Goal-Oriented RE for e-services

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Research goal

• Find software architecture patterns for e-intermediaries
  – Identify e-intermediation service patterns
  – Link these to business goals
  – Identify architecture patterns to support service composition
Research Framework

- **Goal tree**
- **Sub-goal**
- **Service**
  - **Service pattern**
- **Component**
  - **Software architecture pattern**
- **Service-based business model**
  - **Business goal**
  - **Business mission**

Relationships:
- Component includes Software architecture pattern
- Component includes Service pattern
- Service includes Service pattern
- Service realizes Service-based business model
- Sub-goal compose Goal tree
- Goal tree realizes Business goal

Introduction Value patterns Example Summary & further work
Goal of this paper

• To compose e-intermediation business models from patterns

• Research method:
  – Surveyed types of businesses to identify patterns
    • Conflict resolution (9 cases)
    • Negotiation decision support (2 cases)
    • Auctioneer (6 cases)
    • Price discoverer (1 case)
    • Price comparator (1 case)
  – Compose business models with these patterns using goal-oriented RE
Representing a service-based business model by a value model ($e^3$-value method)
Intermediary example

- **Introduction**
- **Value patterns**
- **Example**
- **Summary & further work**
Pattern template

We specify a pattern with the following fields:

• Name
• Headline
• Context
• Goal/Problem
• Solution

• Value exchanges
• Intermediation service
• Value-based model
• Variations
• Occurred in
An intermediary wants to know its clients in order to identify them, to keep track of their transactions and to offer them better-targeted services.
Goal-oriented business model composition: Example

There is a new market for products P, Q and R. In this market, it is economically viable to execute transactions through an intermediary. The goal is to mediate at least A% of the transactions in the market. The intermediary is required to use an auction mechanism for price determination.
And-Or goal tree

To mediate A% of the transactions in a market

- slice P
- matching

- auction

- To run
- transaction

- And

- And

- And

- To attract sellers

- To attract buyers

Telephone, e.
- proxy does have matching patterns
From goal tree to business model

• Match subgoals with pattern goals
  – Done by a person
  – Many-many matching
• Copy matching patterns to leafs
• Remove duplicates
• Unify actors
Composed business model
Consolidate the value exchanges

• Specialize abstract value objects to the concrete business case
• Remove superfluous exchanges
• Remove conflicting exchanges
• Add missing exchanges
Summary

• Identified e-intermediation services by surveying web & literature
• Extracted e-intermediation service patterns
• Showed how they can be composed into e-intermediation business models in a goal-oriented way
Further work

• Improvement
  – Find guidelines for matching
  – $e^3$-value profitability computations to guide choices

• Validation
  – More examples (``simulations’’)

• Extension
  – Design & validate software components for services
  – Component composition mechanisms
  – Identify component architecture patterns
Research Framework

Introduction  Value patterns  Example  Summary & further work

Service

Sub-goal

Goal tree

realizes

Business goal

compose

Service-based business model

realizes

Business mission

compose

Service pattern

includes

Component

compose

Software architecture

compose

Software architecture pattern

includes

Value patterns

Example

Summary & further work