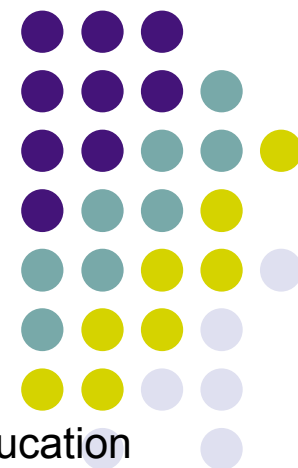
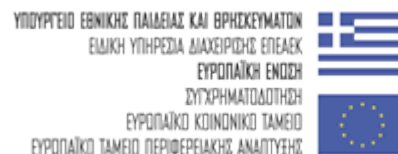


# A Semantic-Web based Framework for Developing Applications to Improve Accessibility in the WWW

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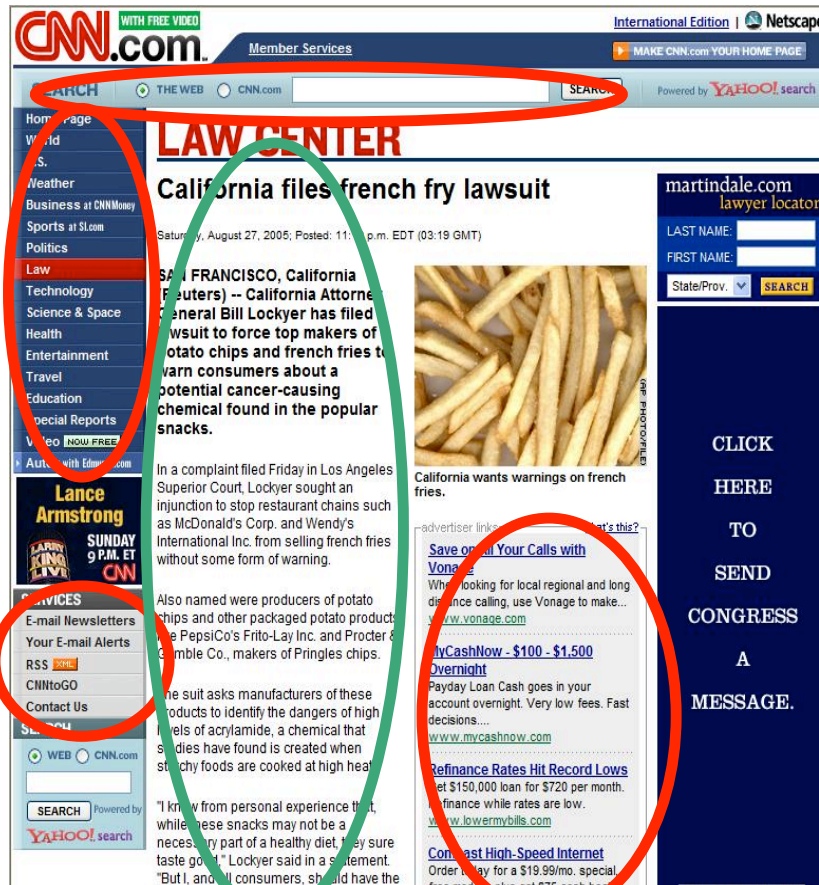




# Aim of the research

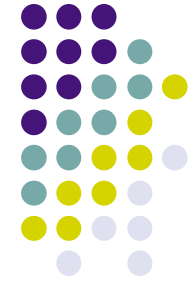
- Improve usability of the WWW for blind people.
  - Efficiency and effectiveness of information seeking process.
    - Browsing strategies.

# Problems of blind users in browsing the web



- Across document browsing.
  - Not quick access to navigational aids.
  - Scanning text for relevancy estimation.

