.

Tracking the LegalRuleML Creators:

- As part of the provenance information, a LegalRuleML document or any of its fragments can be associated with its creators.

Linking Rules and Provisions:

- LegalRuleML includes a mechanism, based on IRI, that allows N:M relationships among the rules and the textual provisions
  - avoiding redundancy in the IRI definition and errors in the associations
  - LegalRuleML is independent respect any Legal Document XML standard, IRI naming convention
LegalRuleML Design Principles (2/2)

Temporal Management:
- LegalRuleML must represent these temporal issues in unambiguous fashion

Formal Ontology Reference:
- LegalRuleML is independent from any legal ontology and logic framework.

LegalRuleML is based on RuleML:
- LegalRuleML reuses and extends concepts and syntax of RuleML.

Mapping to RDF:
- LegalRuleML metadata can be expressed in RDF for implementing Linked Data model.
Open Rule Architecture

Legal document in XML

Legal Ontology

Logic Rules

Combine rules with other dataset
Interoperability and interchange
Retrieve rules and documents

XML

Connection with URI

W3C

Semantic Web

Extraction in RDF

Linked Open Data

Connection with URI

ENGINE

Application Level

XML
Language Design Principles

- **Minimality**, which requires that the language provides only a small set of needed language constructs.

- **Referential transparency**, which means that the same language construct always expresses the same semantics regardless of the context in which it is used. E.g., obligation

- **Orthogonality**, where language constructs are independent of each other, thus permitting their systematic combination. E.g., jurisdiction and authority

- **Pattern-based design**, where design patterns are a distillation of common wisdom in organizing the structural parts, the grammar and the constraints of a language. E.g., Associations is a collection of Association.

- **Metamodel based**, where the metamodel for a language, also defines the vocabulary for describing the language, including syntactic categories.
RuleML/LegalRuleML XML Design principle

Node and Edge Elements

- There is a distinction between type (also called node) elements and role (also called edge) elements, the element name of the
  - **Node** starts with an upper case letter `<Jurisdiction>`.
  - **edge** with a lower case letter `<hasJurisdiction>`.
- Node elements correspond to classes of the metamodel while edge elements correspond to relationships between members of these classes.
Document Structure: Metadata, Contexts, Statements

- **Metadata**
- **Context**
- **Association**
- **Statements**
  - Textual References
  - Statement Context parameters like agents, times, sources, strength
  - Association to Statements N:M relationship
  - Rules, Facts, …
LegalRuleML Approach

Digital Millennium Copyright Act

Multiple rules as (alternative) interpretations of the same text
Digital Millennium Copyright Act

Public Law 105-304
105th Congress

An Act

To amend title 17, United States Code, to implement the World Intellectual Property Organization Copyright Treaty and Performances and Phonograms Treaty, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the “Digital Millennium Copyright Act”.

SEC. 2. TABLE OF CONTENTS.

TITLES

I—WIPO TREATIES IMPLEMENTATION

SEC. 101. Short title.
SEC. 102. Technical amendments.
SEC. 103. Copyright protection systems and copyright management information.
SEC. 104. Evaluation of impact of copyright law and amendments on electronic commerce and technological development.
SEC. 105. Effective date.

TITLES II—ONLINE COPYRIGHT INFRINGEMENT LIABILITY LIMITATION

SEC. 201. Short title.
SEC. 202. Limitations on liability for copyright infringement.
SEC. 203. Effective date.

TITLES III—COMPUTER MAINTENANCE OR REPAIR COPYRIGHT EXEMPTION

SEC. 301. Short title.
SEC. 302. Limitations on exclusive rights; computer programs.

TITLES IV—MISCELLANEOUS PROVISIONS

SEC. 401. Provisions Related to the Copyright Recordation of Information.
SEC. 402. Ephemeral recordings.
SEC. 403. Limitations on exclusive rights; digital audio recordings.
SEC. 404. Exemption for libraries and archives.
SEC. 405. Scope of exclusive rights in sound recordings; ephemeral recordings.
SEC. 406. Assumption of contractual obligations related to transfers of rights in motion pictures.
SEC. 407. Effective date.

