Towards a Transaction Framework for Contract-Driven, Service-Oriented Business Processes

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Introduction

• XTC (eXcution of Transactional Contracted electronic services) Project
  “Provide a generic foundation for support of complex transactional services in contract-driven inter-organizational business interactions that rely on dynamically composed web services.”
• My PhD research
  ~ Co-task: Develop a Business Transaction Framework (BTF) for contract-driven, service-oriented business processes spanning organizational boundaries
  ~ Individual task: Contractual specification of transactional qualities of those business processes

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Introduction

• Example – A travel booking process

Assumption:
Each activity is wrapped as a service.

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Research background

- Challenges from business side
  ~ Processes become complex and time-consuming
  ~ Processes are composed dynamically
  ~ A lot of business relationships need to be regulated
- Opportunities from technology side
  ~ Transaction management for long-living and complex processes
  ~ Service-Oriented Architecture (SOA) and Web services
  ~ E-contracting

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Research background

- Related work
  1. Transaction management
     ACID transaction → Advanced Transaction Model → Workflow transaction → Web services transaction
  2. E-contracting
     ~ E-contracting languages
     ~ Web Service Level Agreement (WSLA) project
  3. Web services composition
     ~ Web services Quality of Service (QoS)
     ~ Contractual support for Web services

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Business Transaction Framework (BTF)

Terminology:

~ BTF
~ ATC
~ ACBT
~ CBT
~ TC

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Contractual support for the BTF

- Contract-driven business processes
  ~ Involve miscellaneous activities and partners
  ~ E-contracts specify the agreed terms between service providers and consumers
  ~ E-contracts guarantee the business trustworthiness

- Transactional QoS specification
  ~ Measurable qualities for a (sub-)transaction
  ~ Subset of Web services composition QoS
  ~ A specification language

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Contractual support for the BTF
• Transactional Quality of Service (Tx-QoS)

Summary and future work
• Refine the BTF/ATC specification
  ~ Parameterization of the ATCs
  ~ Composition rules for the ATCs
• Refine the BTF architecture
  ~ Decomposition of the function components
  ~ Architectural overview in different levels of detail
  ~ Requirement from cross-organizational processes
• Develop a Tx-QoS language
  ~ Investigation of existing candidate languages
  ~ Clear description of QoS for transactions
Questions?