3rd DECISION DECK Workshop

Coimbra June 16-17, 2008

A demonstration of XMCDA 1-0

R. Bisdorff

University of Luxembourg

Content

- *U*niversal *M*utiple *C*riteria *D*ecision *A*nalysis - *M*odelling *L*anguage
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- UMCDA-ML XMCDA 1.0 RC2
- XMCDA 1.0 Schema documentation
- XMCDA instances
- Example D3 XMCDA session

UMCDA-ML XMCDA 1.0

- UMCDA-ML is a generic XML encoding language for Multicriteria Decision Analysis and Aiding (MCDA) case studies
- It is recommended by the DECISION DECK (D2) Project and supported by the COST Action IC0602 *Algorithmic Decision Theory*.
- XMCDA 1.0 is the XML encoded ontology of UMCDA-ML that is currently elaborated by the D2 Technical Committee.

The D2 Technical Committee

- Specifications Meetings
  - 1st Meeting in Paris, May 15, 2007
  - 2nd Meeting in Paris, September 4, 2007
  - 3rd Meeting in Paris, October 12, 2007
  - 4th Meeting in Paris, November 15, 2007
  - 5th Meeting in Paris, March 10, 2008
  - 6th Meeting in Luxembourg, May 29, 2008
- Minutes on http://sma.uni.lu/d2cms

XMCDA 1.0 resources

- Published Version 1.0 RC2
  http://ernst-chroeder.uni.lu/UMCDA-ML-1.0/
- Available Components:
  - XML Schema **umcda-ml-1.0.xsd**
  - XML to HTML transform stylesheets: **xmcdaDefault.xsl**, **xmcdaRubis.xsl**, **xmcdaKappalab.xsl**
  - Documentation oXygen: **http://ernst-schroeder.uni.lu/UMCDA-ML-1.0/doc/**
  - Example XMCDA instance files for **Rubis** and **Kappalab** methods.

Content

Structure of an XMCDA instance file

```
<xmcda:XMCDA instanceID="case 1">
    <caseReference> ...
        <name>Case 1</name>
        ...
    </caseReference>
    <methodData> ...
    <alternatives> ...
    <criteria>...
    <performanceTable> ...
    ...
</xmcda:XMCDA>
```


Content

Target Namespace	http://www.decision-deck.org/2008/UMCDA-ML-1.0
Element and Attribute Namespaces	• Global element and attribute declarations belong to this schema's target namespace. • By default, local element declarations have no namespace. • By default, local attribute declarations have no namespace.
Documentation	**Universal Multicriteria Decision Analysis - Modelling Language XMCDA 1.0 Schema** **$Revision: 1.29 $** XML schema for UMCDA-ML problem instances for the *D* [3] web application. Patrick MEYER (Telecom Bretagne) and Raymond Bisdorff (University of Luxembourg) Copyright May 2008 DECISION-DECK Project

Declared Namespaces

Prefix	Namespace
xml	http://www.w3.org/XML/1998/namespace
xmcda	http://www.decision-deck.org/2008/UMCDA-ML-1.0
xs	http://www.w3.org/2001/XMLSchema

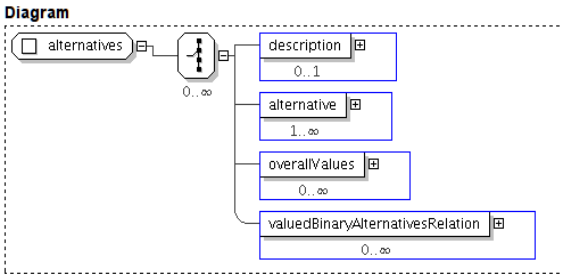
Schema Component Representation

```
<xs:schema targetNamespace="http://www.decision-deck.org/2008/UMCDA-ML-1.0">
  ...
</xs:schema>
```