TITLES V—PROTECTION OF CERTAIN ORIGINAL DESIGNS

SEC. 501. Short title.
SEC. 502. Protection of certain original designs.
SEC. 503. Conforming amendments.
SEC. 504. Joint study of the effect of this title.
SEC. 505. Effective date.

<ruleml:Rule key=":rule3">
  <ruleml:if> ...
  ....
  <ruleml:then>...
</ruleml:Rule>...
LegalRuleML Approach

Digital Millennium Copyright Act

Public Law 105-304
105th Congress

An Act

To amend title 17, United States Code, to implement the World Intellectual Property Organization Copyright Treaty and Performances and Phonograms Treaty, and for other purposes.

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SEC. 2. TABLE OF CONTENTS.

TITLE I—WIPO TREATIES IMPLEMENTATION

Context 3 of rule 4

Context 2 of rule 4

Context 1 of rule 4

Multiple contexts (interpretations) for the same rule

<ruleml:Rule key=":rule4">
  <ruleml:if> ...</ruleml:if>
  ...
  <ruleml:then>... </ruleml:then>
</ruleml:Rule>...
LegalRuleML Approach

Digital Millennium Copyright Act
NEW VERSION

2013

Context T1 of rule2

<ruleml:Rule key=":rule2">
  <ruleml:if> ...
  <ruleml:then>...
</ruleml:Rule>...

Versioning of the rules according to updates of the law

Context T2 of rule2-v2

<ruleml:Rule key=":rule2-v2">
  <ruleml:if> ...
  <ruleml:then>...
</ruleml:Rule>...
LegalRuleML main blocks: Metadata

- Metadata
  - Legal Sources
  - References
  - Agents, Figures
  - Authority
  - Time Instants
  - Temporal Characteristics
  - Jurisdiction
  - Role
LegalRuleML main blocks: Statements

- Metadata
  - Legal Sources
  - References
  - Agents, Figures
  - Authority
  - Time Instants
  - Temporal Characteristics
  - Jurisdiction
  - Role

```xml
<ruleml:Rule key=":rule1">
  <ruleml:if> ... </ruleml:if>
  <ruleml:then> ... </ruleml:then>
</ruleml:Rule>...

<ruleml:Rule key=":rule2">
  <ruleml:if> ... </ruleml:if>
  <ruleml:then> ... </ruleml:then>
</ruleml:Rule>...
```
LegalRuleML main blocks: Context

Metadata
- Legal Sources
- References
- Agents, Figures
- Authority
- Time Instants
- Temporal Characteristics
- Jurisdiction
- Role

Context
- association of metadata with statements

Context different author association of metadata with statements

Context different time and jurisdiction association of metadata with rules

Context association of alternative interpretations of the same text

```
<ruleml:Rule key=":rule1">
  <ruleml:if> ...</ruleml:if>
  <ruleml:then>...</ruleml:then>
</ruleml:Rule>...
```

```
<ruleml:Rule key=":rule2">
  <ruleml:if> ...</ruleml:if>
  <ruleml:then>...</ruleml:then>
</ruleml:Rule>...
```
<lrml:LegalRuleML>
  <lrml:References>
    <Reference> ...
    </Reference>
  </lrml:References>

  ...