# Problems of blind users in browsing the web



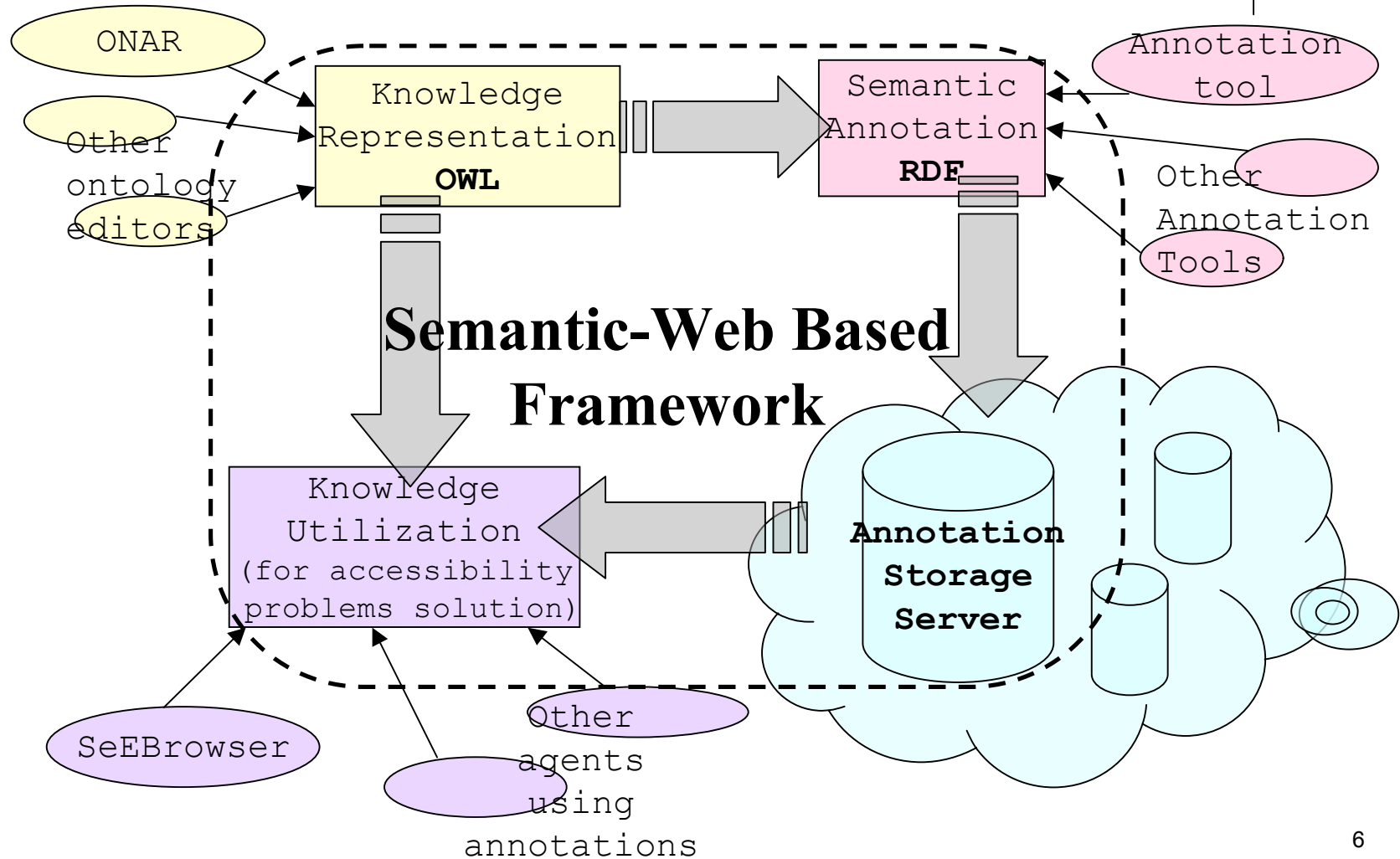
- Within document browsing.
  - Sight dependant functions.
  - No use of visual cues such as colors, headlines, tables. (Misuse of HTML layout tags)
  - Sight oriented web design (desktop metaphor and misuse of TABLE tag).
  - Serialization as the main mechanism of adaptation.



