Safe semantic search engine of medical services

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Agenda

1. Introduction
2. Architecture of Semantic Web
3. Security problem of Semantic Web
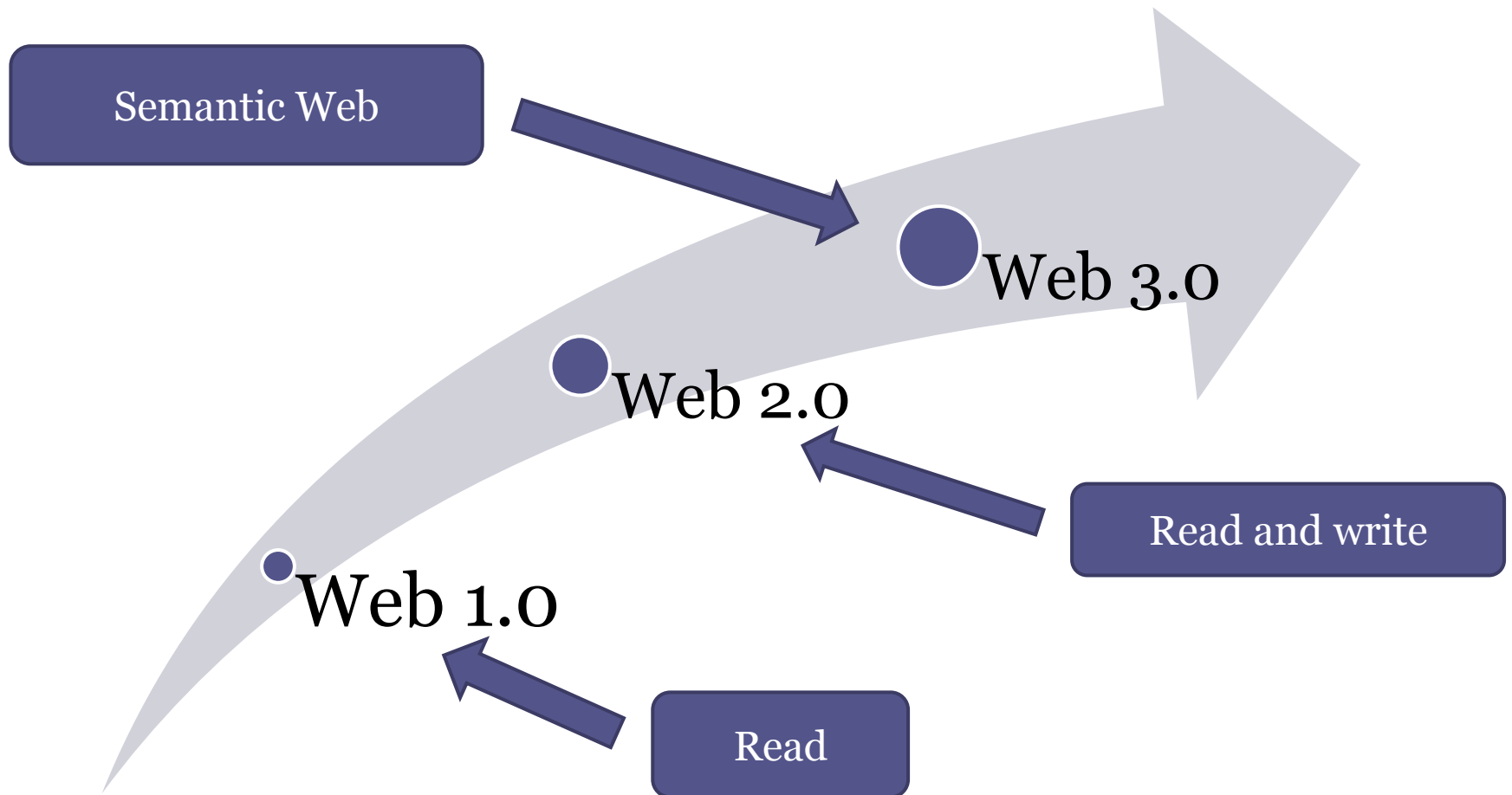4. My search engine
5. Summary

