A Pyramid Framework for the Semantic Web: Some Issues and Challenges

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Some Issues and Challenges

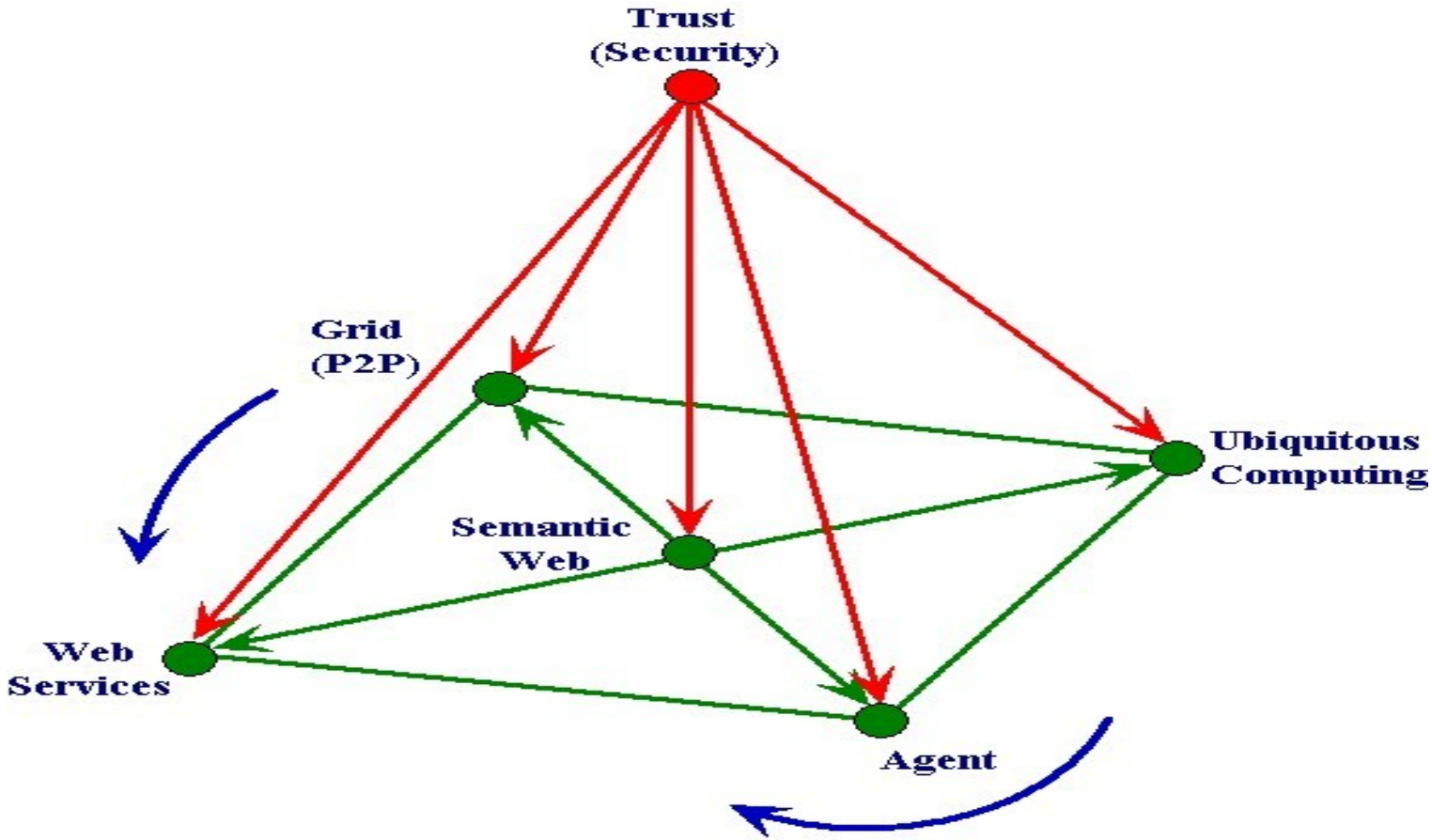
- ✔ *What is the Semantic Pyramid Framework?*
- ✔ *The Semantic Web*
- ✔ *Ubiquitous Computing*
- ✔ *Agent*
- ✔ *Grid (P2P)*
- ✔ *Web Services*
- ✔ *Trust (Security)*

Some Issues and Challenges (Conti.)

