BUSINESS RULES IN THE SEMANTIC WEB

are there any, or any they different?

european semantic web conference heraclion 2005 s. spreeuwenberg

RUMOURS SAY

O'REILLY xml.com xml from the inside out	Reference to taxonomies and ontologies by vendors of mainstream enterprise-application-integration (EAI) solutions are becoming commonplace.
The Semantic Web represents a huge potential technology disrupter, enabling new and more flexible approaches to data integration, Web services, and knowledge discovery;	Butler Group
CUTTER CONSORTIUM	We think the Semantic Web has already started; today we may be using 40% of the potential power we could use to improve man-to-machine interaction and 10% in improving machine-to-machine interactions
Business rules technology can enable rapid changes to be made without programming, and as such is likely to deliver longer term ROI, with reduced development and maintenance costs once the initial phase of capturing rules has been completed.	Butler Group

PRESENTER

Drs. S. Spreeuwenberg has a background in artificial intelligence and many years experience in business rules modeling and application development were rules play an important role. She is the co-founder and director of LibRT. LibRT helps customers to assess and improve the quality of business rules. We believe that focus on quality is necessary to profit of all promises of the business rules approach.

Silvie is involved in the business rules work group of the OMG working on standardization of business rules and is editor of the European section of the Business Rules Community.
LibRT is co-organizer of the European Business Rules Conference and a member of the REWERSE Network of Excellance.

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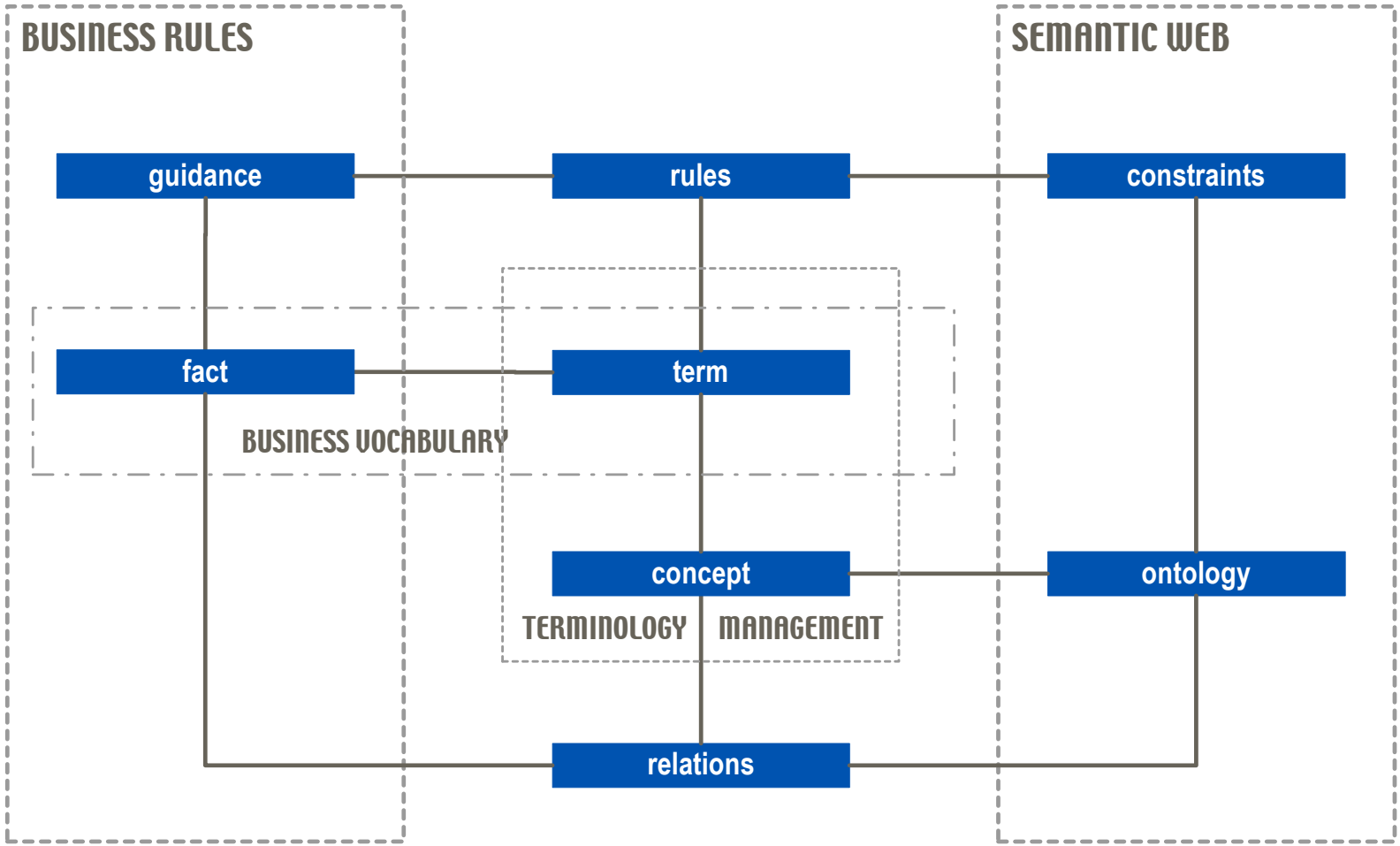

