Semantic ~~Web~~

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My View of the Semantic Web

- Web (content) was built for humans
  - **human interpretation** is needed to accomplish tasks on the Web
  - automation is difficult (esp. automating **unforeseen** situations)
  - we need "machine-friendly" content
    - information w/ **accessible formal semantics**
    - allow machines to **reason** about information
- Motivation & Drivers
  - origins are in **metadata**
  - initial goal: Enabling automation
  - short term goal: Interoperability
  - long term goal: Make computers work **on our behalf**
    - (instead of using them like tools)
    - remove humans from the loop

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What Should We Do Next?

- Now forget that we are talking about the Web...
- Modern PC applications are essentially just repositories for information (typically) in proprietary formats
  - combining or sharing information **across application boundaries** is impossible or difficult at best
  - any two applications can be engineered to enable information exchange, but we cannot anticipate all possible "pairings"
- In addition to the explicitly represented information, these systems hold a lot of **implicit** information
  - implicit information is largely **inaccessible** to current applications

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Implicit → Explicit

- e.g., your calendar may indicate that you have a flight reservation from Boston to London
  - **implying** that if you take the flight, you will then **be** in London
  - this information may be more useful (say, for meeting planning)
- Use of **reasoning** (= logical inference) will allow us to access the implicit information
- What do we need?
  - ubiquitous reasoning services
  - ontologies for all kinds of "common" concepts & information, e.g.
    - PIM data
    - geographical and organizational concepts (and instances)
    - classification of information (e.g., photo content)

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Mobile Computing & Ubiquitous Computing

- Mobile Computing: "awkward" usage situations
  - needs information in "raw" form (on or off the Web)
  - (current Web information content is "rendering-oriented")
  - presentation to be decided dynamically based on context
- Ubiquitous Computing: an interoperability nightmare
  - many devices to be dynamically connected & re-connected
  - must be able to handle unanticipated "encounters" of devices
  - Semantic Web Services: uniform representation of functionality?
- Generally, systems must work on behalf of users
  - (forget the use of applications/devices as tools)
  - autonomous agents, multi-agent systems are a good fit
  - more generally, we need many AI technologies

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