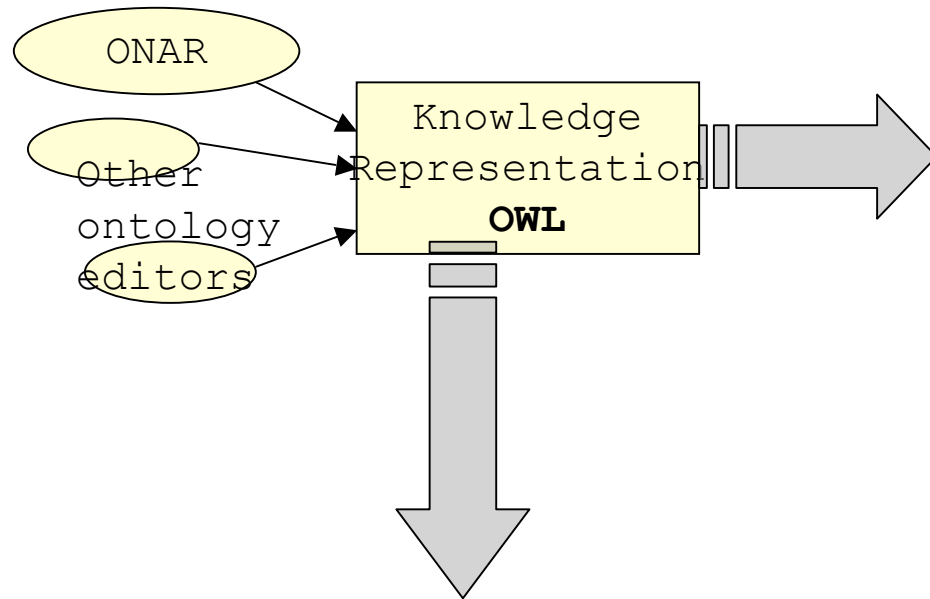
# Inspiring ideas

- Transcoding servers (Tagaki & Asawaka, Huang & Sundaresan)
- Semantic web
  - A metadata layer build upon the current web.
  - Use metadata to communicate missed information to blind users.
- Annotea project
- Community formation

