W3C Workshop on Languages for Privacy Policy Negotiation and Semantics-Driven Enforcement
17 and 18 October 2006, Ispra, Italy

A Policy Oriented Architecture for the Web: New Infrastructure and New Opportunities

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A bit of History...

W3C Digital Rights Management Workshop

Sophia Antipolis, France
22-23 January 2001

Open Digital Rights Management

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Policy-Aware Web

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- Fully support a move to a Policy-Aware Web
  - This will truly move towards “Leading the Web to Its Full Potential...”
  - New Web Infrastructure
- Huge Opportunity
  - Numerous communities working on Policy Languages
  - Vertical nightmare...
- Huge Interest...Major Impact...

Policies, Policies...

- Privacy
- Rights
- Identity
- Access Control
- Context
- Preference
- QoS
- ...

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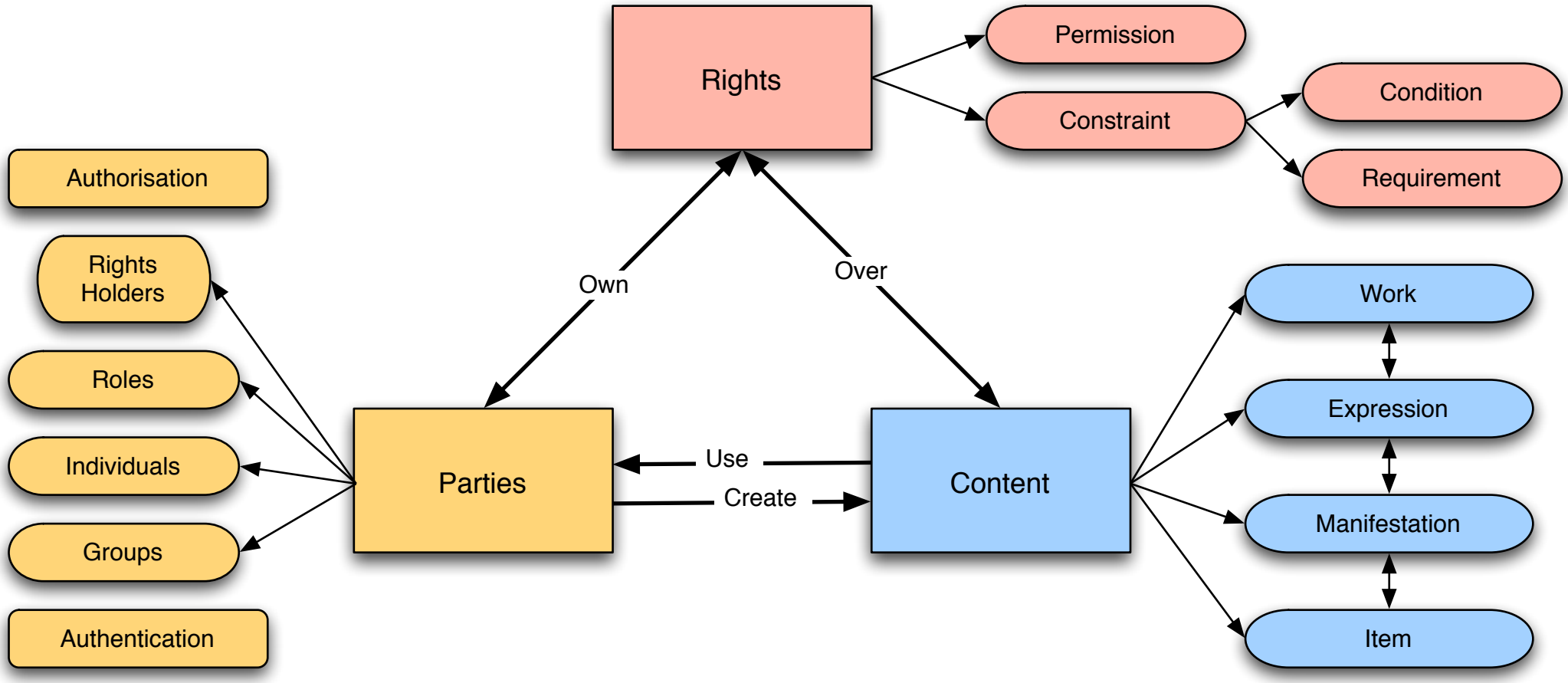
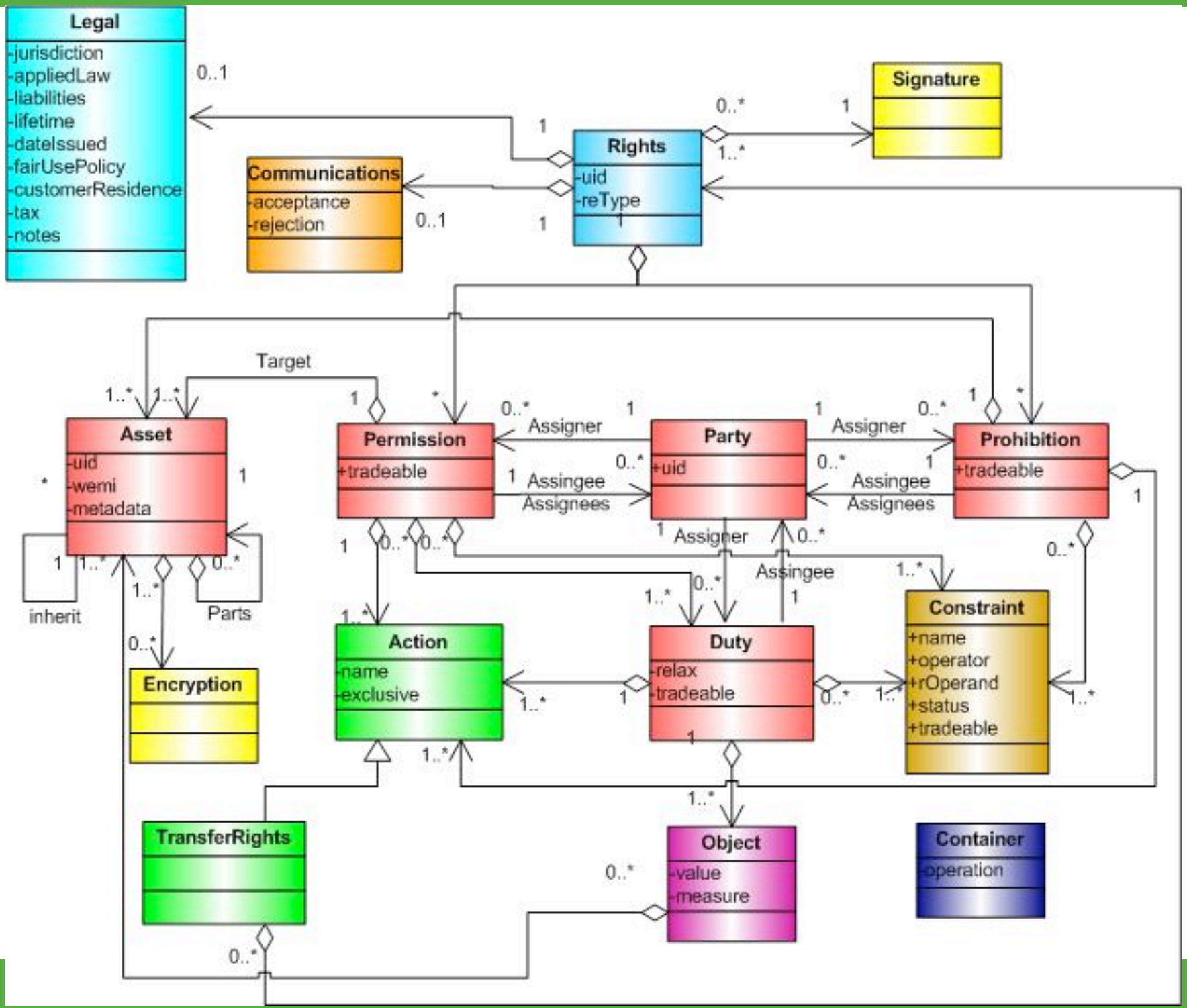
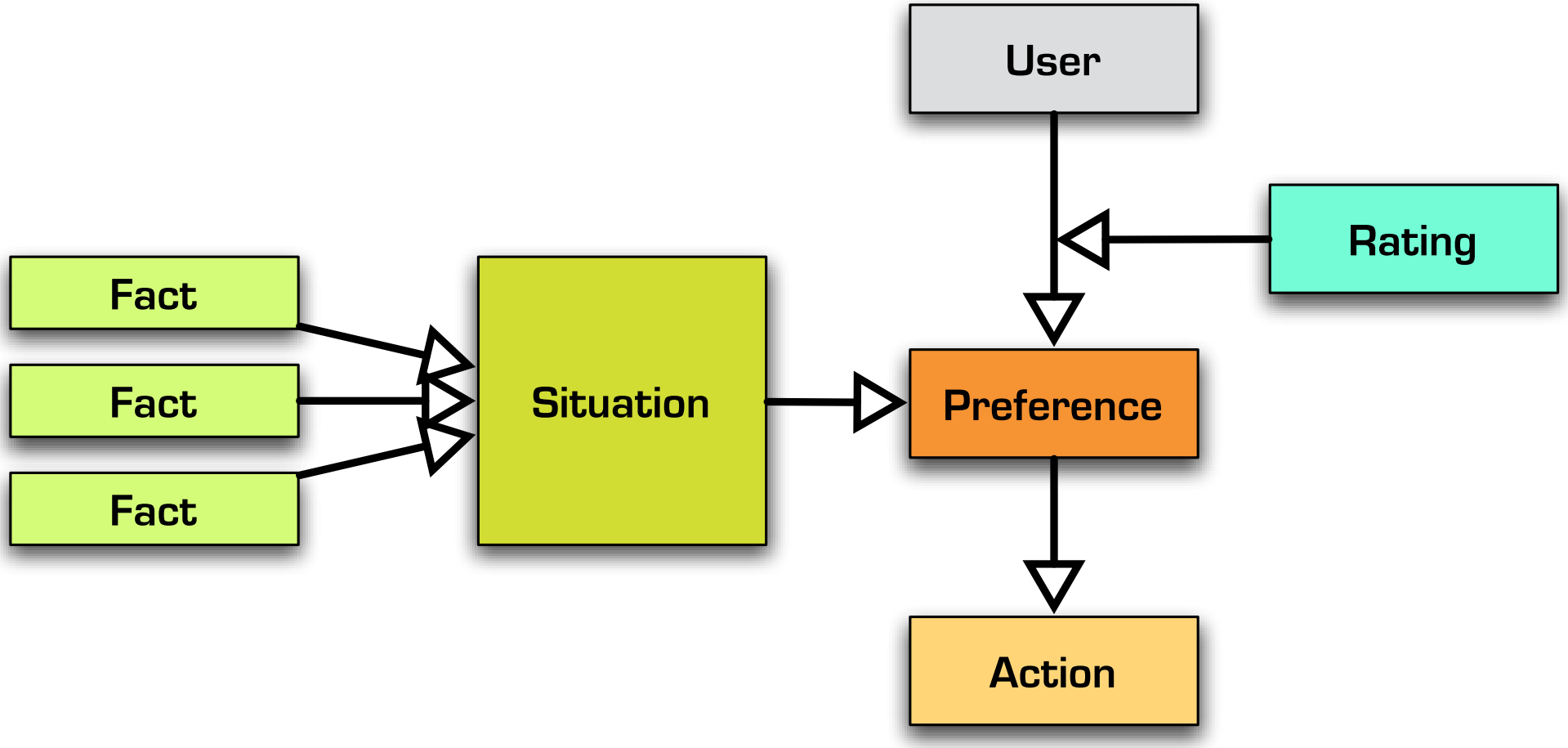