BUSINESS RULES
SEMANTIC WEB
guidance
rules
constraints
fact
term
BUSINESS VOCABULARY
concept
ontology
TERMINOLOGY
MANAGEMENT
relations

Concept	Concept with definition 'a motorized vehicle' has signifier 'car' and 'automobile' for the English lanuage
Fact type 1	A car has wheels
Fact type 2	A normal car is a category of an automobile where the car has exactly four wheels
Fact type 3	A car drives with a speed
Fact	A mercedes is a 'normal car'
Rule	It is forbidden to drive with a speed greater than 100 km. per hour with a three-wheeled-car

CREATE UNDERSTANDING

SEMANTIC WEB & BUSINESS RULES

common roots

artificial intelligence

- knowledge representation
- formal logic
- expert systems

offspring

- product vendors decouple themselves from this ancestor
- positioning in business rules management
- positioning in knowledge management.

COMMON ROOTS

are we on a better way?

- IT-organizations are more mature

  more skills, better infrastructure, finished basic business support

- business rules do not stand on their own

  business rules are positioned in relation to business goals and policies

- there is a need to improve IT performance

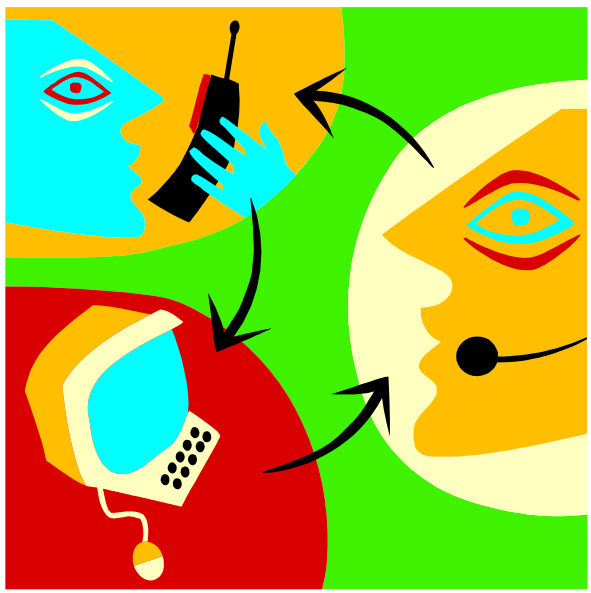
  flexibility, agility, time to market, business control, compliance,