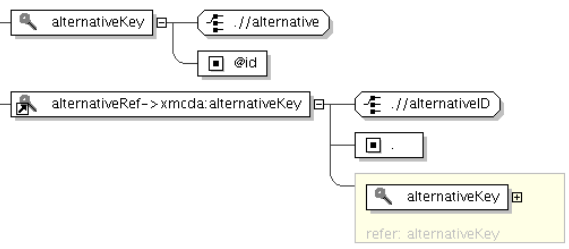


```
<description>
    <title> xs:string </title> [0..1]
    <subTitle> xs:string </subTitle> [0..1]
    <subSubTitle> xs:string </subSubTitle> [0..1]
    Start Choice [0..*]
        <abstract> xs:string </abstract> [0..1]
        <author> xs:string </author> [0..*]
        <bibliography> xmcda:bibliography </bibliography> [0..1]
        <comment> xs:string </comment> [0..1]
        <creationDate> xs:dateTime </creationDate> [0..1]
        <id> xs:string </id> [0..1]
        <keywords> xs:string </keywords> [0..1]
        <lastModificationDate> xs:dateTime </lastModificationDate> [0..1]
        <name> xs:string </name> [0..1]
        <shortName> xs:string </shortName> [0..1]
        <stakeholders> xs:string </stakeholders> [0..1]
        <type> xs:string </type> [0..1]
        <user> xs:string </user> [0..1]
        <version> xs:string </version> [0..1]
    End Choice
</description>
```


