

Conflict Management with Goal Oriented Requirements Engineering

Requirements Engineering II

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Outline

- 1 Goal models in conflict management
 - Detecting Conflicts
 - Solving conflicts
- 2 What is KAOS?
 - Acquisition Language
 - Elaboration Strategies
- 3 Ubifood case

Adressed issues of conflict management

- no precise definition of conflicts
- n-ary conflicts (in contrast to binary)
- no systematic techniques for solving conflicts
- weak conflicts and *boundary conditions*

Formal techniques

Regressing Negated Assertions, Conflict patterns

- Regressing Negated Assertions
 - formal technique for looking for boundary conditions
 - calculating preconditions for deriving negation of a goal assertion from other assertions
- Conflict patterns
 - once formally established can be reused
 - contain boundary conditions
 - no formal derivations needed for every instance
 - eg. Achieve-Avoid conflict pattern
(Achieve[RequestSatisfied], Avoid[UnReliableResourceUsed])

Heuristics

- identify conflicts without having to go through formal techniques
- derived from patterns or past experience
- eg. *If there are two Optimize goals interfering on a same object's attribute, then the possibility of a Conflict Of Interest divergence between those two goals should be considered.*
(Maximize[NumberOfAmbulances] , Minimize[CostOfService])

Conflict solving strategies

Assertion Transformation

- create, delete or modify goal assertions

Goal weakening reformulate the goals

Avoiding boundary conditions new goal “Avoid”

Goal restoration temporarily break goal

Conflict anticipation new goal “expires”

Alternative goal refinement introduce subgoals

Heuristics (eg. *“If there is a Competition divergence among multiple agent instances, then a resolution by introduction of an Arbitrator agent should be considered”*)

Conflict solving strategies

Object transformations

- create, delete or modify object types

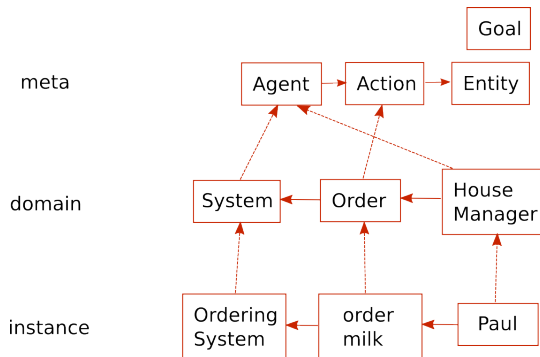
Object refinement introduce disjoint subtypes, move conflicting assertion; weaken assertions on some of attributes

Agent refinement (as above but for agents)

Knowledge Acquisition automated Specification



Acquisition Language - Model



Goal-Oriented Elaboration Strategy

- 1 Subdivide into subgoals
- 2 Identify agents
- 3 Operationalize goals
- 4 Refine agents
- 5 Ensure constraints
- 6 Linking agents to constraints
- 7 Assign actions to agents

Ubifood

- boundary conditions (*System should not break down vs. System should use RFID technology; System should be user-friendly vs. System should be based on modern technologies*)
- solutions: Agent refinement, Goal weakening
- difficult to deal with: *Minimize development costs and Provide only necessary functionality*