A Business Aware Transaction Framework for Service Oriented Environments

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ICSOC 2005 Ph.D. Symposium
Amsterdam
December 12, 2005
Introduction

- Part of the XTC project
- Individual Goal:
  > Formal specification of transactional semantics for automated long-running business processes with (multi-party) business transactions in service oriented environments
  
  consistent and reliable execution of these business transactions and processes

- Transactions key concept to ensure consistency and reliability
- Integration between the concepts of Business Transactions and *Data* Transactions
Research Challenges

• Technical Challenges:
  > Process structure determines suitable transaction model
  > Heterogeneous participants

• Business Challenges
  > Transaction support is required for the complete business protocol
  > Bi-directional integration of agreements and transactions
BTF Concepts - ATC

- Abstract Transactional Construct (ATC)
  - Definition Phase Concept
  - Abstract representations of transaction mechanisms
  - Small ADT like components
  - Two Kinds of ATCs:
    - Transactional
    - Business
> Transactional ATC

- Represent existing Tx Models & Protocols by composing suitable fine-grained ATCs into higher level ATC

- Taxonomy
  - Flat
  - Choreographed
  - Nested
Business ATC

- Agreements between parties engaged in a business transaction constrain possible transactions
- Based on Unconventional Atomicity Criteria, Example: Delivery time
BTF Concepts - ACBT

- Abstract Composite Business Transactions (ACBT)
  - Composition Phase Concept
  - Composition of ATCs representing a structural transaction specification for a business process with business transactions.
  - This *Blue Print* has the following inputs:
    - A Business Process Specification
    - ATCs & ATC Composition Rules
    - Contractual Requirements

- Introduction
- Research Challenges
- BTF Concepts
  - ATC
  - ACBT
- CBT
- Future Work
- Summary
- Questions & Discussion
BTF Concepts – ACBT (cont.)

> Benefits of this approach:

• Multiple ACBT for one Business Process depending on requirements and contractual agreements

• Reusability of ACBTs for different processes as kind of reference models
# BTF Concepts - CBT

- Composite Business Transactions (CBT)
  - Execution Phase Concept
  - Events (e.g., an order) trigger execution of ACBT instance, i.e., the process & execution of transactions starts
  - Execution behavior of ACBTs is parameterizable at run-time in order to create CBTs
  - ATCs in the ACBT are instantiated and become concrete transactions denoted as Transactional Constructs (TC)
Future Work

- Work in Progress
  - Further ATC Conceptualization
  - Initial ATC/BTF Formalization
    - Selection of suitable formalization language
- Future Work
  - ATC Composition Rules
  - Specification of Correctness Criteria for ATCs, possibly contract driven based upon business requirements
  - Orchestration Oriented to Choreography Oriented
  - Construction of Prototype
Summary

- The BTF provides transaction support for business processes with business transactions that require an automated and consistent execution with clear semantics (in case of errors) in service oriented environments.
- Platform-independent way of integrating required transaction models.
- Accommodate the various activities and their resources (databases, workflows, web services) throughout the business process into a cohesive whole.
- Flexible creation of reusable transaction plans to support business processes.
Thank you for listening

Now it is time for questions and discussion