Agenda

Introduction

- How much time take planning journey from place where you live to city B where you want book a room in the cheapest hotel and rent a car?
  - At first you should decide which kind of transport you can use to get to City B
  - Secondly book a ticket
  - After that find hotel services and choose one hotel in the center with the best price
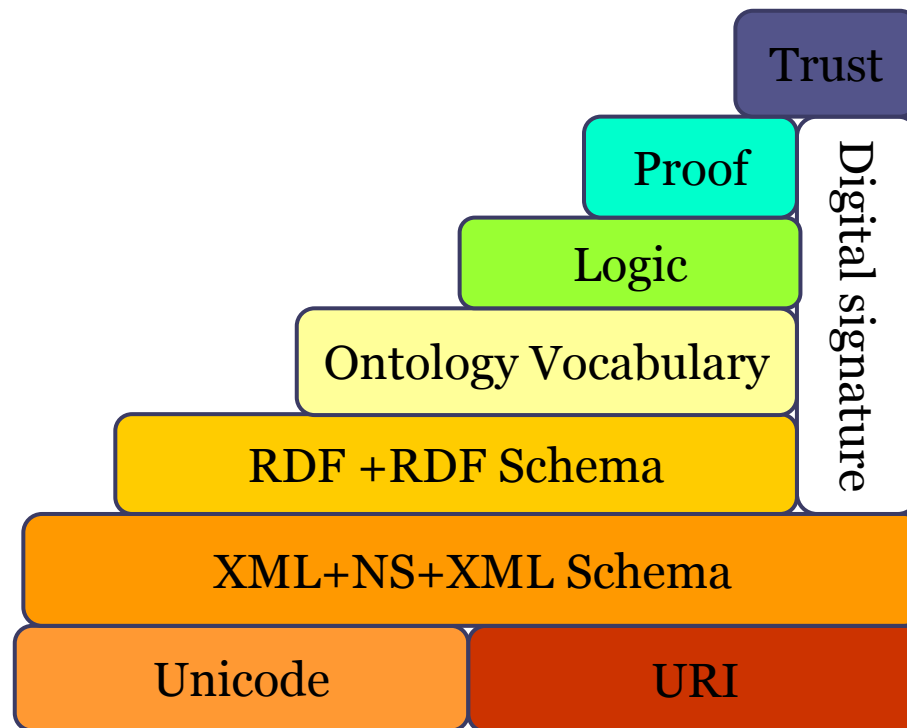 - Finally rent a car

Introduction

Semantic Web

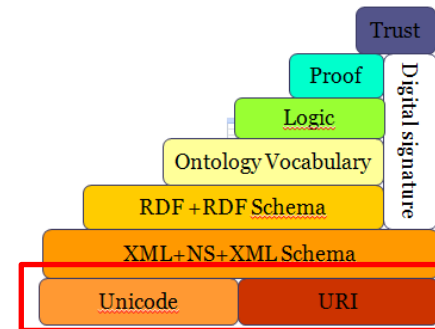Web 3.0

Web 2.0

Read and write

Web 1.0

Read

Agenda

Architecture of Semantic Web

Architecture of Semantic Web

1. Layer 1:

- Unicode- universal standard encoding system for computer character representation

- URI- a uniform resource identifier (URI) is a string of characters used to identify a name or a resource on the Internet
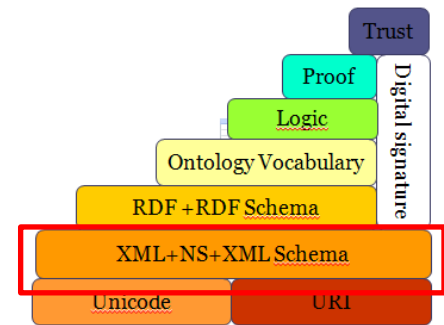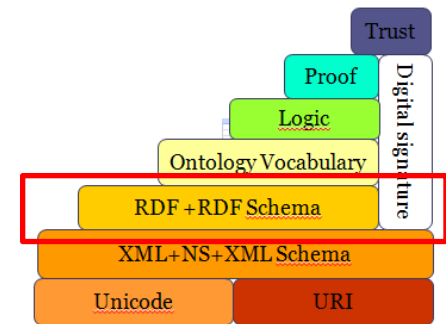
Architecture of Semantic Web

2. Layer 2:

- XML- language used to represent data in a structural way.