- ✔ *The Semantic Web and Web Services*
- ✔ *The Semantic Web and Grid*
- ✔ *The Semantic Web and Agent*
- ✔ *The Grid and Web Services*
- ✔ *Trust (Security) for the Semantic Web*
- ✔ *Trust (Security) for Web Services*
- ✔ *Trust (Security) for Grid*

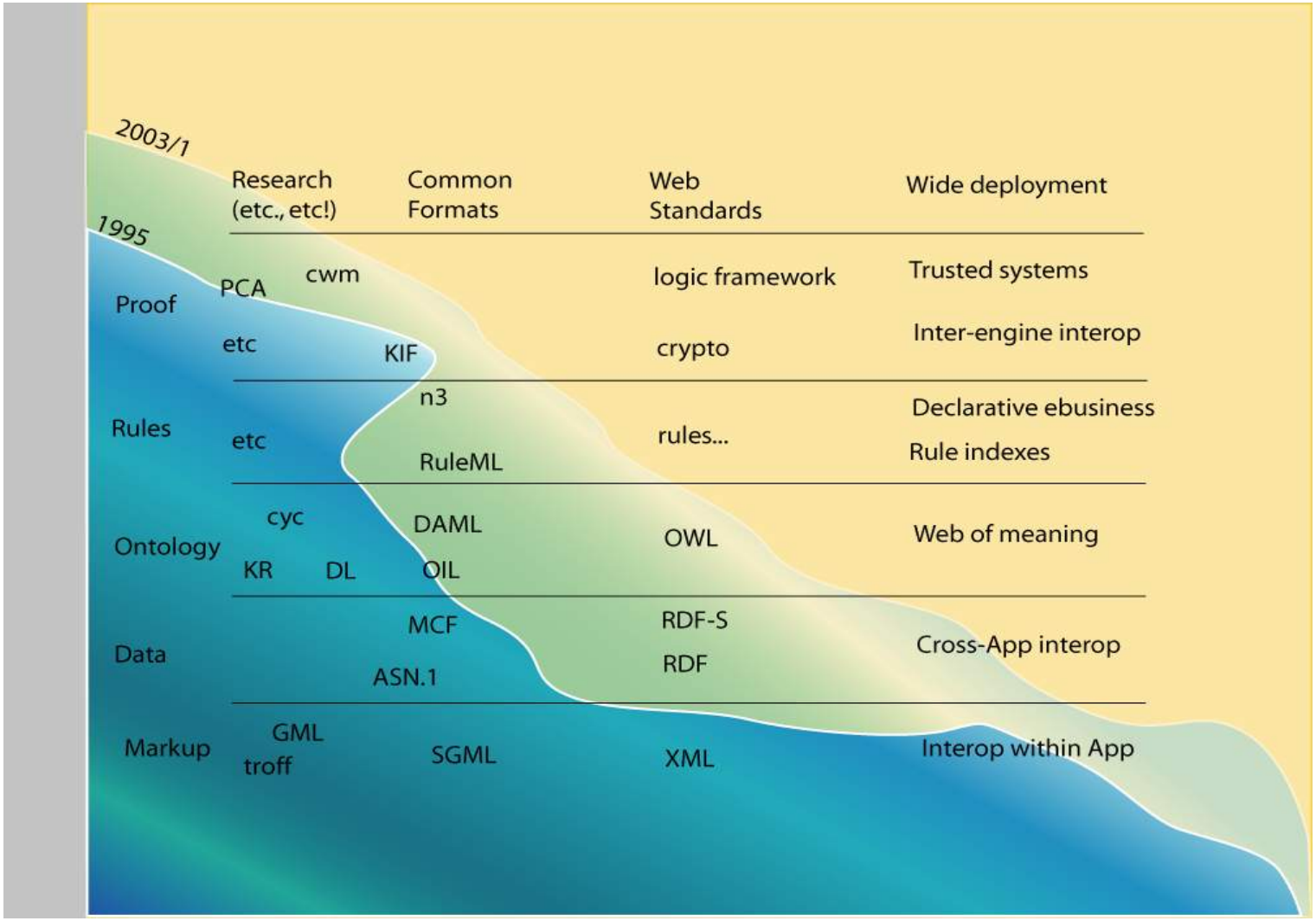
Some Issues and Challenges (Conti.)

