A Pragmatics Perspective on Web Services

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Conclusion: Sophistication Is Essential for Practicality

- What the WS standards agenda should be
  - Capture subtle, but practical use cases emphasizing essential properties of services
  - Develop representations that are
    - Expressive
    - Conceptually decentralized
    - Enable negotiation
  - Be *comprehensible* to practitioners – absolutely critical!

Current WS Standards

- Industry work
- Mostly about the mechanics of services
- Useful but too little for any serious purpose
  - Programmers would develop application-specific solutions
  - Key common notions exist but are missed

Pragmatics Perspective

- Essence of WS
  - Openness: autonomy, heterogeneity, dynamism
  - Almost always used in compositions

- Invocation ➔ Engagement

- Discovery ➔ Selection

- Descriptions:
  - Provisioning-centrism ➔ Usage-centrism

WS Data Semantics

- Semantics of inputs and results
- Apply ideas from ontologies and other work on knowledge representation
- Valuable and making good progress, but
  - Need to go beyond provider perspective
  - Most complexity is in processes and interactions

WS Process Approaches

- Primarily procedural
  - BPEL (WSFL, XLANG), WSCL
  - Is branch and fork the best we can offer?
    - Used even in the 1950s
    - Inadequate for describing activities with multiple autonomous, heterogeneous components

Planning

- Fundamentally backwards
  - About construction of services, not about how to use them
  - Certainly valuable, but for a different purpose

ACLs

- Useful, but often obscure
- Generic semantics can be useful but
  - Extremely weak to make significant contributions in practical settings
  - Must be enhancable

Commitments

Emphasize engagement rather than invocation

- Capture contracts
  - 90% of all business data reflects commitments (statistics made up ⌐)
  - Exploit opportunities
  - Accommodate exceptions
- Patterns, extensible set in principle, but reasonably complete for target applications

Trust

Emphasizes selection rather than discovery

- Schemas for service description
  - Not merely the provider's perspective
  - Also the user's perspective and context of usage
- Mechanisms
  - Reputations
  - Ratings and endorsements
  - Referrals