  normalization, re-use

SEMANTIC WEB & BUSINESS RULES

different target audience

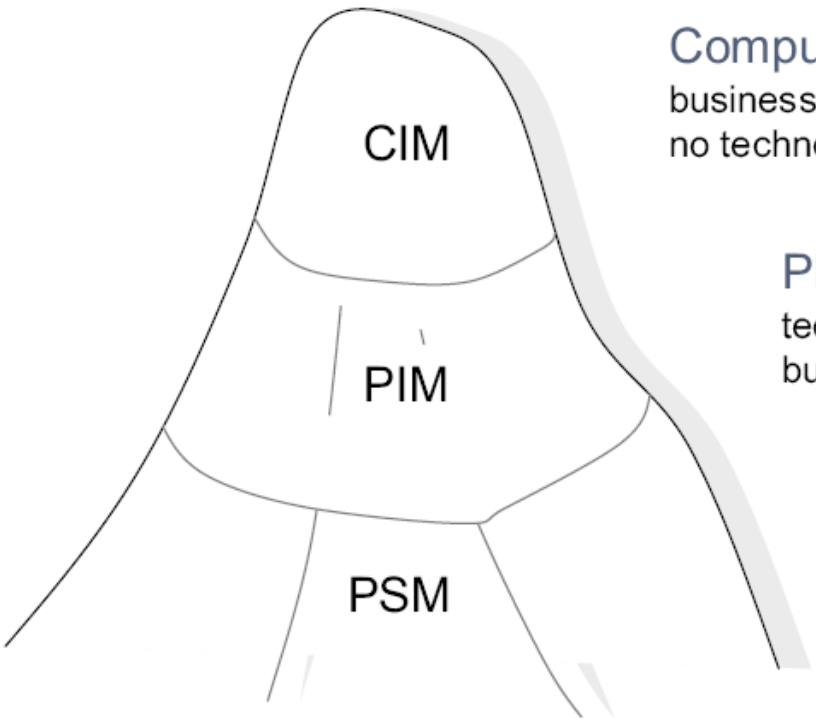
business rules



semantic web

DIFFERENT TARGET AUDIENCE

positioning in MDA



Computation Independent Model

business terminology -
no technological specification

Platform Independent Model

technology oriented (e.g. OO)
but vendor/product/platform neutral

Platform Specific Model

particular technology choices
languages, packages, middleware, …

DIFFERENT TARGET AUDIENCE

positioning in MDA

business rules

- independent of implementation in IT systems
- improve human communication
- positioned in CIM
- transformation to several run-time platforms possible

ontology model

- used in a run-time environment
- support communication between objects
- run time positioned in PSM
- edit time positioned in PIM

DIFFERENT TARGET AUDIENCE

tools

survey among ontology tool builders

- decrease complexity of building an ontology
- support ontology building by domain experts

  this sentiment echoes back a few decades to when practitioners were trying to use expert system shells productively
- training in formal logic or computer programming not needed
- support standards (in a standard way)