- ✔ *Trust (Security) for Agent*
- ✔ *Trust (Security) for Ubiquitous Computing*
- ✔ *Some Other Relationships*
- ✔ *Mobile Commerce Agent and Security*
- ✔ *The Play Roles*
- ✔ *The Outputs*


Trust
(Security)
Grid
(P2P)
Ubiquitous
Computing
Semantic
Web
Web
Services
Agent

The Semantic Web

- *When the WWW becomes the fully loaded semantic web?*
- *Is it possible success and get the momentum in a near future?*
- *What is the incentive for industry to adopt the semantic web?*
- *Is this a pure academic research or the next wave of WWW?*



(see http://www.w3.org/2003/Talks/01-sweb-tbl/Overview-1.html)

Ubiquitous Computing

The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it (Mark Weiser).

- *Dimensions of ubiquitous computing: pervasive computing, ubiquitous computing, mobile computing.*

- *Which ubiquitous computing platform is the right choice, 2G+(WAP), GPRS, 3G, or IEEE 802.11(a,b)?*

- *Context-aware computing is one of the key research areas.*

- *But pervasive network devices and programs that can seamlessly interoperate are still a way off. So is it a dream or a mirage?*

Agent

- *People have already talked too much about agent.*
- *When (or How) the multi-agent system can be seamlessly built on top of the (semantic) WWW?*
- *Why people still can not see any decent agent infrastructure or environment?*
- *Do you think AgentCiti project will succeed in a near future?*

Grid (P2P)

- *Some of the issues for Grid computing were already proposed by distributed system researchers.*
- *Do you think Grid (or P2P) will be a feasible service model for the emerging web services?*
- *Open Grid Service Architecture (OGSA) is the one we can refer to (Ian Foster).*
- *A few days ago, Academic Sinica held a symposium on the Grid computing.*