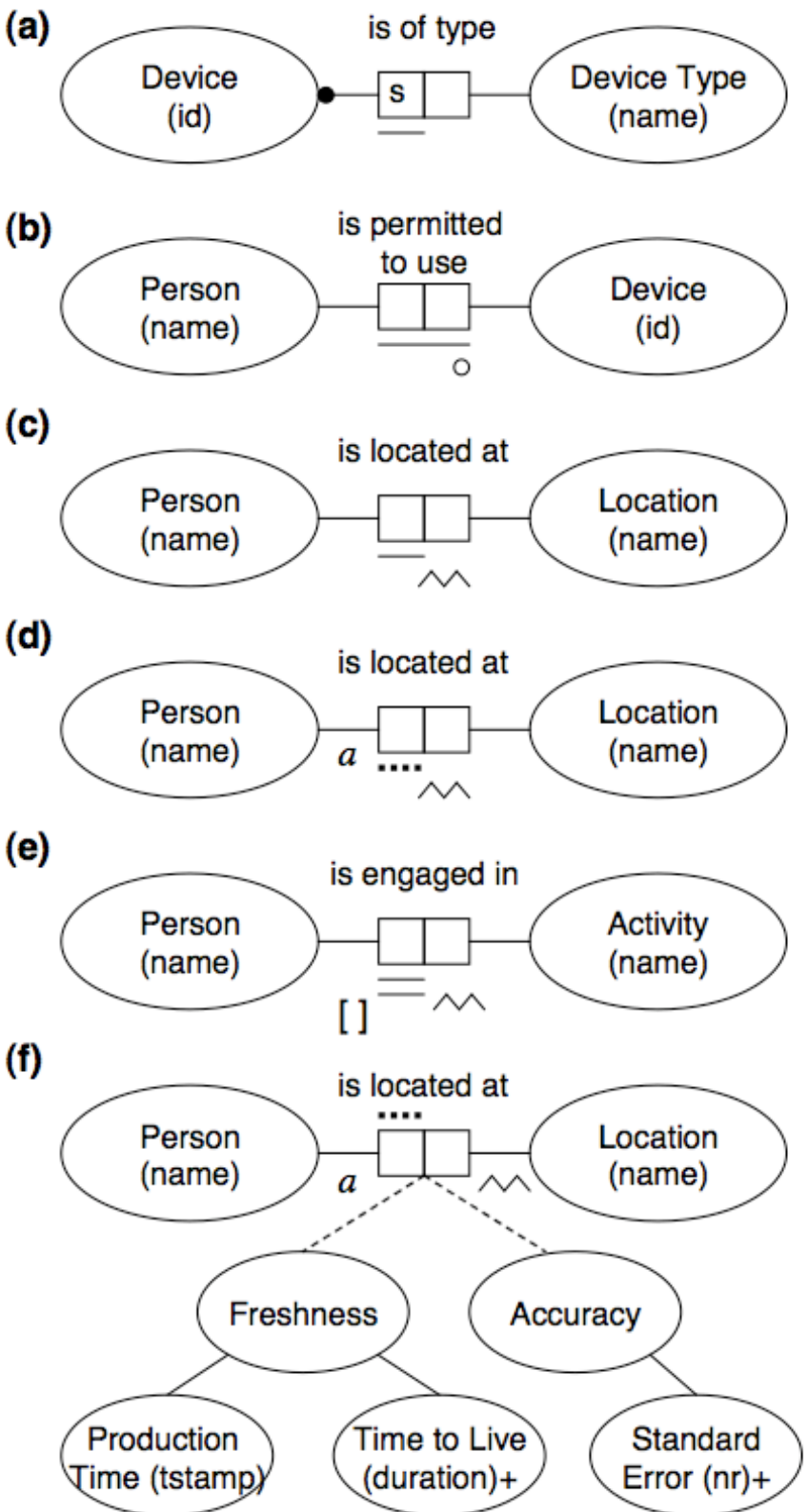
Rights Model - 2



Context Preferences



Context Example



IETF Common Policy

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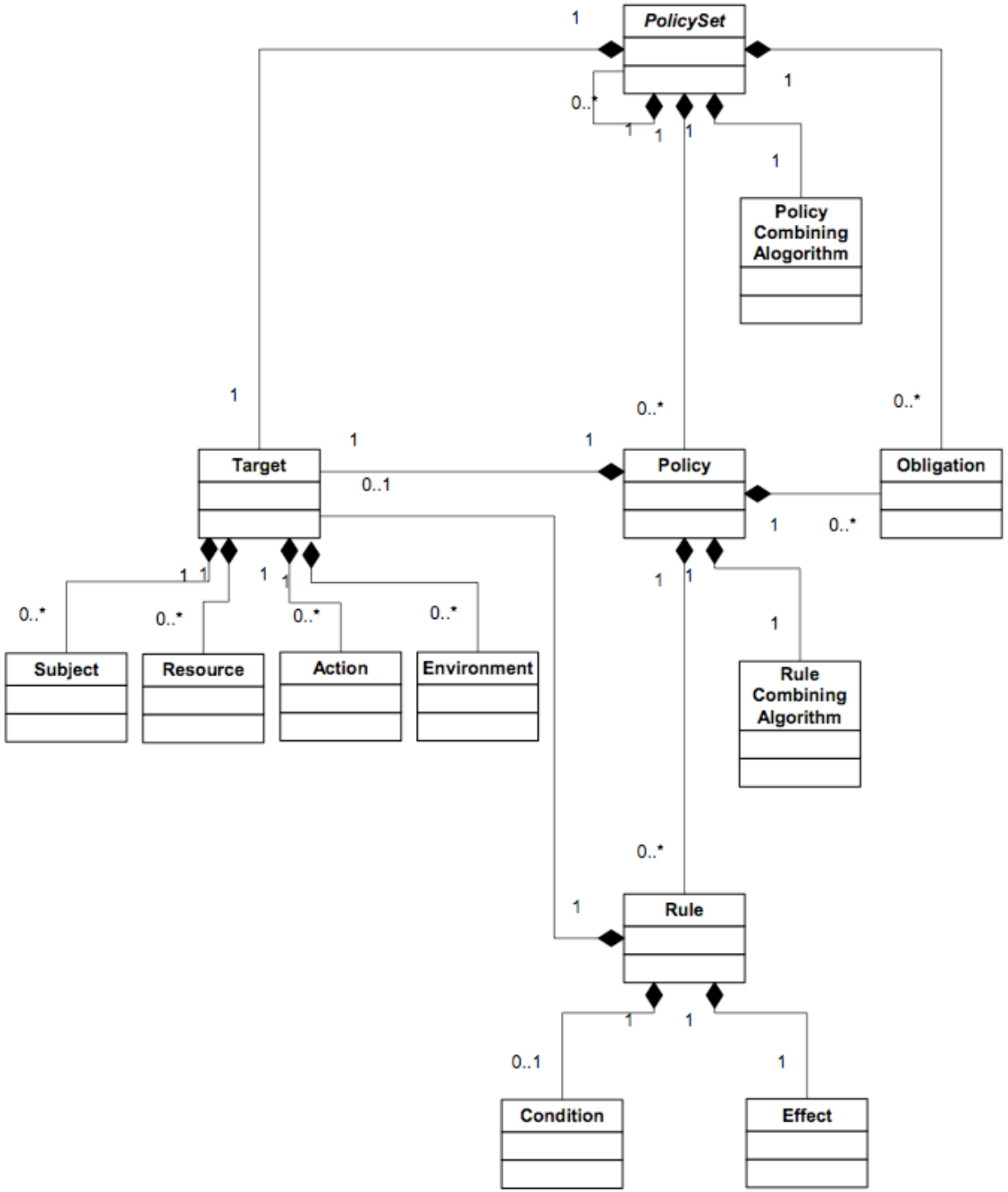
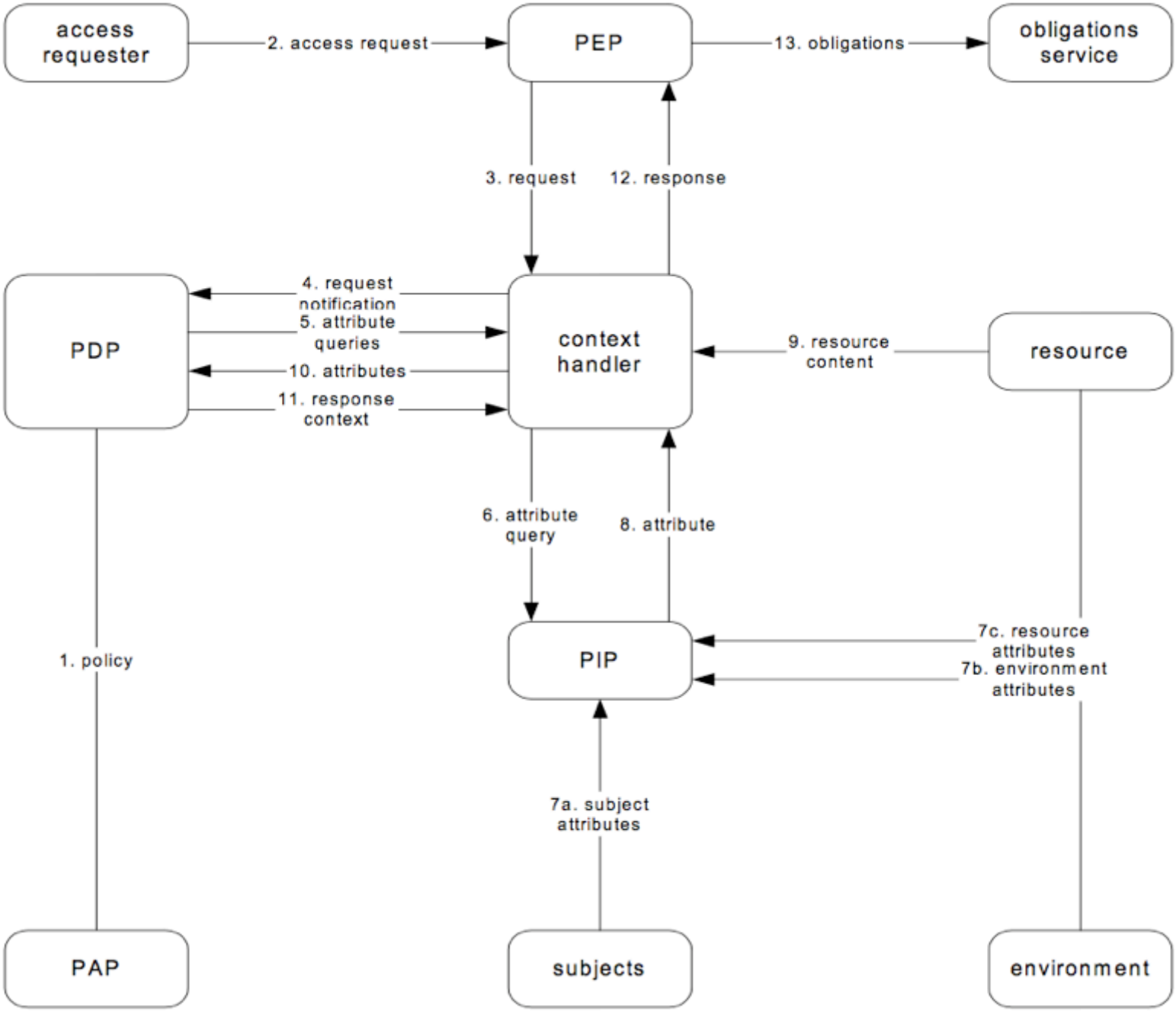
```
<ruleset xmlns="urn:ietf:params:xml:ns:common-policy">
  <rule id="f3g44r1">
    <conditions>
      <sphere value="work"/>
      <identity>
        <one id="sip:alice@example.com"/>
        <many>
          <except domain="example.com"/>
          <except id="tel:+1-212-555-1234" />
        </many>
      </identity>
      <validity>
        <from>2003-12-24T17:00:00+01:00</from>
        <until>2003-12-24T19:00:00+01:00</until>
      </validity>
    </conditions>
    <actions/>
    <transformations/>
  </rule>
</ruleset>
```