  <lrml:Context key=":ruleInfo1-v2">
    <lrml:Association>
      <lrml:appliesSource keyref=":sec2.1-list1-itm31-par1-v2"/>
      <lrml:toTarget keyref=":rulebase1-v2"/>
    </lrml:Association>
  </lrml:Context>

  <lrml:hasStatements key=":rulebase-v2">
    <lrml:ConstitutiveStatement key=":rule1a-v2">
      <ruleml:if> ...
      <ruleml:then>... </ruleml:then>
    </lrml:ConstitutiveStatement>
  </lrml:hasStatements>...
</lrml:LegalRuleML>
LegalRuleML main blocks

Metadata
- Legal Sources
- References
- Agents
- Authority
- Time Instants
- Temporal Characteristics
- Jurisdiction
- Role

Context
- bridge between metadata and rules
- interpretation of rules

<ruleml:Rule key=":rule1">
  <ruleml:if> ... </ruleml:if>
  <ruleml:then> ... </ruleml:then>
</ruleml:Rule>...
<lrml:LegalSources>
  <lrml:LegalSource key=":ref1"
    sameAs="http://www.law.cornell.edu/uscode/text/17/504#psection-1"/>
</lrml:LegalSources>

<lrml:References>
  <lrml:Reference refersTo=":ref2"
    refID="/us/USCode/eng@/main#title17-sec504-clsc-pnt1" refIDSystemName="AkomaNtoso2.0-2012-10"/>
</lrml:References>
Temporal Events and Temporal Situations

Event that define the validity of the rules

Type of event: In force Efficacy

Event that define the validity of the rules

Type of event: In force Efficacy

Event that define the validity of the rules

Type of event: In force Efficacy
LegalRuleML main blocks: rules

Metadata
- Legal Sources
- References
- Agents
- Authority
- Time Instants
- Temporal Characteristics
- Jurisdiction
- Role

Context
bridge between metadata and rules
interpretation of rules

```xml
<ruleml:Rule key=":rule1">
    <ruleml:if> ...</ruleml:if>
    <ruleml:then>...</ruleml:then>
</ruleml:Rule>...
```
National Consumer Credit Protection Act 2009: Section 29
(Prohibition on engaging in credit activities without a licence)
(1) A person must not engage in a credit activity unless the person holds a licence authorising the person to engage in the credit activity.

Civil penalty: 2,000 penalty units.

... Criminal penalty: 200 penalty units, or 2 years imprisonment, or both.
Deontic operators

**Obligation +**: a Deontic Specification for a state, an act, or a course of action to which a Bearer is legally bound, and if it is not achieved or performed results in a Violation.

**Prohibition +**: a Deontic Specification for a state, an act, or a course of action to which a Bearer is legally bound, and if it is achieved or performed results in a Violation.

**Permission +**: a Deontic Specification for a state, an act, or a course of action where the Bearer has no Obligation or Prohibition to the contrary.

**Right +**: a Deontic Specification that gives a Permission to a party (the Bearer) and implies there are Obligations or Prohibitions on other parties (the AuxiliaryParty) such that the Bearer can (eventually) exercise the Right.
Deontic operators

Obligation

Prohibition

Permission

Right

A person must not engage in a credit activity. **Prohibition**

A person who has a financial licence may engage in a credit activity. **Permission**
Metamodel in RDFS
Partial Metamodell for Deontic

- LegalRuleML classes are shown with blue fill, LegalRuleML properties with pink fill, RuleML classes with orange fill
Penalty and Reparation

PenaltyStatement +: a Legal Statement of a sanction (e.g. a punishment or a correction).

Reparation +: an indication that a PenaltyStatement is linked with a PrescriptiveStatement, meaning that a sanction may apply when the PrescriptiveStatement entails a Deontic Specification, and there is a Violation of the Deontic Specification.

A penalty of 200 criminal unit is a reparation for violating the prohibition on engaging in a credit activity without a financial licence.
LegalRuleML classes are shown with blue fill, LegalRuleML properties with pink fill, RuleML classes with orange fill
Defeasibility

body always head  body -> head  *strict*
body sometimes head  body => head  *defeasible*
body not complement head  body ~> head  *defeater*

R2 > R1

R1: A person must not engage in a credit activity. *defeasible*
R2: However, if the person has a financial licence they may engage in a credit activity. *defeasible exception*

<lrml:hasQualification>
  <lrml:Overrides over=":R2" under=":R1"/>
</lrml:hasQualification>
Partial Metamodel for Defeasible Concepts

- LegalRuleML classes are shown with blue fill, LegalRuleML properties with pink fill, RuleML classes with orange fill
National Consumer Credit Protection Act 2009: Section 29
(Prohibition on engaging in credit activities without a licence)
(1) A person must not engage in a credit activity unless the person holds a licence authorising the person to engage in the credit activity.