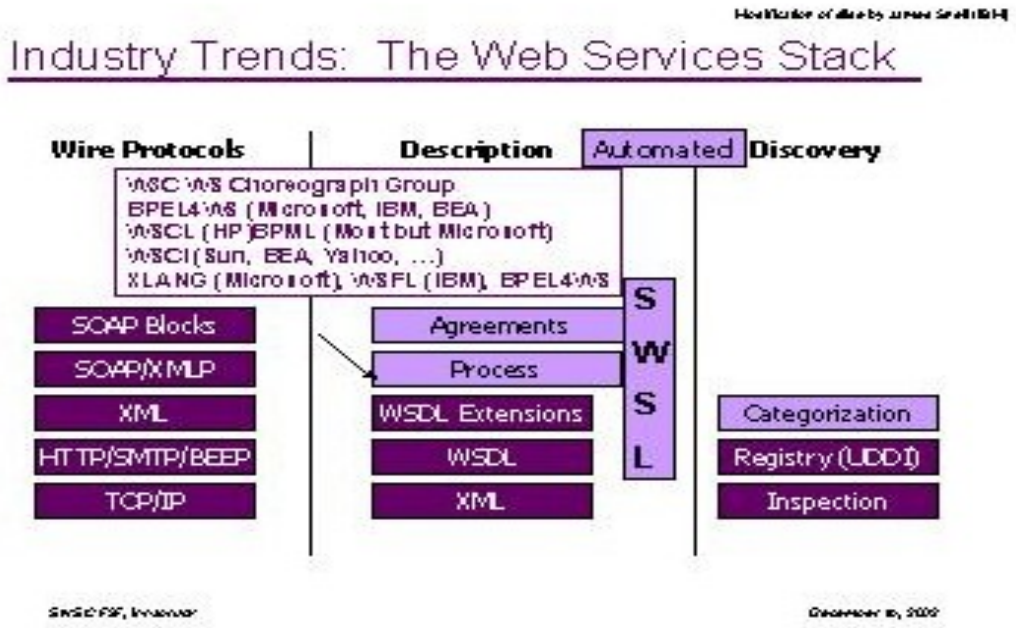
Web Services

Self-contained, modular applications that can be described, published, located, and invoked over a network - WWW (K. Gottschalk et al.).

- *SOAP, UDDI, WSDL, XLANG, WSFL, BPEL4WS - Too many generic language standards*

- *.NET, IBM WebSphere, SUN J2EE, etc. - I do not know which framework to choose yet.*

The Web Services Stack



(see http://swsc.semanticweb.org/)

Trust (Security)

- *Trust (security) is always the last thing to concern so do we have to worry about this issue at this moment?*
- *On our pyramid framework, trust (security) is a shining star to light up the others.*
- *We have some background and domain knowledge on trust and security.*

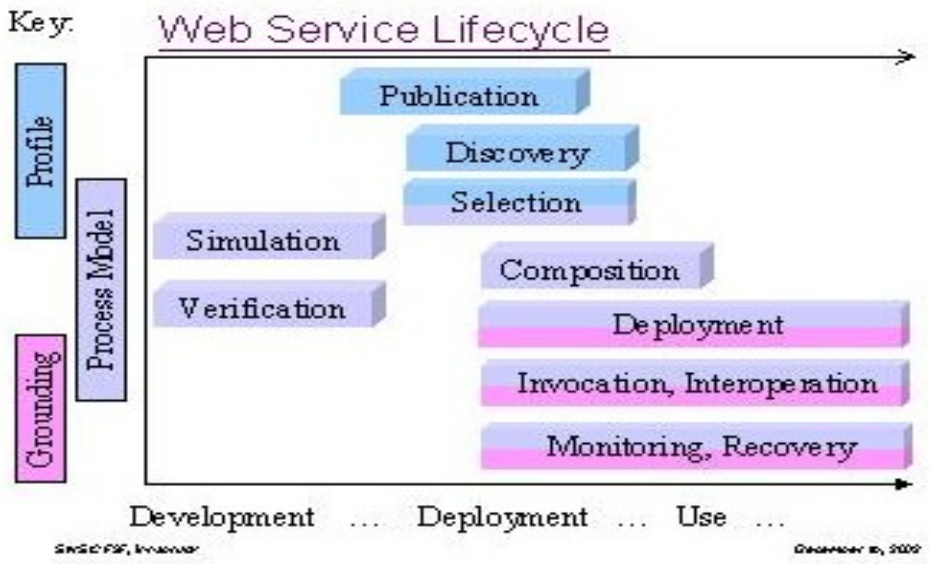
The Semantic Web and Web Services

- *I am expecting the semantic web technology can really help the web services on the automation of web services.*

- *Does the DAML-S really help the web service facing problems?*

- *I am not sure whether the web service group really want to buy the semantic web technologies in the future.*

The Web Service Life Cycle



(see http://swsc.semanticweb.org/)

The Semantic Web and Grid (P2P)

- *Are your sure the Semantic Grid can be really achieved on a future e-science? (David De Roure, Univ. of Southampton)*