# The framework scheme



# Knowledge Representation

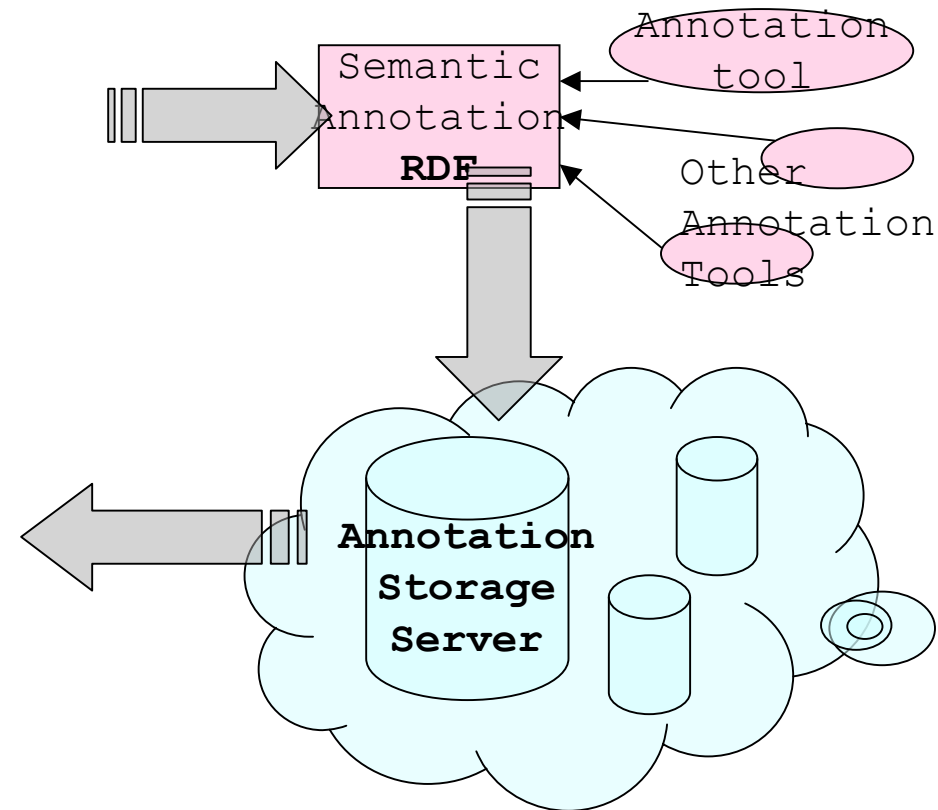


- Ontology creators
- OWL
  - Ontological approach
  - Design freedom
- ONAR
  - GUI for editing ontologies
  - Collaborative design

# Semantic Annotation

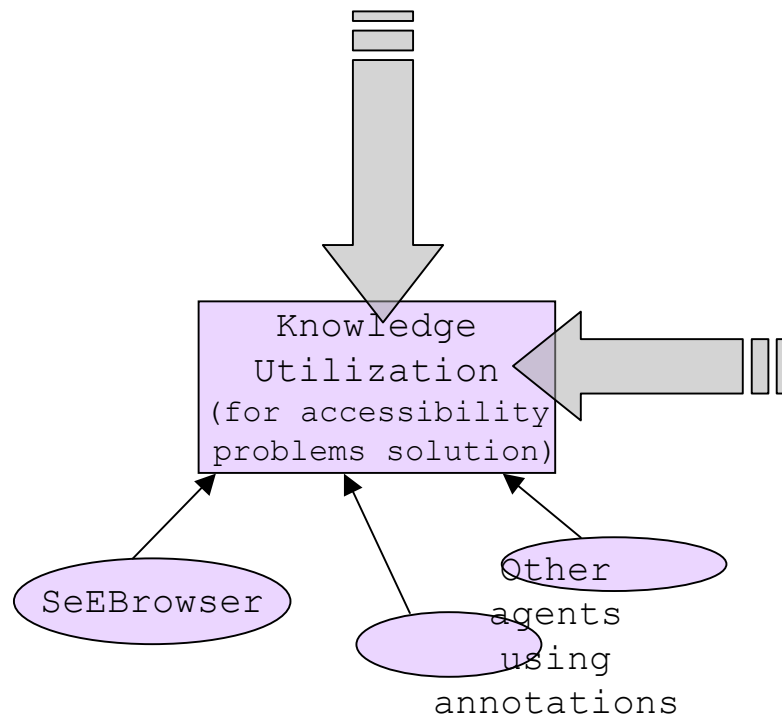


- Annotators
- RDF
  - Basic standard of semantic web
  - Extensibility through vocabularies
- Annotation tool
- Annotation storage server
  - Use of HTTP
  - User authorization