SEMANTIC WEB & BUSINESS RULES

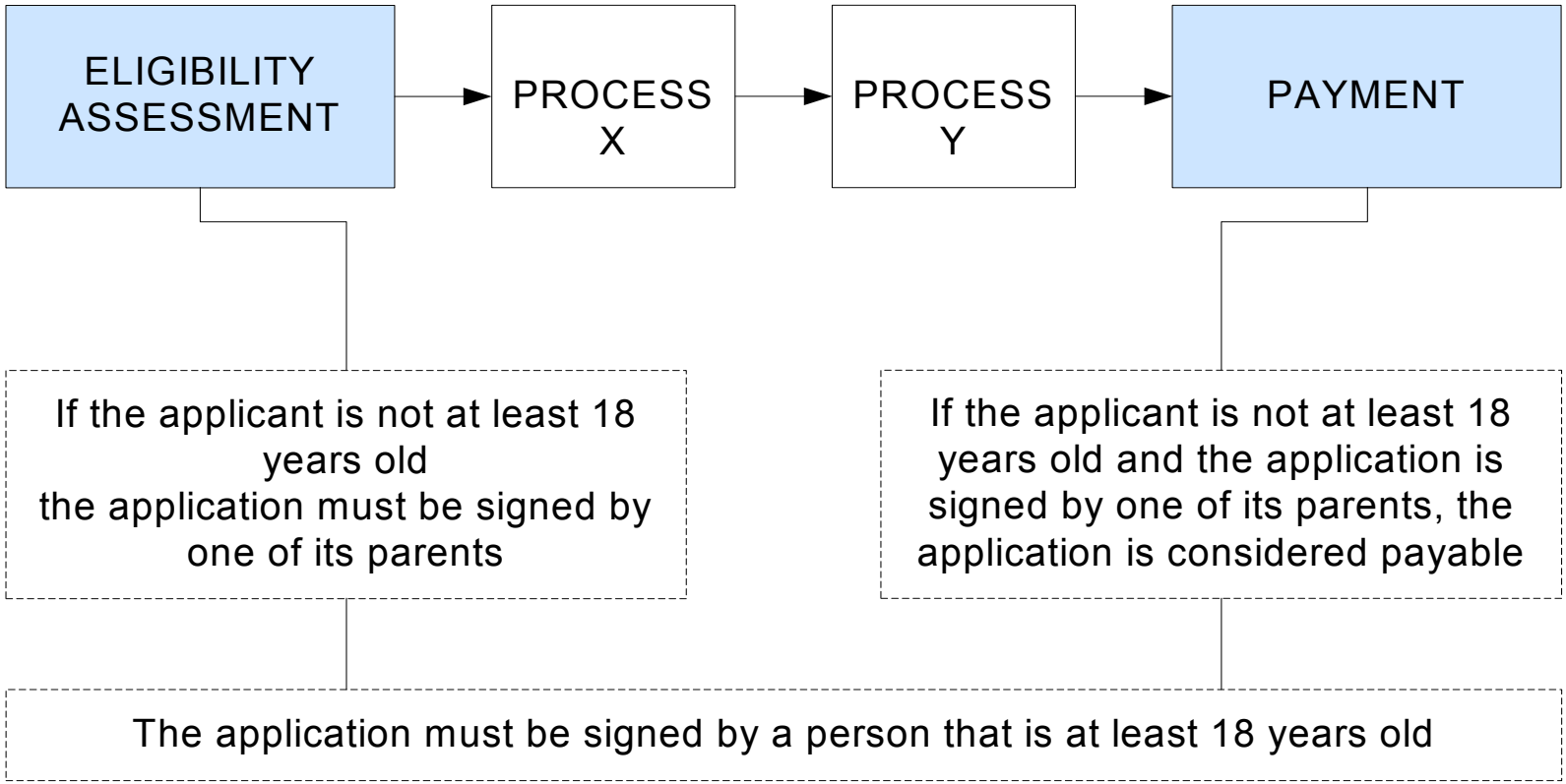
same goal

business rules

semantic web

SAME GOAL

re-use



SEMANTIC WEB & BUSINESS RULES

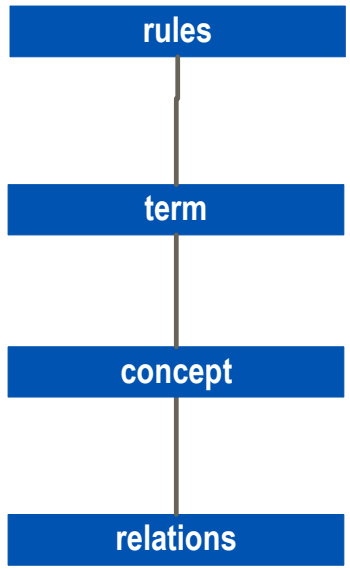
similar form

business rules

- human readable descriptions to specify meaning

semantic web

- machine readable descriptions to specify meaning



SIMILAR FORM

example

business rules

It is forbidden to drive with a speed

that is more than 100 km. per hour

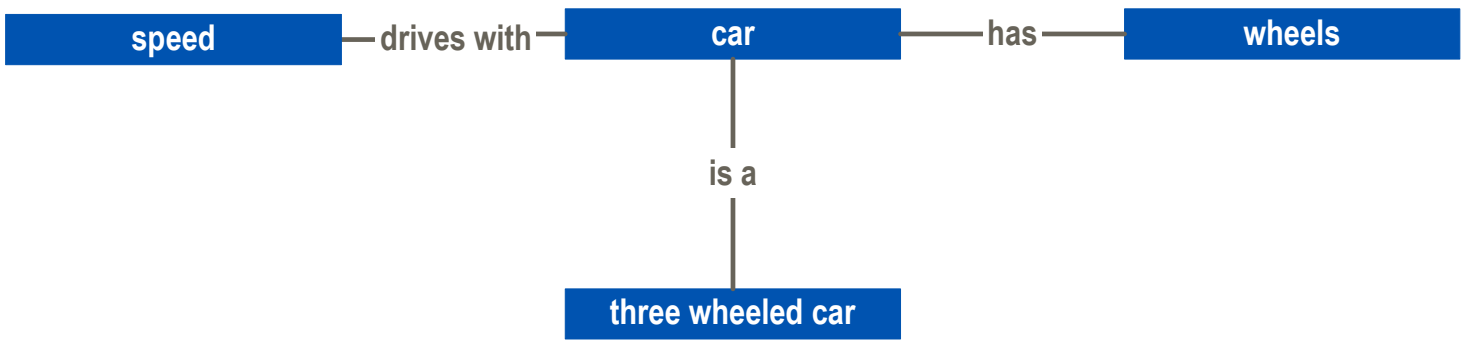
with a three wheeled car

semantic web (human readable syntax)

three_wheeled_car (X) $\wedge$ drive(X)