Civil penalty: 2,000 penalty units.

... 

Criminal penalty: 200 penalty units, or 2 years imprisonment, or both.
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Section 29
(Prohibition on engaging in credit activities without a licence)

(1) A person must not engage in a credit activity unless the person holds a licence authorising the person to engage in the credit activity.

Civil penalty: 2,000 penalty units.

... Criminal penalty: 200 penalty units, or 2 years imprisonment, or both.
LegalRuleML modelling

- At a given time $t=2009$, the author Guido, the authority “Consumer Credit Agency”, in the jurisdiction “Australia”, source text sec29
- $ps1$: $\text{Person}(x) \Rightarrow [\text{FORB}]\text{EngageCreditActivity}(x)$
- $ps2$: $\text{HasLicence}(x) \Rightarrow [\text{PERM}]\text{EngageCreditActivity}(x)$
- $ps2 > ps1$
- $pen1$: $[\text{OBL}]\text{PayCivilUnits}(x,2000)$
- $pen2$:
  - $[\text{OBL}]\text{PayPenalUnits}(x,200)$,
  - $[\text{OBL}]\text{Imprisonment}(x,2y)$,
  - $[\text{OBL}]\text{PayPenaltyUnitsPlusImprisonment}(x,200,2y)$
- $rep1$: $[\text{Violation}]ps1, pen1$
- $rep2$: $[\text{Violation}]ps1, pen2$
LegalRuleML main blocks

Metadata
  Legal Sources
  References
  Agents
  Authority
  Time Instants
  Temporal Characteristics
  Jurisdiction
  Role

Context
  bridge between metadata and rules
  interpretation of rules

<ruleml:Rule key=":rule1">
  <ruleml:if> ...</ruleml:if>
  <ruleml:then>... </ruleml:then>
</ruleml:Rule>...
Alternatives

Case 1: Same legal provision(s), $T_1$, and different alternatives ($A_1$ and $A_2$).

Case 2: Different alternatives ($A_1$ and $A_2$) that share one or more pieces of text, $T_2$, but others are not shared ($T_1$ and $T_3$).

Case 3: Different alternatives ($A_1$ and $A_2$) sharing the same legal provision(s) ($T_1$), but embedding different rules ($R_1$ and $R_2$ for $A_1$ and $R_3$ for $A_1$).

Case 4: Different alternatives that share the same legal provision(s), but one or more rules are in common (e.g., $R_2$).
Alternative interpretations of the same text

Criminal penalty: 200 penalty units, or 2 years imprisonment, or both.

\textbf{pen2a:}
\begin{lrml SUBORDERLIST}
  \begin{itemize}
    \item [OBL] PayPenalUnits(x,200),
    \item [OBL] Imprisonment(x,2y),
    \item [OBL] PayPenaltyUnitsPlusImprisonment(x,200,2y)
  \end{itemize}
\end{lrml SUBORDERLIST}

\textbf{pen2b:}
\begin{lrml OR}
  \begin{itemize}
    \item [OBL] PayPenalUnits(x,200)
    \item [OBL] Imprisonment(x,2y),
    \item [OBL] PayPenaltyUnitsPlusImprisonment(x,200,2y)
  \end{itemize}
\end{lrml OR}

\begin{lrml Alternatives key=":alt1"}
  \begin{lrml fromLegalSources}
    \begin{lrml LegalSources}
      \begin{lrml hasLegalSource keyref=":sec29-par3"/>
    \end{lrml LegalSources}
  \end{lrml fromLegalSources}
  \begin{lrml hasAlternative keyref=":pen2a"/>
  \begin{lrml hasAlternative keyref=":pen2b"/>
  \end{lrml Alternatives>
LegalRuleML modelling