- *People on the Grid camp are not really aware of the semantic web technology.*

The Semantic Web and Agent

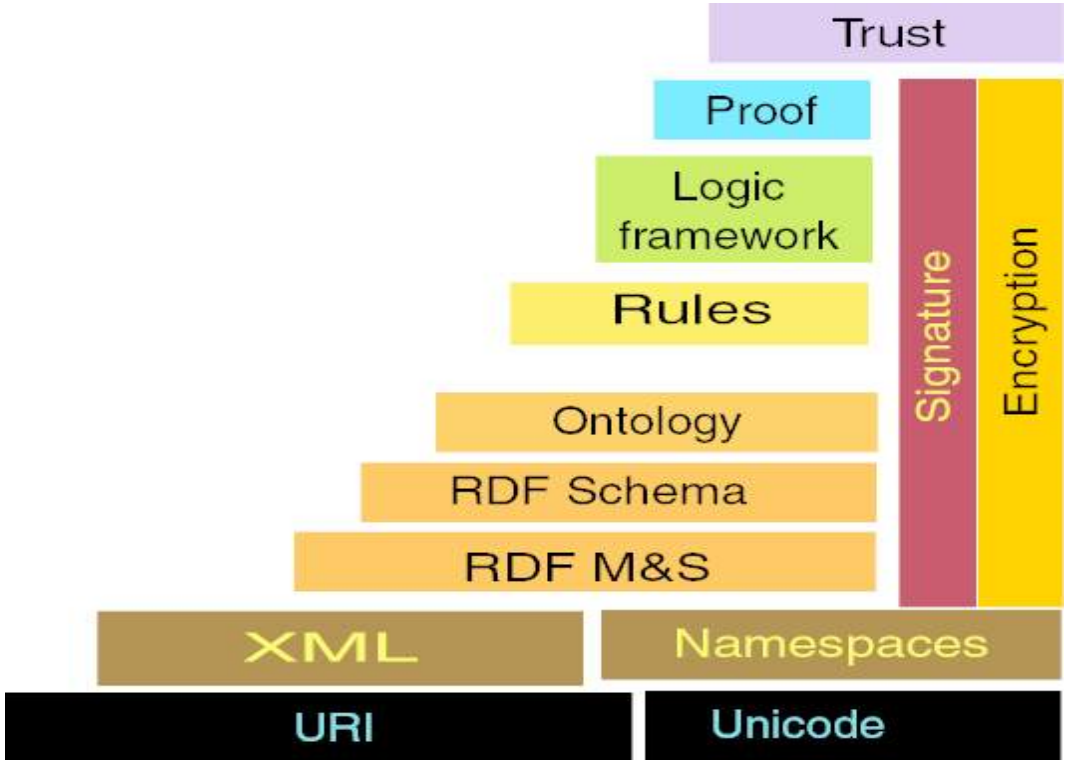
- *We are doing some research on semantic web and agent to build a trust (security) ontology and several trust rules with the semantic web core technology, such as RuleML, DAML+OIL (OWL), etc.*