$\Rightarrow$

driving_speed (X) <= 100

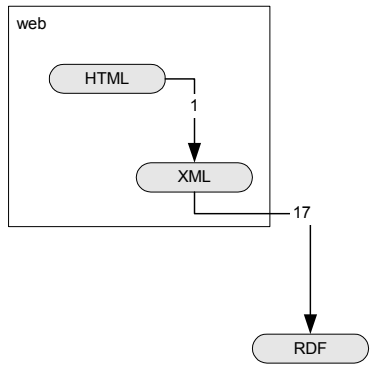


SIMILAR FORM

ontology and rules standards evolution

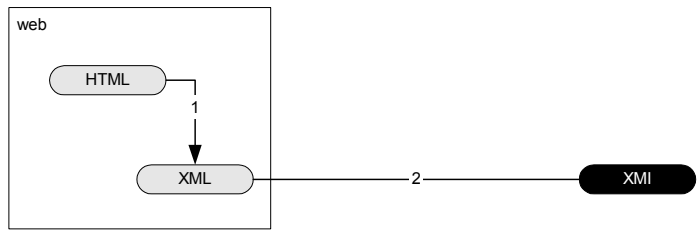
semantic web standards

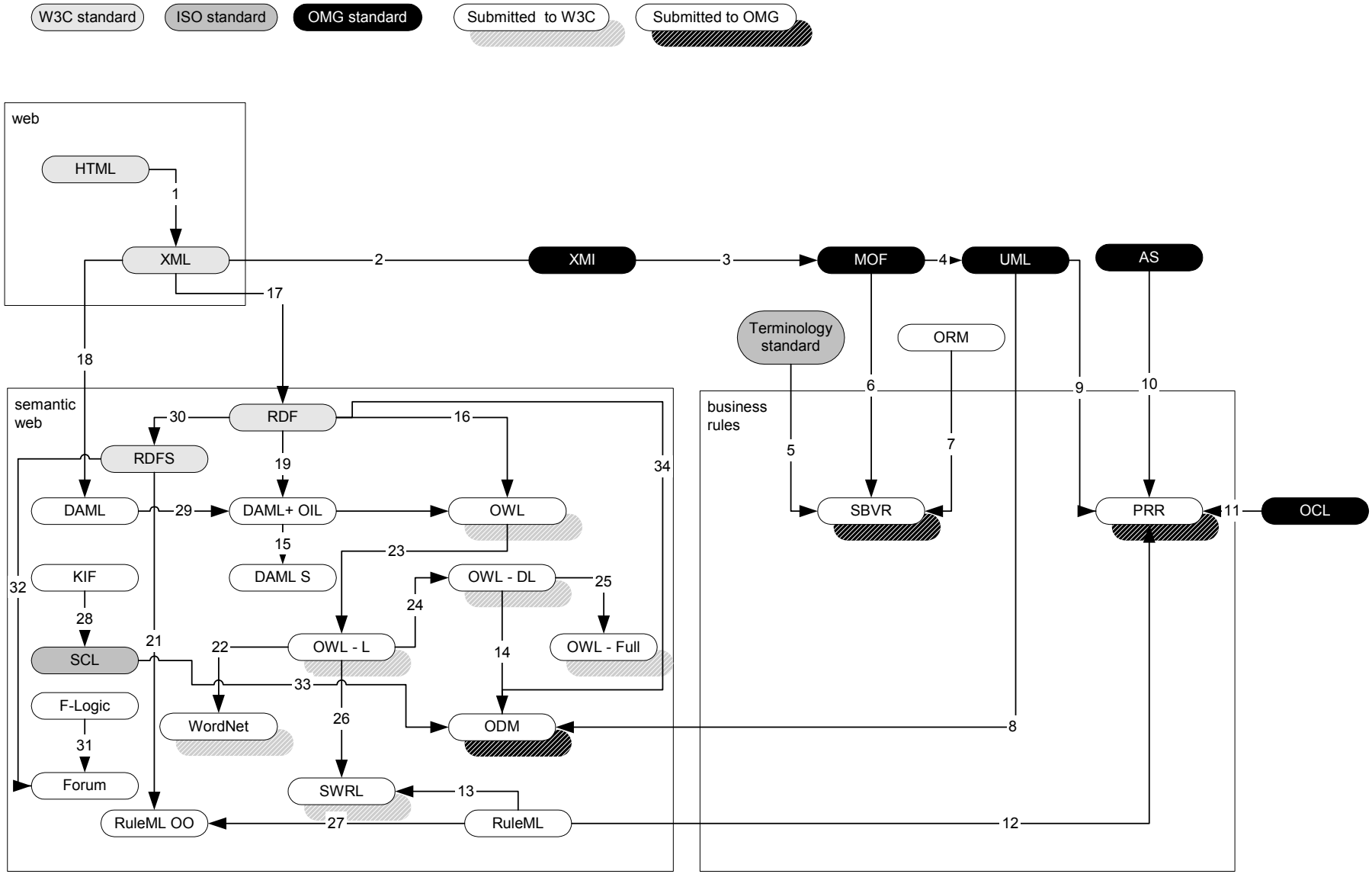
- follow HTML, XML, RDF evolution
- a lot of variants