- Name Spaces- used for providing uniquely named elements and attributes in an XML document.

- XML Schema- description of a type of XML document, typically expressed in terms of constraints on the structure and content of documents of that type, above and beyond the basic syntactical constraints imposed by XML itself
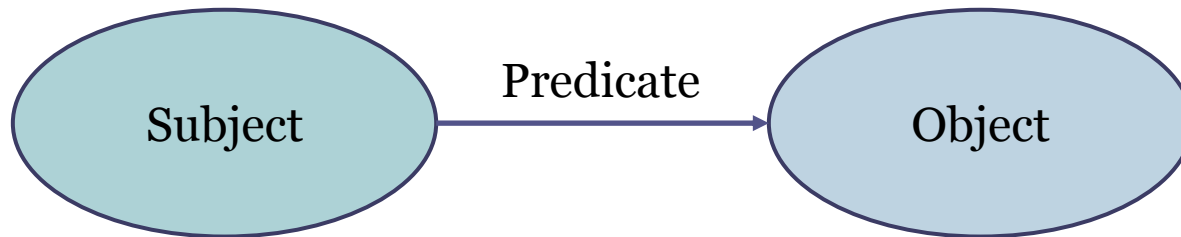
Architecture of Semantic Web

3.   Layer 3:

- RDF- Resource Description Framework is a way for representing, exchanging and reusing of metadata. RDF uses URIs to identify web resources and uses a graph model for the purpose of describing the relationship between different resources.

- RDF Schema- simple modeling language introducing classes of resources, properties and relations between them
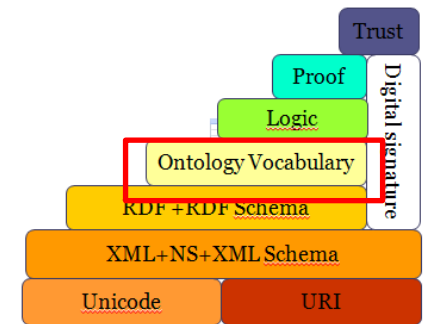
Architecture of Semantic Web

RDF graph model

Architecture of Semantic Web

4. Layer 4:

- Ontology vocabulary-
  represents knowledge as a set of concepts
  within a branch, and the relationships
 between those concepts

Architecture of Semantic Web

5. **Layer 5:**
- Logic- It is supposed that information will be extracted from the web according to logic

6. **Layer 6:**
- Proof- It is assumed to be a language used in a manner that describes for agents why they should believe the results.

7. **Layer 7:**
- Trust- depends on the source of information as well as the policies available on the information source which can prevent unwanted applications or user from access to these sources
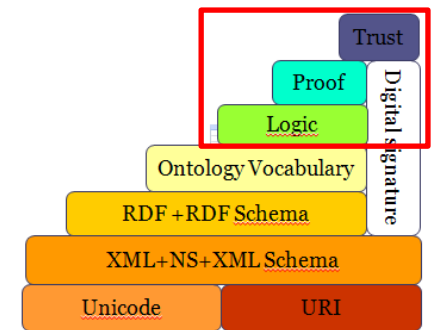
Agenda