The decision alternatives

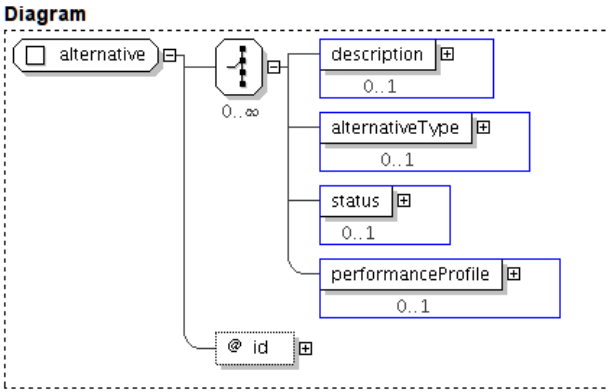


List of one or more alternatives

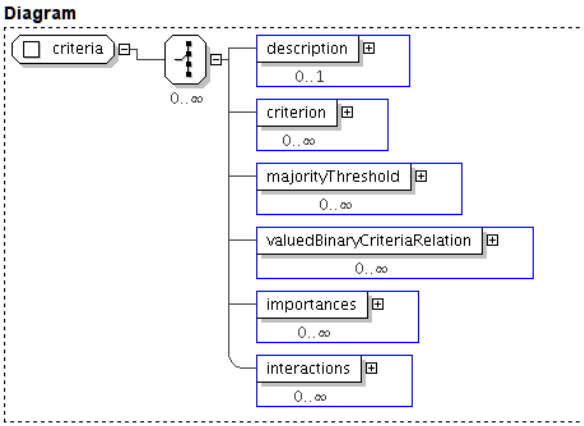


unique key identifiers and reference checking

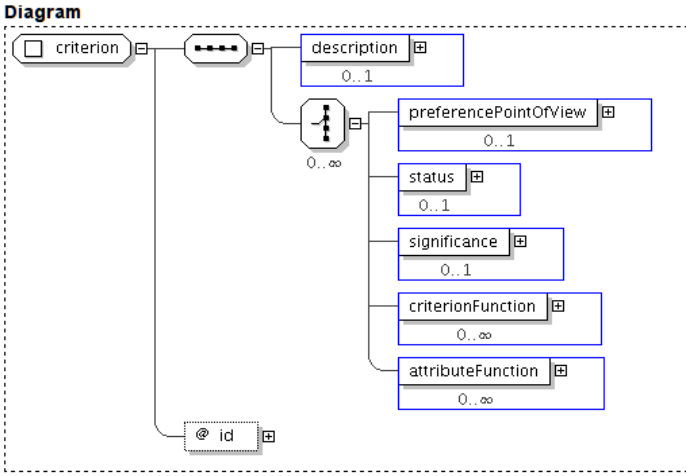
The alternative



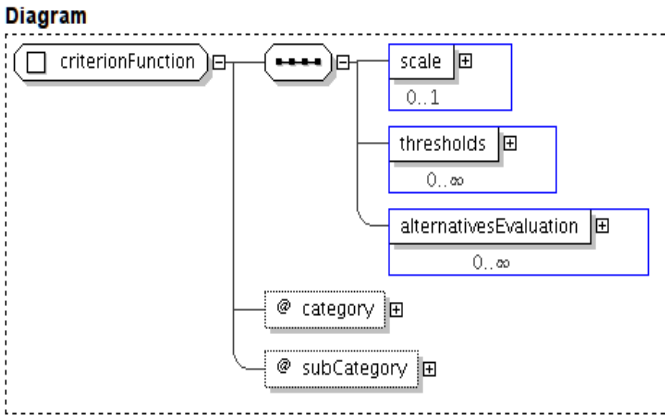
The list of criteria



The criterion



The criterion-function



Generic <function> type

- <function>
  <description> xmcda:description </description> [0..1]
  Start Choice [1]
  <constant> **xmcda:numericValue** </constant> [1]
  <linear> [1] 'A linear function. Requires a slope and an intercept.'
  <slope> xmcda:numericValue </slope> [1]
  <intercept> xmcda:numericValue </intercept> [1]
  </linear>
  <piecewiseLinear> [1] 'A peicewise linear function as a list of segments.'
   [1..*] 'Represents a segment, defined by two points: one for the head, one for the tail.'
  <head> **xmcda:point** </head> [1]
  <tail> xmcda:point </tail> [1]

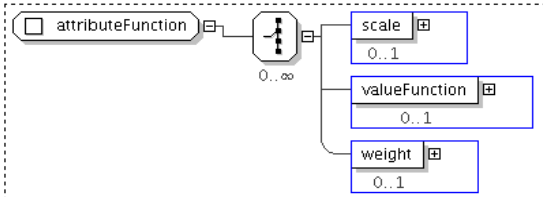
  </piecewiseLinear>
  End Choice
  </function>

Attribute-function

XML Instance Representation

```
<...>
   Start Choice [0..*]
      <scale> xmcda:scale </scale> [0..1]
      <valueFunction> xmcda:function </valueFunction> [0..1]
      <weight> xmcda:value </weight> [0..1]
   End Choice
</...>
```

Diagram

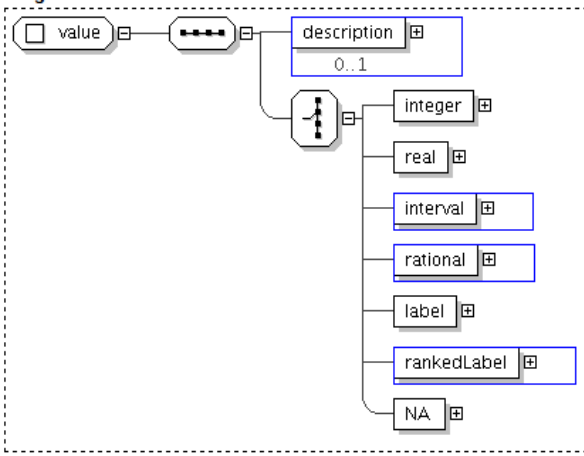


Performance Table

- <performanceTable>
  <description> xmcda:description </description> [0..1]
  Start Choice [1]
  <**alternativePerformances**>
  <description> xmcda:description </description> [0..1]
  <alternativeID> xs:string </alternativeID> [0..1]
  <**performance**> [1..*] 'Performance valuation of an alternative on a single criterion.'
  <description> xmcda:description </description> [0..1]
  <criterionID> xs:string </criterionID> [1]
  <value> **xmcda:value** </value> [0..1]
  <minimum> xmcda:value </minimum> [0..1]
  <maximum> xmcda:value </maximum> [0..1]
  <interval> xmcda:interval </interval> [0..1]
  </performance>
  </alternativePerformances> [1..*]
  <**criterionEvaluations**> xmcda:criterionAlternativesEvaluation
  </criterionEvaluations> [1..*]
  End Choice
  </performanceTable>

generic xmcda:value type

Diagram



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Thank you for your attention.