CS 431
The Semester in Elevator Speak

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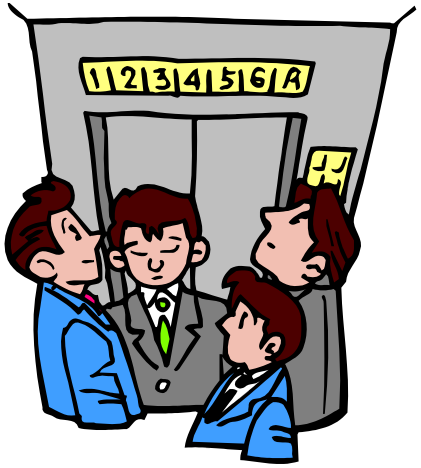
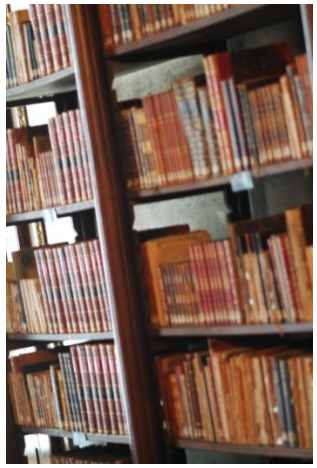


Libraries as a model

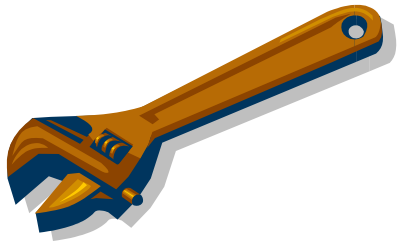


- Elevator Speak
  - Tim Berners-Lee didn't invent information. Libraries have a centuries long tradition of information organization. We need to learn from that tradition but rethink it in the networked environment.
- Issues
  - Coordination of physical and digital information
  - Machine learning from organized corpora
  - Balancing human and machine effort
  - What will happen to the library?

Metadata

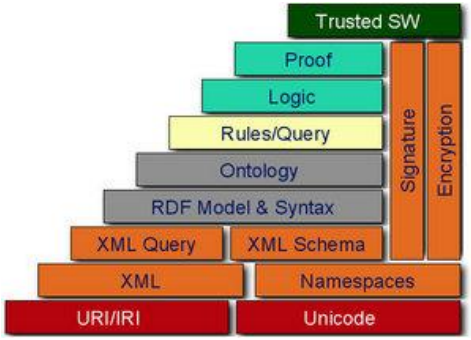
- Elevator Speak
  - Metadata is both a plague and a cure. In many cases it is necessary, but too much thinking about it relies on human input. Non-expert humans just don't do it well
- Issues
  - Automatic generation of metadata from document context
  - Automatic generation of metadata for non-textual resources from related text

Tools and Standards



- Elevator Speak
  - The entire XML stack provides a suite of tools and standards that enrich our ability to process semi-structured data. However, considerable work remains to make this suite as efficient and robust as established relational technology
- Issues
  - Bridging the gap between fully structured and unstructured data
  - Overcoming the complexity problem

Semantic Web



- Elevator Speak
  - Despite the almost overwhelming hype, the work coming out of the semantic web initiative provides an important foundation for modeling and manipulating distributed semi-structured information.
- Issues
  - Efficient storage and querying of highly-scaled semantic graphs
  - Populating the semantic web with minimal human effort

Web-Scale Information Discovery

- Elevator Speak
  - The use of link structure and document context has dramatically advanced our ability to find and rank information at a massive scale
- Issues
  - Customization of search results based on user profiles, role, geographic location, etc.
  - Incorporating the deep web
  - Introducing the dimension of time in web analysis

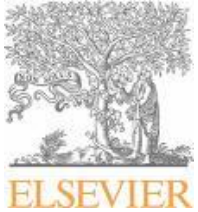
Web 2.0

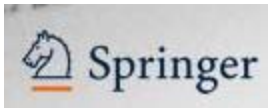
- Elevator Speak
  - The move from the read-only to the read-write web, along with the development of web services, provides context for a rich social/information environment
- Issues
  - Quality and the "wisdom of crowds"
  - Privacy
  - Understanding complex heterogeneous networks

Preservation

- Elevator Speak
  - Despite years of research in preservation of digital content it remains a difficult, expensive, and unresolved problem
- Issues
  - Understanding "just enough" preservation
  - Economic models of preservation

Scholarly Publishing



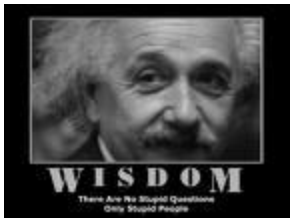


- Elevator Speak
  - We are in the midst of massive changes. It is not yet clear who are the losers and winners or how the technical/social/economic solutions will shake out.
- Issues
  - P2P and scholarly publishing
  - Integrating social networks and bibliographic networks
  - Economic models

Digital Rights Management

- Elevator Speak
  - Another issue, like scholarly publishing, that is on the front lines of the battle between the old (physical) and new (digital) worlds. Who "wins" has a much to do with politics and money as it does with technology
- Issues
  - Fair use and DRM
  - Web-scale DRM infrastructure/authentication
  - Business models for a digital society

Big Elevator Speak (1)



- The web architecture is a foundation for a massive and rich data layer. This is only the start. Human intellectual, cultural, and political activity builds on knowledge and wisdom. The grand challenge lies in how to move along the data -> knowledge -> wisdom spectrum.

Big Elevator Speak (2)

- As *"code"* infiltrates our social, political, cultural, and economic lives its not just good old computer science any more. We can work to create the most optimal algorithms and engineer the best systems. But, their effect on our lives requires an awareness of social context, human behavior, and ethics.