- At a given time $t=2009$, the author Guido, the authority “Consumer Credit Agency”, in the jurisdiction “Australia”, source text sec29
- $ps1$: Person($x$) $\Rightarrow$ [FORB]EngageCreditActivity($x$)
- $ps2$: HasLicence($x$) $\Rightarrow$ [PERM]EngageCreditActivity($x$)
- $ps2 > ps1$
- $pen1$: [OBL] PayCivilUnits($x,2000$)
- $pen2a$: SUBORDERLIST {
  - [OBL] PayPenalUnits($x,200$),
  - [OBL] Imprisonment($x,2y$),
  - [OBL] PayPenaltyUnitsPlusImprisonment($x,200,2y$)}
- $pen2b$: OR {
  - [OBL] PayPenalUnits($x,200$)
  - [OBL] Imprisonment($x,2y$),
  - [OBL] PayPenaltyUnitsPlusImprisonment($x,200,2y$) }
- $rep1$: [Violation]$ps1$, $pen1$
- $rep2a$: [Violation]$ps1$, $pen2a$
- $rep2b$: [Violation]$ps1$, $pen2b$
Complaint

means an expression of dissatisfaction made to a Supplier in relation to its Telecommunications Products or the complaints handling process itself, where a response or Resolution is explicitly or implicitly expected by the Consumer.

An initial call to a provider to request a service or information or to request support is not necessarily a Complaint. An initial call to report a fault or service difficulty is not a Complaint. However, if a Customer advises that they want this initial call treated as a Complaint, the Supplier will also treat this initial call as a Complaint.

If a Supplier is uncertain, a Supplier must ask a Customer if they wish to make a Complaint and must rely on the Customer’s response.
**Complaint**

- means an expression of dissatisfaction made to a Supplier in relation to its Telecommunications Products or the complaints handling process itself, where a response or Resolution is explicitly or implicitly expected by the Consumer.

- An initial call to a provider to request a service or information or to request support is not necessarily a Complaint.

An initial call to report a fault or service difficulty is not a Complaint.

However, if a Customer advises that they want this initial call treated as a Complaint, the Supplier will also treat this initial call as a Complaint.

- If a Supplier is uncertain, a Supplier must ask a Customer if they wish to make a Complaint and must rely on the Customer’s response.
Complaint example from Telecommunications Consumer Protections Code C628:2012, Australia

2.1 Complaint

Complaint means an expression of dissatisfaction made to a Supplier in relation to its Telecommunications Products or the complaints handling process itself, where a response or Resolution is explicitly or implicitly expected by the Consumer.

An initial call to a provider to request a service or information or to request support is not necessarily a Complaint. An initial call to report a fault or service difficulty is not a Complaint. However, if a Customer advises that they want this initial call treated as a Complaint, the Supplier will also treat this initial call as a Complaint.

If a Supplier is uncertain, a Supplier must ask a Customer if they wish to make a Complaint and must rely on the Customer’s response.
Complaint example from TCP Code C628:2012, Australia

