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 \(\tilde{E}\) Engagement
• Discovery \(\tilde{E}\) Selection
• Descriptions:
  – Provisioning-centrism \(\tilde{E}\) 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 J )
  – 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