An Infrastructure
for Meta-Auctions

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(Large-scale) Dissemination-based Information Systems

Emerging applications involve distribution of data from sources to many consumers:
- stock and sports tickers
- traffic information systems
- software distribution
- news and entertainment delivery
- auctions and reverse auctions

Online Auctions Today
- Auctions: a popular trading mechanism
- A broad public can trade anything
- Users want to (continuously) monitor the data of interest
- If users participate in multiple auction sites
  - different user interfaces
  - different categories setups
  - different terms

Meta-Auction Proposal
Unified view of different Auction sites:
- category browsing
- item search
- auction participation
- auction tracking

Meta-Auction Requirements
- Notifications of events (as first class information)
- Publish/subscribe as an additional interaction paradigm
- Need for semantic metadata-based infrastructures for integration
- Common vocabularies for semantically meaningful exchange of data and notifications

Meaningful Data/Notification Exchange
- Ontologies as common interpretation basis
- provide an extensible description basis to which data providers and consumers refer
- Organized in
  - user level (categories, representation of information)
  - infrastructure level (exchange of notifications)
  - heterogeneity at the database level (data organization)

Information Dissemination: PPSS
- Server-initiated
- proactive information system
- Aperiodic and publish/subscribe
- subject-based addressing (multicast) 1:n communication
- encapsulates user preferences (categories, interests,...)
- seen as continuously evaluating queries
- reduces the load at the backend
- inter-node caching, snooping and state reassembling
- data replication as a side-effect benefit

Shortcomings
- Limited interaction potential due to C/S request/response
- User-initiated: data is transferred upon client request
- Possible inconsistencies due to implicit assumptions and semantic heterogeneities between different sources (e.g. date format, currency,...)

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