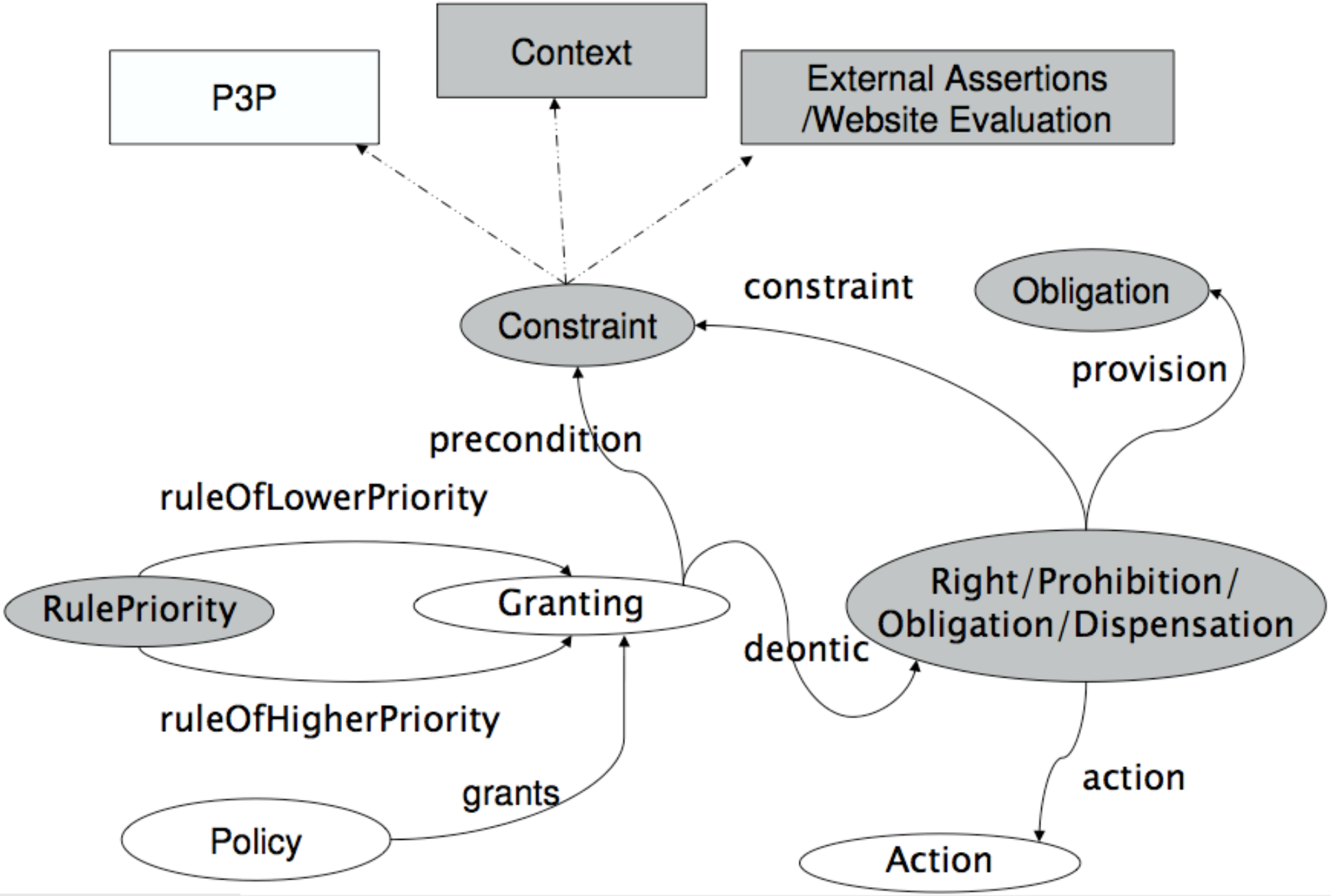
XACML 2 - Language Model



XACML 2 - Negotiation Model



REI Privacy Model



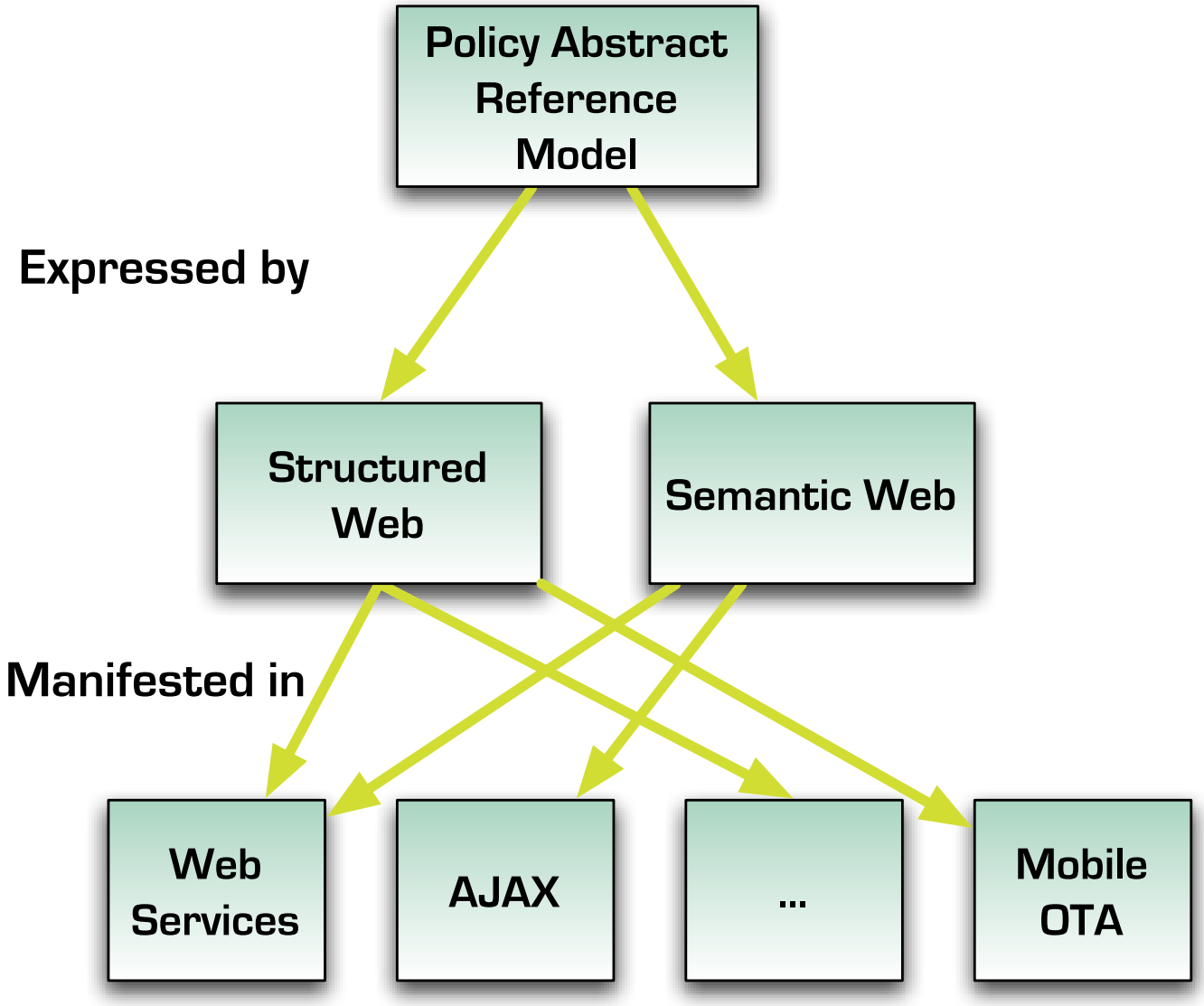
Policy Requirements

- Transparency, Compliance mechanisms, Accountability (See Weitzner et al)
- Trust
  - “enforcement” mechanisms V community acceptance
- Inclusive of the Mobile sector (identity privacy)
- Address Policy conflicts and preferences (priorities)
- Meet the dynamics of Context

Policy Framework

- Challenges
  - Policy Requirements
  - Policy Abstract Reference Model (PARM)
  - Expression(s) of the PARM
  - PARM Architecture(s)
- Community/Sector based Ontologies and Vocabularies