<lrml:hasStatements key=":rulebase1-v2">
  <lrml:ConstitutiveStatement key=":rule1b-v2">
    <ruleml:if>
      <ruleml:Atom key=":rule1-atom2-v2">
        <ruleml:Rel iri=":rule1-rel2-v2">is an expression of dissatisfaction made to a Supplier in relation to its Telecommunications Products or the complaints handling process itself, where a response or Resolution is explicitly or implicitly expected by the Consumer</ruleml:Rel>
        <ruleml:Var>X</ruleml:Var>
      </ruleml:Atom>
    </ruleml:if>
    <ruleml:then>
      <ruleml:Atom key=":rule1-atom1-v2">
        <ruleml:Rel iri=":complaint-v2"/>
        <ruleml:Var>X</ruleml:Var>
      </ruleml:Atom>
    </ruleml:then>
  </lrml:ConstitutiveStatement>
</lrml:hasStatements>
Complaint example from TCP Code C628:2012, Australia

```xml
<lrml:PrescriptiveStatement key=":rule5-v2">
  <ruleml:if>
    <ruleml:Atom key=":rule5-atom1-v2">
      <ruleml:Rel iri=":rule5-rel1-v2">is uncertain if/wishes to make a Complaint</ruleml:Rel>
      <ruleml:Var type=":supplier-v2">S</ruleml:Var>
      <ruleml:Var type=":customer-v2">C</ruleml:Var>
    </ruleml:Atom>
  </ruleml:if>
  <ruleml:then>
    <lrml:Obligation key=":rule5-ob1-v2">
      <ruleml:And key=":rule5-and1-v2">
        <ruleml:Atom key=":rule5-atom2-v2">
          <ruleml:Rel iri=":rule5-rel2-v2">asks/if they wish to make a Complaint</ruleml:Rel>
          <ruleml:Var>S</ruleml:Var>
          <ruleml:Var>C</ruleml:Var>
        </ruleml:Atom>
        <ruleml:Atom key=":rule5-atom3-v2">
          <ruleml:Rel iri=":rule5-rel3-v2">relies on the response of</ruleml:Rel>
          <ruleml:Var>S</ruleml:Var>
          <ruleml:Var>C</ruleml:Var>
        </ruleml:Atom>
      </ruleml:And>
    </lrml:Obligation>
  </ruleml:then>
</lrml:PrescriptiveStatement>
```
Complaint example from TCP Code C628:2012, Australia

<lrml:PrescriptiveStatement key=":rule5-v2">
  <ruleml:if>
    <ruleml:Atom key=":rule5-atom1-v2">
      <ruleml:Rel iri=":rule5-rel1-v2">is uncertain if/wishes to make a Complaint</ruleml:Rel>
      <ruleml:Var type=":supplier-v2">S</ruleml:Var>
      <ruleml:Var type=":customer-v2">C</ruleml:Var>
    </ruleml:Atom>
  </ruleml:if>
  <ruleml:then> ... </ruleml:then>
</lrml:PrescriptiveStatement>
Complaint example from TCP Code C628:2012, Australia

<lrml:PrescriptiveStatement key=":rule5-v2">
  <ruleml:if> ...</ruleml:if>
  <ruleml:then>
    <lrml:Obligation key=":rule5-ob1-v2">
      <ruleml:And key=":rule5-and1-v2">
        <ruleml:Atom key=":rule5-atom2-v2">
          <ruleml:Rel iri=":rule5-rel2-v2">asks/if they wish to make a Complaint</ruleml:Rel>
          <ruleml:Var>S</ruleml:Var>
          <ruleml:Var>C</ruleml:Var>
        </ruleml:Atom>
        <ruleml:Atom key=":rule5-atom3-v2">
          <ruleml:Rel iri=":rule5-rel3-v2">relies on the response of</ruleml:Rel>
          <ruleml:Var>S</ruleml:Var>
          <ruleml:Var>C</ruleml:Var>
        </ruleml:Atom>
      </ruleml:And>
    </lrml:Obligation>
  </ruleml:then>
</lrml:PrescriptiveStatement>
Defeasibility

<lrml:hasQualification>
    <lrml:Overrides over="#rule2-v2" under="#rule1b-v2"/>
</lrml:hasQualification>

<lrml:hasQualification>
    <lrml:Overrides over="#rule3-v2" under="#rule1b-v2"/>
</lrml:hasQualification>

<lrml:hasQualification>
    <lrml:Overrides over="#rule4-v2" under="#rule3-v2"/>
</lrml:hasQualification>

<lrml:hasQualification>
    <lrml:Overrides over="#rule5-v2" under="#rule3-v2"/>
</lrml:hasQualification>
# Copyright law: copyright infringement

- US “Digital Millenium Act” and modifications
- goal: in $t_x$ calculate the proper *statutory damage* in case of violation of the copyright taking in consideration all the exceptions and the modifications respect an fact.