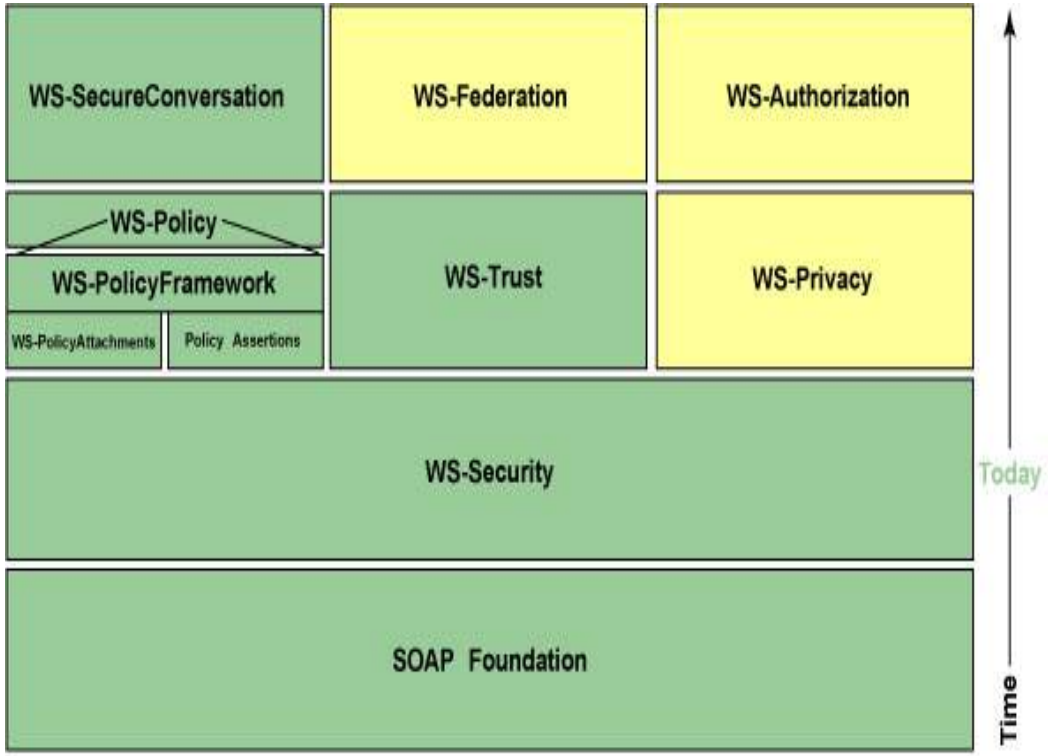
- *Maybe agent technology vision can be achieved on the future semantic web and we are expecting this.*

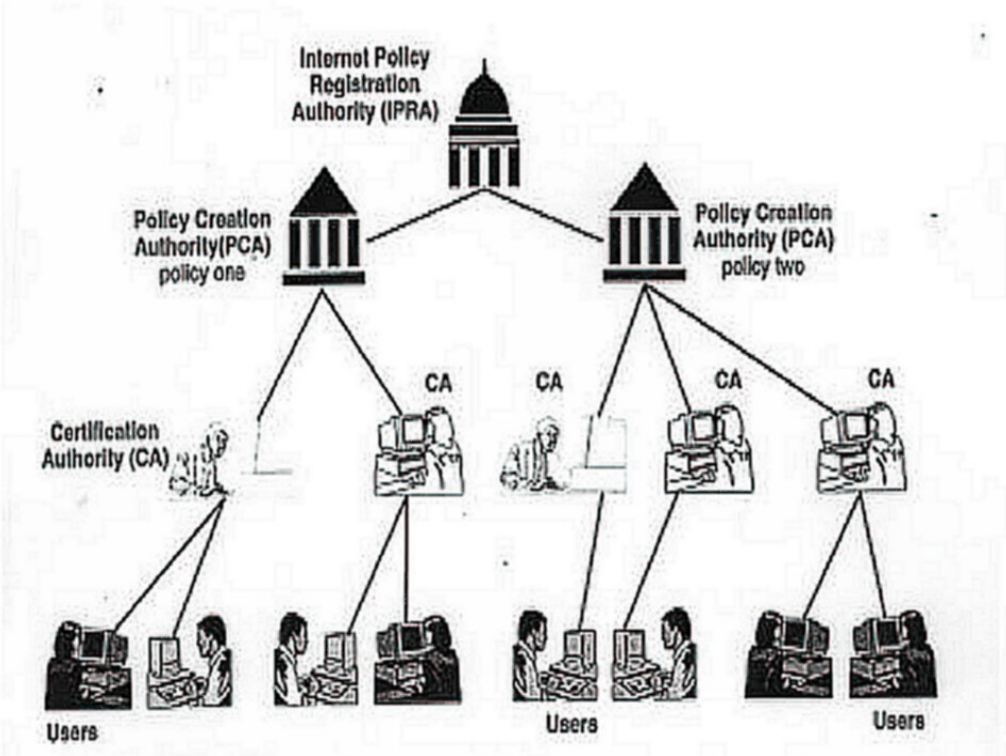
- *I am curious whether we have to use FIPA or FIPA-alike agent toolkits to interoperate with the semantic web.*

