Managing the uncertainty with Business Rules

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ODM Overview

• IBM Lab France (Gentilly)
  – ODM/Engine Development team
  – Case of Advanced Studies

• Operational Decision Manager
  – Business Rule Management System
  – combines decision making and change detection
  – easy to evolve, trace, audit, and test
  – business agility enhancement

• Technical context
  – Java, Application Server
  – From ILOG JRules engine
ODM platform
Business rules

- Natural language
- Specialised editor
- Business concept/word
Business vs Technical Rules
ODM RETE Rule Engine
URBS PhD

- Uncertain Reasoning for Business rules
- PhD started in 2014 (cifre, H. Agli)
- Collaboration with UPMC-LIP6 (C. Gonzales, P. Wuillemin)
  - Probabilistic Relational Model (O3PRM)
  - aGrUM probabilistic framework
- Objectives:
  - Graphical model for uncertain information processing
  - Decision-making improvement (inference, search, optim)
  - Coupling Rules and Probabilistic Engines efficiently
  - Java prototype based on ODM, aGrUM, SMILE, SPSS
Probabilistic Production Rules

- Rule pattern over probabilistic models (Bayesian Network, Markov Chain...)
- Execute action modifying the probabilistic models

```plaintext
rule « plan exams for cancer »
if
    the patient's risk of having a lung cancer is upper than 40%
then
    plan an XRay exam
else
    plan a Dyspnea exam
```
URBS possible Use Cases

• Predictive and corrective maintenance
  – Vehicle,
  – Computer network
• Medical care (patient follow-up, diagnosis)
• Fraud detection
• Loan validation
• Open data mining
Useful Links

• ODM documentation:
  – Reference:  
  – Guidelines:  
    http://www.redbooks.ibm.com/abstracts/redp4836.html
  – Performance:  
    http://www.redbooks.ibm.com/abstracts/redp4899.html

• O3PRM:
  – http://o3prm.lip6.fr/
Q&A

• Thank you!