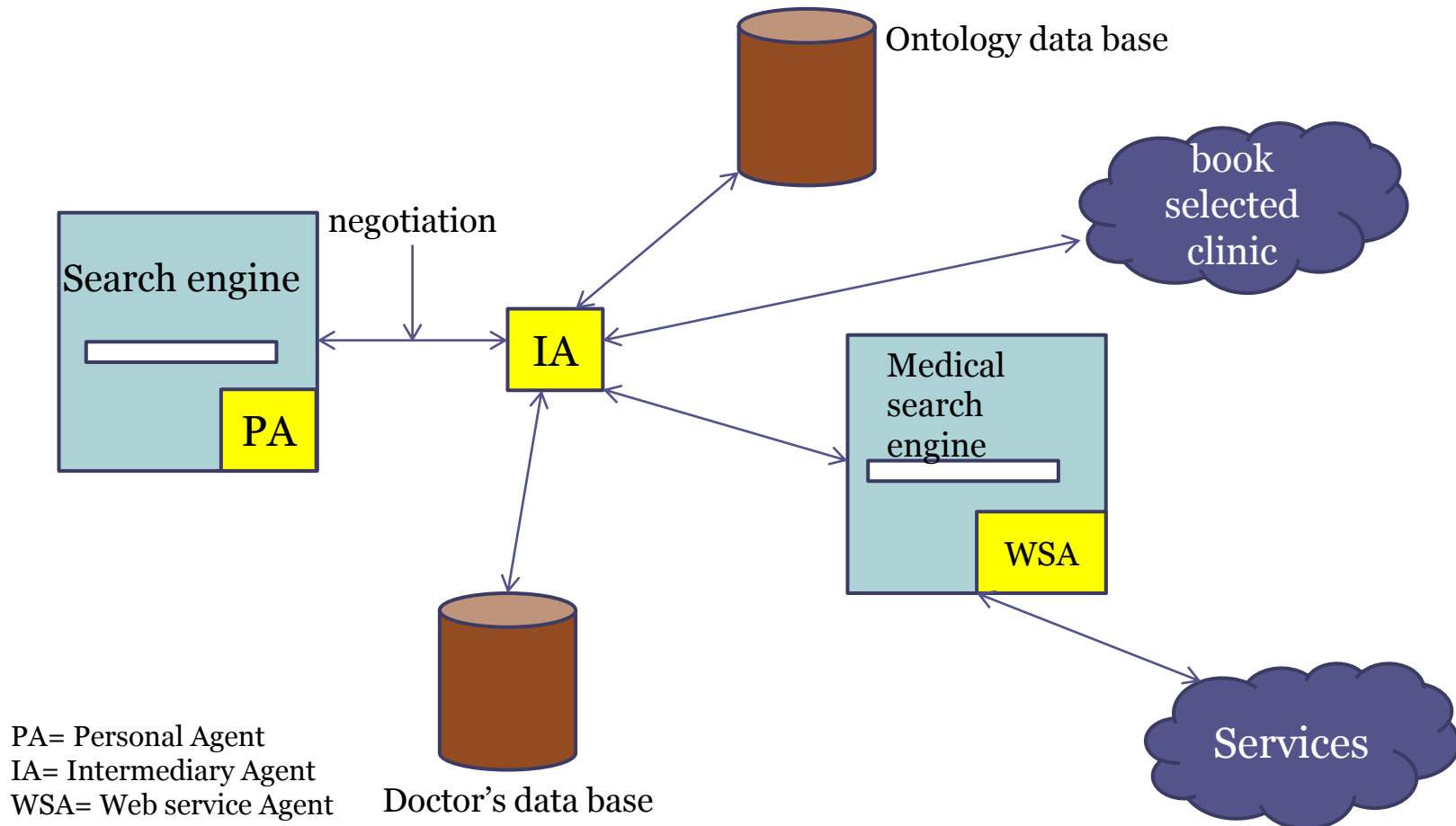# Security problem of Semantic Web

- XML
  - Access must be controlled to various portions of the document for reading, browsing and modification
- RDF
  - The certainty that the RDF data model has not been changed
- Ontology
  - Access control for different users to different part of the ontology

Agenda

My search engine

Ontology data base

book selected clinic

negotiation

Search engine

PA

IA

Medical search engine

WSA

Services

PA= Personal Agent
IA= Intermediary Agent
WSA= Web service Agent

Doctor's data base

My search engine

- JADE (Java Agent DEvelopment Framework)- is a software framework for multi-agent systems
- JENA- is an open source Semantic Web framework for Java which include:
  - an API for reading, processing and writing RDF data in XML
  - an ontology API for handling Web Ontology Language
  - a rule-based inference engine for reasoning with RDF and OWL data sources;

Summary

- Future of www is Semantic Web
- Simple and fast search of information
- Many other facilities in the life
- But still a lot works to create WEB 3.0

Thank you for your attention!
Questions?