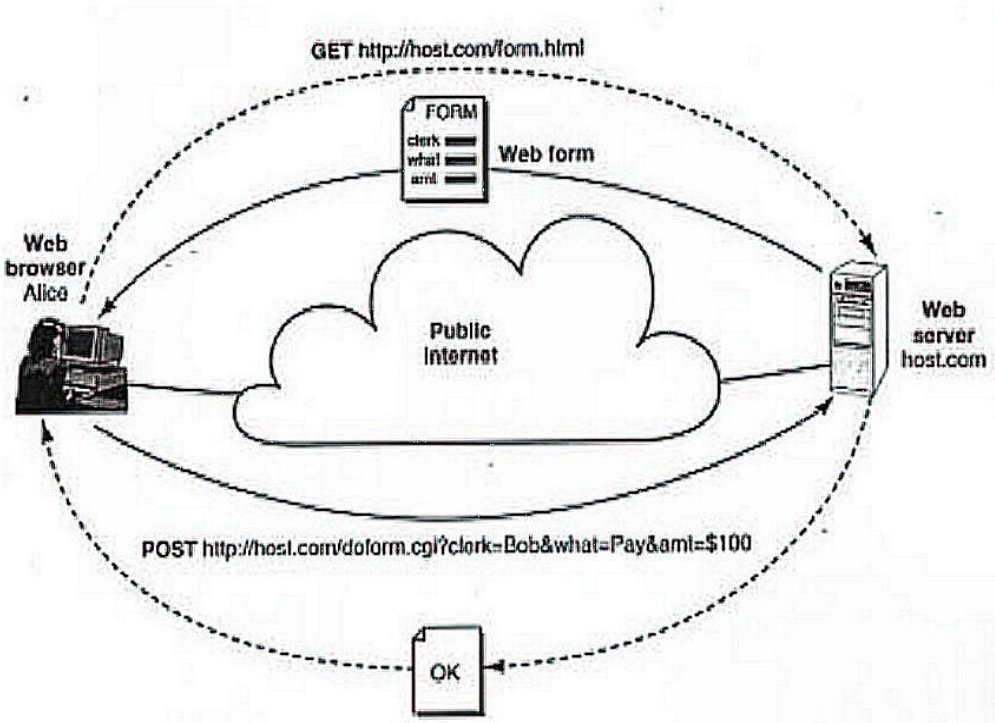
The Grid and Web Services

- *As a computer scientist, do you like to build a Grid service model only to serve the physics community?*
- *Are you sure Grid service and Web service really different?*
- *Grid service and security standards are closely related to web service and security architectures.*