**17 USC Sec. 504**

Remedies for infringement: Damages and profits

<table>
<thead>
<tr>
<th>Enter in force of the norm</th>
<th>Interval of efficacy of the norm</th>
<th>Statutory Damages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec. 9, 1999</td>
<td>[Dec. 9, 1999, ∞</td>
<td>$750 &lt;= statutoryDamages &lt;= $30,000</td>
</tr>
</tbody>
</table>
(c) Statutory Damages. -

(1) Except as provided by clause (2) of this subsection, the copyright owner may elect, at any time before final judgment is rendered, to recover, instead of actual damages and profits, an award of statutory damages for all infringements involved in the action, with respect to any one work, for which any one infringer is liable individually, or for which any two or more infringers are liable jointly and severally, in a sum of not less than $250 or more than $10,000 as the court considers just. For the purposes of this subsection, all the parts of a compilation or derivative work constitute one work.

(2) In a case where the copyright owner sustains the burden of proving, and the court finds, that infringement was committed willfully, the court in its discretion may increase the award of statutory damages to a sum of not more than $50,000. In a case where the infringer sustains the burden of proving, and the court finds, that such infringer was not aware and had no reason to believe that his or her acts constituted an infringement of copyright, the court in its discretion may reduce the award of statutory damages to a sum of not less than $100.

http://www.law.cornell.edu/uscode/text/17/504
(c) **Statutory Damages.** - The copyright owner may elect an award of statutory damages for infringements in a sum of not less than $250 or more than $10,000 as the court considers just.

(c) **Statutory Damages.** - The copyright owner may elect an award of statutory damages for infringements in a sum of not less than $500 or more than $20,000 as the court considers just.

(c) **Statutory Damages.** - The copyright owner may elect an award of statutory damages for infringements in a sum of not less than $750 or more than $30,000 as the court considers just.
Rules

- **R1**: If a piece of work is covered by copyright, then it is forbidden to use it.
- **C1**: An infringer is defined as somebody who used a piece of work when it was forbidden to use it.

Section 504

- **R2**: If the copyright owner claims statutory damages then the penalty for the infringer is to pay statutory damages of between $250 and $10,000.
- **R3**: If the copyright owner sustains the burden of proof and the infringer infringes copyright willfully then the penalty for the infringer is to pay statutory damages of between $250 and $50,000.
- **R4**: If the infringer sustains the burden of proof and the infringer infringes NOT willfully then the penalty for the infringer is to pay statutory damages of between $100 and $10,000.

Defeasibility: \( R4 > R3 > R2 \)
Conclusion and Future plans

- LegalRuleML is an emerging XML standard for modelling legal rules oriented to the legal expert, that provides a compact and expressive syntax
- RDF approach helps to foster the Open Rule Architecture in Linked Data and in Semantic Web
- Last outcomes
  - integration with Reaction RuleML
  - metamodel for permitting export in RDF
- Future outcomes
  - extensibility mechanisms of the schema
  - parameters in the syntax
  - case-law management
Where to find material of the tutorial

- Schemas and Examples SVN: https://tools.oasis-open.org/version-control/browse/wsvn/legalruleml/trunk/examples/approved/?opt=dir&sc=1
- XML schemas: https://tools.oasis-open.org/version-control/browse/wsvn/legalruleml/trunk/schemas/xsd/?sc=1#_trunk_schemas_xsd
- Documentation of the LegalRuleML TC: https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=legalruleml
Thank you for your attention!