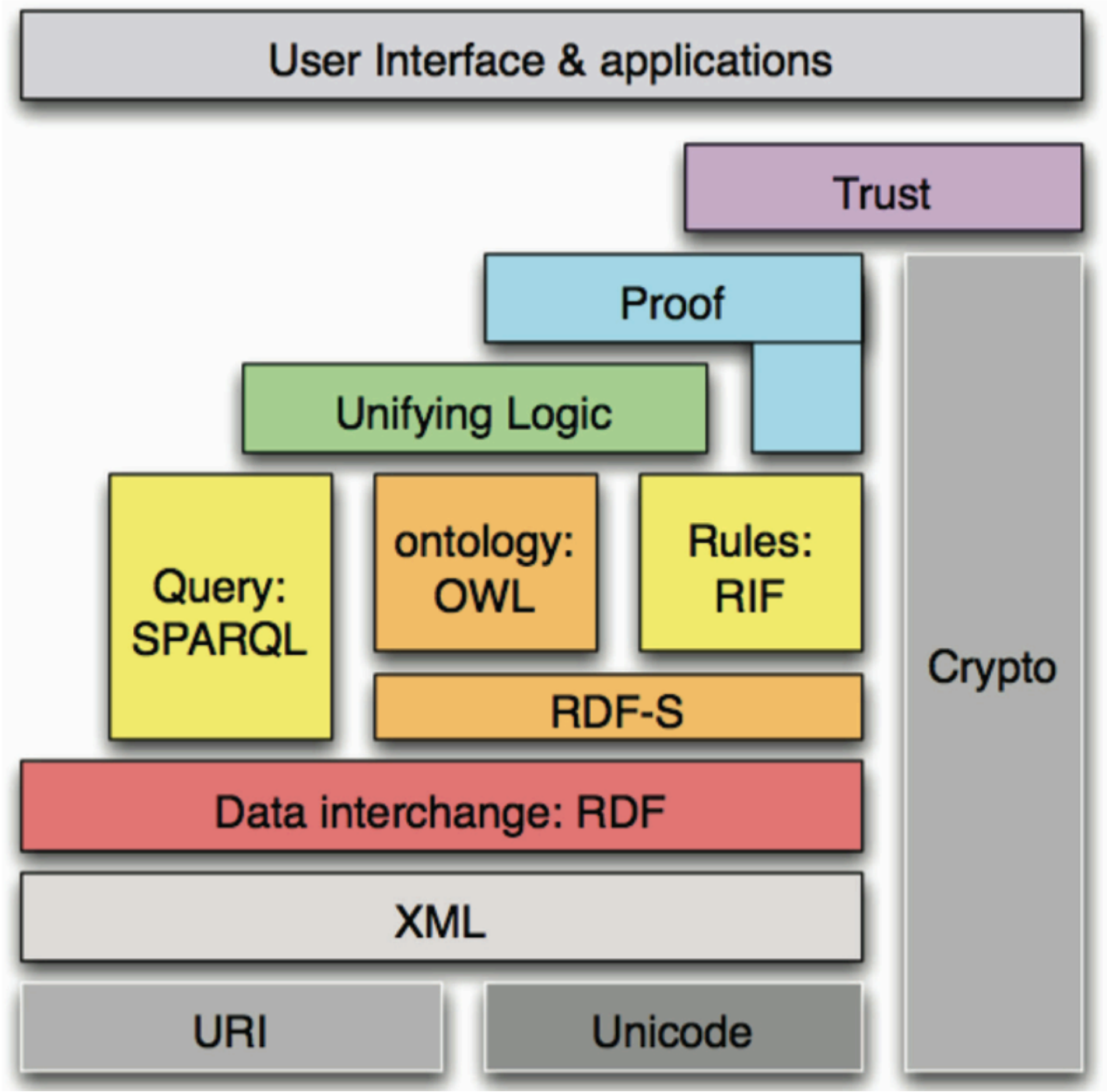
Policy Framework



Policy Models

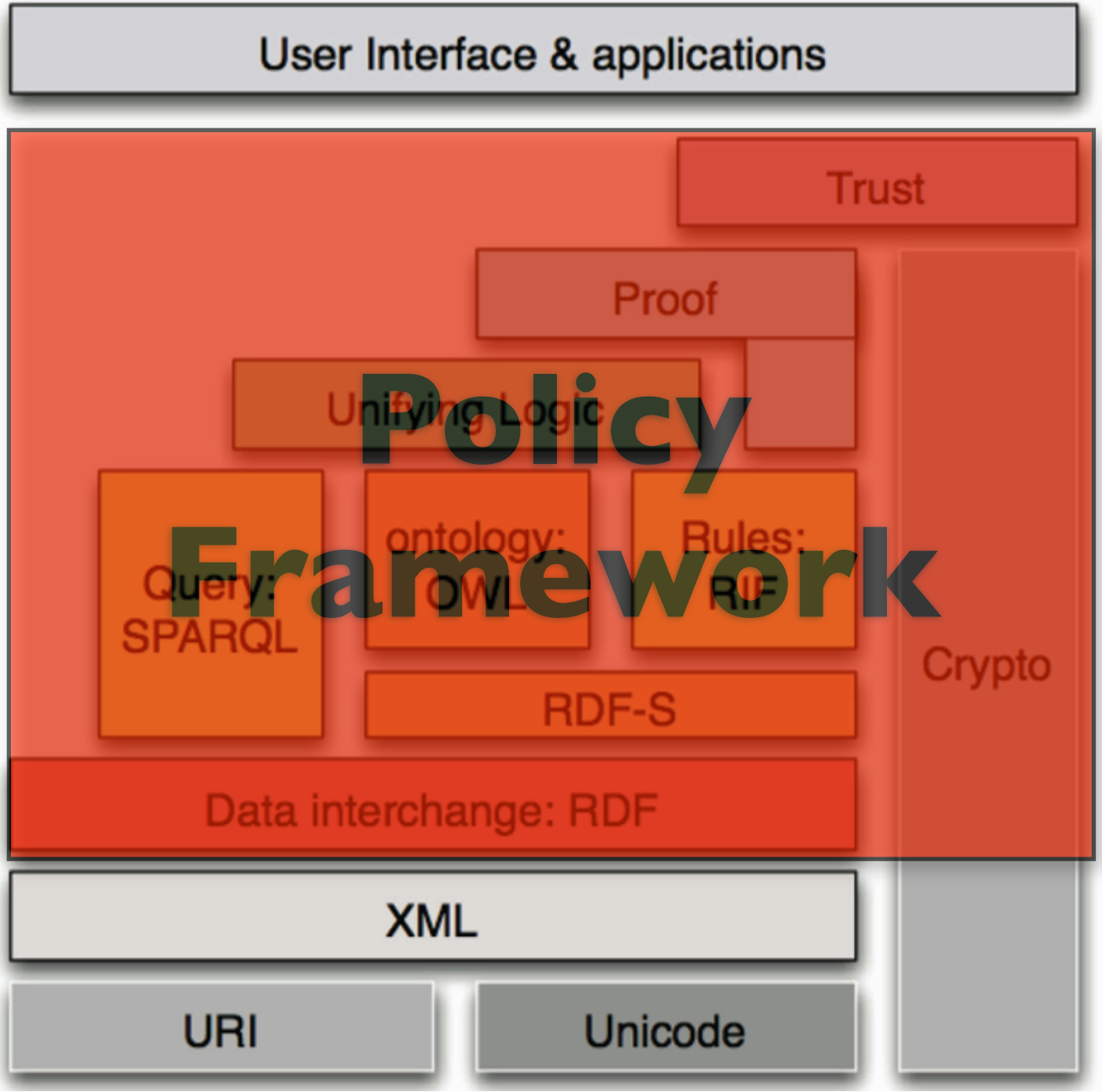
- Capture the commonality of the community
  - Information Model
  - Negotiation Model
  - Enforcement Model
  - Consent Model
  - ...
- Support in the Web Infrastructure

Semantic Web Stack 2006



A Framework for Web Science, Tim Berners-Lee (et al). Foundations and Trends in Web Science, 2006

Semantic Web Stack 2006



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Policy-Aware Web

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- This is the real Web 2.0
- Core new Infrastructure that will enable major new services
- Time is right...

Back to the Future...

W3C Role

- Digital Rights Language (DRL) WG
  - Develop the semantics of an cross-sector digital rights language - encoded in XML
- Trusted Metadata (TM) WG
  - Architecture that supports the encoding and transmission of DRM (and other) metadata
  - RDF II
- DRM Interest Group
  - Discuss the next steps that W3C should take in developing solutions to the larger DRM issues
  - Establish strong relationships with other communities developing open DRM solutions

Back to the Future...

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