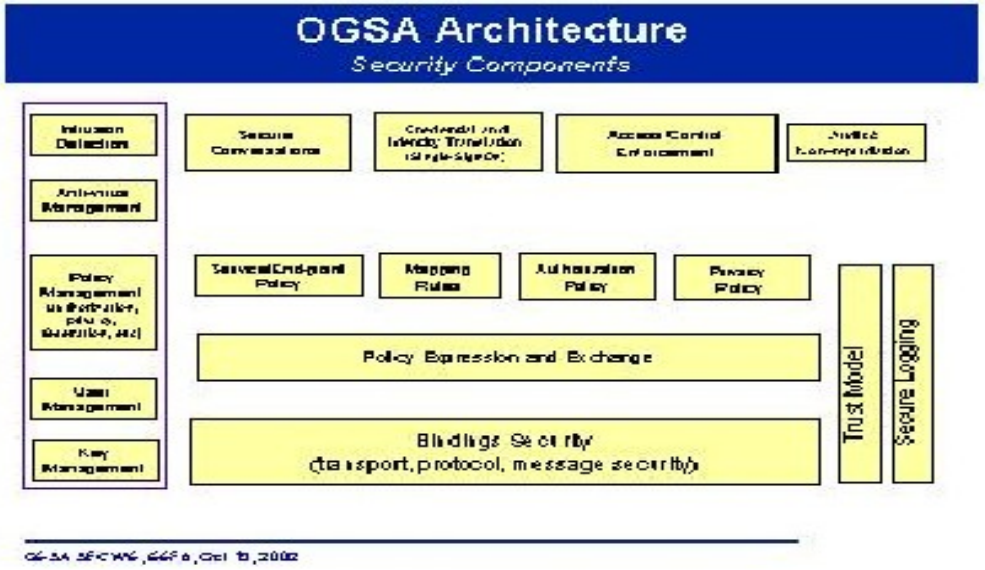

Trust
Proof
Logic framework
Rules
Ontology
RDF Schema
RDF M&S
XML
Namespaces
URI
Unicode
Signature
Encryption


WS-SecureConversation
WS-Federation
WS-Authorization
WS-Policy
WS-PolicyFramework
WS-PolicyAttachments
Policy Assertions
WS-Trust
WS-Privacy
WS-Security
SOAP Foundation
Today
Time


Internet Policy
Registration
Authority (IPRA)
Policy Creation
Authority(PCA)
policy one
Policy Creation
Authority (PCA)
policy two
Certification
Authority (CA)
CA
CA
CA
CA
Users
Users
Users


GET http://host.com/form.html
FORM
clerk
what
amt
Web form
Web browser Alice
Public Internet
Web server host.com
POST http://host.com/doform.cgi?clerk=Bob&what=Pay&amt=$100
OK

Trust (Security) for Grid



Trust (Security) for Agent

- *We have involved in the trust agent on AAMAS since 2000.*
- *We have published several papers on this issue.*

Trust (Security) for Ubiquitous Computing

- *We are not really involve yet*

- *Is it the wireless security? Or we have to consider more high level trust and security mechanisms and protocols.*

Some Other Relationships

- *Agent and Web Services: Agent-Mediated Web Services*
- *Ubiquitous Computing and Agent: Tim Finnin held a workshop*
- *Ubiquitous Computing Agent, and Web Services: MIT Oxygen Project*
- *Ubiquitous Computing, Agent, Web Services, and Semantic Web: CMU Semantic Web for Mobile Context-Aware Services (Norman Sadeh)*

Mobile Commerce Agent and Security

- *At least three core technologies are involved: ubiquitous computing, agent, and web services. If you like, the semantic web can be included but that will add complexity.*

- *M-Commerce has not taken off w.r.t. the economy of scale and the ubiquity that was initially expected.*

- *Is this the chapter two for DoCoMo's i-mode?*

- *What is the business model for M-Commerce?*

M-Commerce Business Model

- *What the customer pay for?*
  - ✔ *Billing for the mobile connection service*
  - ✔ *Billing for the acquired contents/provided service*
- *To whom the customer pays?*
  - ✔ *The mobile connection service provider*
  - ✔ *The service/content provider*

The Play Roles

- *What are the play roles w.r.t each person from the academic?*
- *What is the play role for III?*
- *What is the play role for local software firm in the future?*

The Outputs

- *No specific output expect, we just distill mature technologies and show path(s) to usage. Of course, get funding to live with.*
- *Producing research papers*
- *Building prototype system and transferring technology to the industry in the future so that we can localize the technology (Taiwan and China).*
- *Joining and involving the consortium, such as W3C to cooperatively generate core technology standards.*
- *Others*