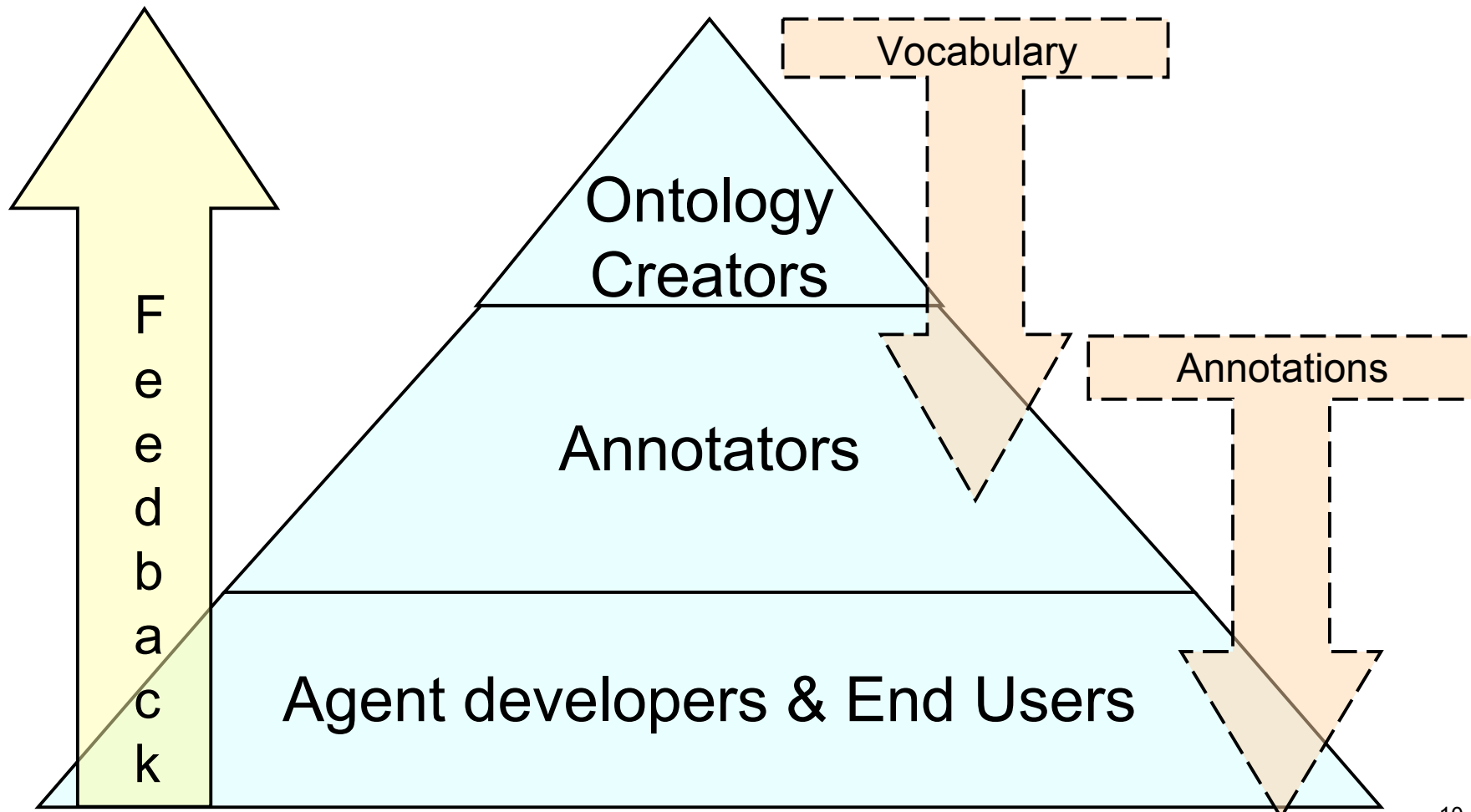
# Knowledge Utilization



- Agent developers
- End users
- SeEBrowser
- Voice web browser
- Shortcuts to annotated elements
  - Faster access to content entry points
  - Faster transition amongst page sections



# Framework community





## Is it realistic?

- Community commitment
- Open (based on RDF, OWL)
- Extensible (development of various vocabularies)
- Scalable (network of storage servers)
- Autonomous community (No need to be an expert in the standards if you have the right tools)

# Preliminary evaluation results



- Frequent use of shortcuts functions
- Satisfaction by its use
- Bookmarks feature
- Notepad feature
- Difficulty in reading tables



# Further research

- Vocabularies development and exploitation
- Automatic annotation
  - Syntactic analysis
  - Semantic analysis
- Other uses of annotations
  - User profiles
  - Semantic web usage mining



# Conclusion

- Accessibility on the WWW is a complex problem.
- The framework uses the Semantic Web as a metadata layer built upon the current web.
- It supports and encourages the development of a variety of software for the web.
- It supports and encourages the collaboration amongst people that care for accessibility problem.

# Thank you for your attention

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<http://erodios.it.teithe.gr/Archimedes>