business rules standards

- follow HTML, XML, XMI evolution
- limited number of initiatives




W3C standard
ISO standard
OMG standard
Submitted to W3C
Submitted to OMG
web
HTML
XML
XMI
MOF
UML
AS
Terminology standard
ORM
semantic web
RDF
RDFS
DAML
DAML+ OIL
OWL
KIF
DAML S
OWL - DL
OWL - L
OWL - Full
SCL
F-Logic
WordNet
ODM
Forum
SWRL
RuleML OO
RuleML
business rules
SBVR
PRR
OCL
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SEMANTIC WEB & BUSINESS RULES

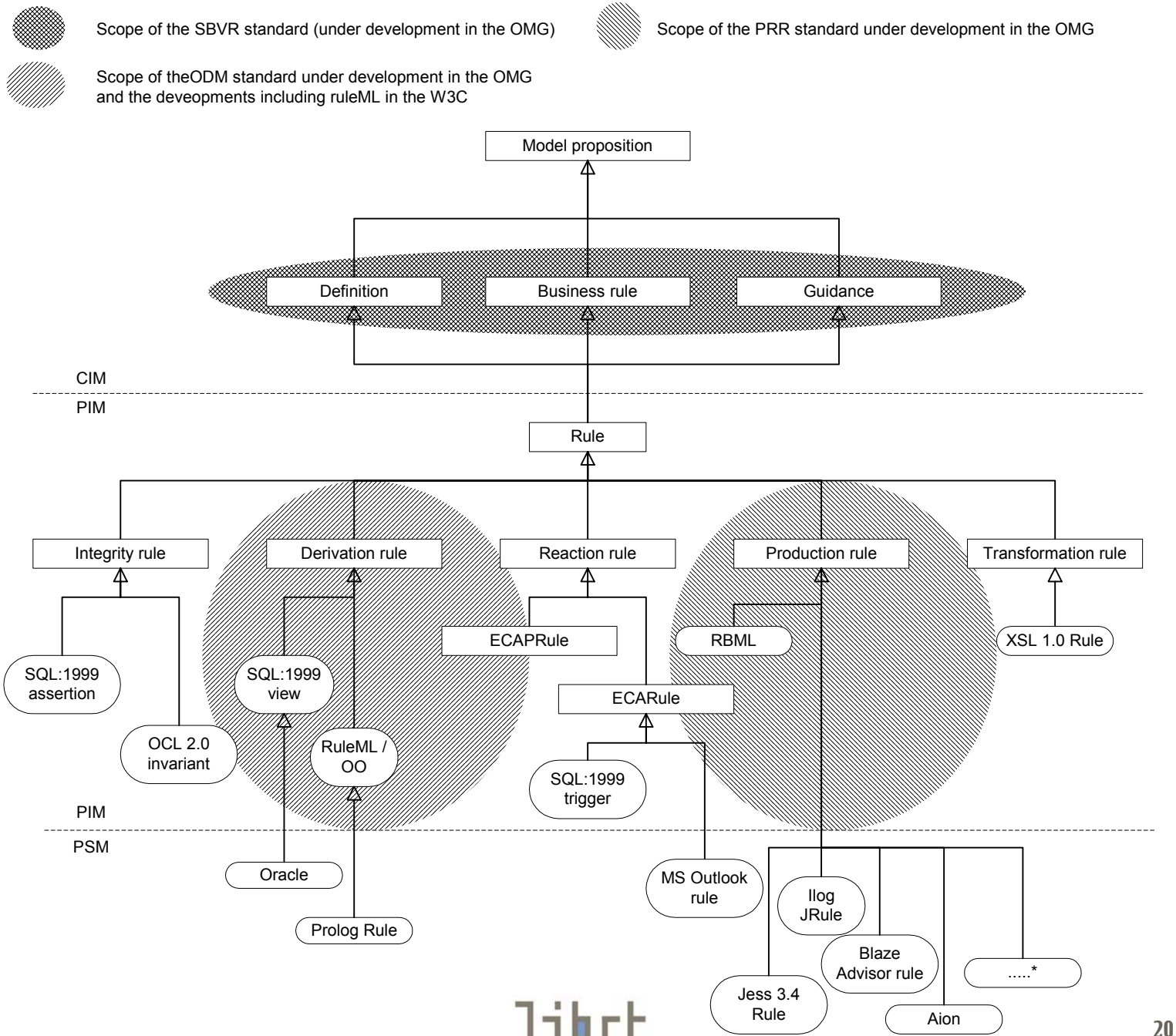
different expression power

semantic web

- open world assumption
- horn clause logic / description logic

business rules

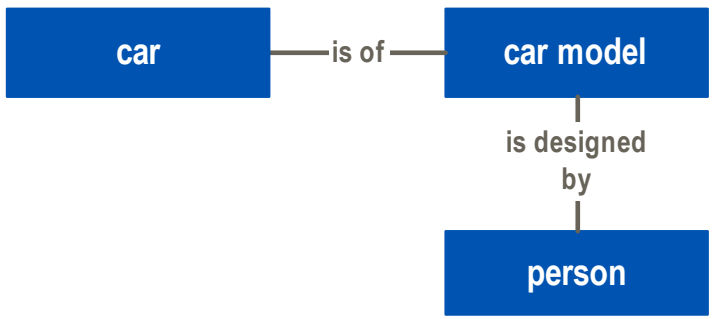
- closed world assumption
- higher order logic
- predicate / deontic logic

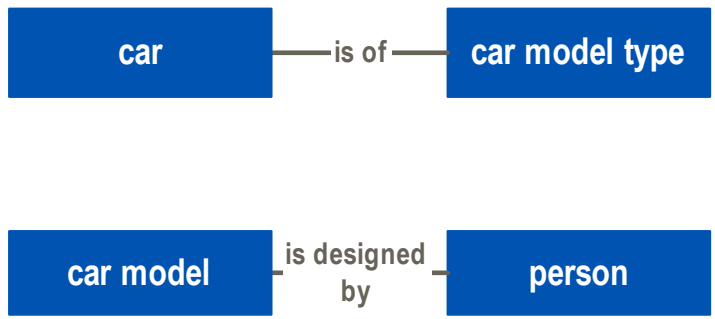

Scope of the SBVR standard (under development in the OMG)
Scope of the PRR standard under development in the OMG
Scope of theODM standard under development in the OMG
and the deveopments including ruleML in the W3C
Model proposition
Definition
Business rule
Guidance
CIM
PIM
Rule
Integrity rule
Derivation rule
Reaction rule
Production rule
Transformation rule
SQL:1999
assertion
OCL 2.0
invariant
SQL:1999
view
RuleML /
OO
ECAPRule
ECARule
SQL:1999
trigger
RBML
XSL 1.0 Rule
PIM
PSM
Oracle
Prolog Rule
MS Outlook
rule
Ilog
JRule
Blaze
Advisor rule
.....*
Jess 3.4
Rule
Aion

DIFFERENT EXPRESSION POWER

higher order

why do business people need higher order?





SEMANTIC WEB & BUSINESS RULES

conclusion

- researchers and practitioners should work more closely together to explore fundamental issues at the level of capturing the semantics of real world domains
- process is already started

W3C workshop on rules (April 2005, Washington) - http://www.w3.org/2004/12/rules-ws/

EBRC05 workshop on rules (speakers from ISO, W3C and OMG) - www.eurobizrules.org

- process will be driven by tool builders

SEMANTIC WEB & BUSINESS RULES

challenges

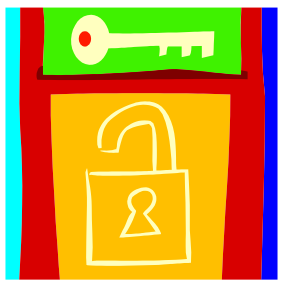
business rules

- should be automated
- natural language
- closed world

semantic web

- are executed
- formal language
- open world

mapping



QUESTIONS ?

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with thanks to the help of Rik Gerrits