Goal Orientation

Informatics 113

WQ 2011
A chapter of definitions…

- But a fundamental shift in approaching RE
  - Chapters 1-6 provide reasons, techniques, approaches, notations
  - Chapter 7 provides the basis for organizing all RE activity, and developing a RD
Goals

- A goal is a **prescriptive** statement of intent
  - That the system should satisfy through the cooperation of agents
  - [*Prescriptive*: “serving to lay down as a rule” -- as contrasted with *operational*]

- An agent is an active system component playing a specific role in goal satisfaction
In other words, **why** and we doing this, and **who** is responsible?
Examples from the text

- “Meetings shall be scheduled so as to maximize the attendance of invited participants”
- “The nearest available ambulance shall be mobilized for the incident”
Goals and Subgoals: Getting to Requirements and Expectations

- Goals may be refined to sub-goals
  - (think ahead: and/or refinement)
- The more refined, the fewer agents
- Requirement: A goal under the responsibility of a single agent of the software-to-be
  - Chapter 1: “a software requirement is a prescriptive statement to be enforced solely by the software to be and formulated only in terms of phenomena shared between the software and the environment”
- Expectation: A goal under the responsibility of a single agent in the environment of the software-to-be
Why Focus on Goals?

- A rationale for requirements
- A basis for showing alignment of the system-to-be with the organization’s strategic objectives
- A natural mechanism for structuring complex specifications at different levels of concern
- Goals drive id of requirements to support them
- A criterion for requirements completeness
- A criterion for requirements pertinence
Types of Statements

- Prescriptive
  - Multi-agent Goal
  - Single-agent Goal
  - Requirement
  - Expectation
- Descriptive
  - Domain property
  - Domain hypothesis

Figure 7.1 – Statement typology with goals
Types of Goals

- Behavioral: they prescribe system behaviors declaratively
  - (must be able to) always determine whether established or not
- Soft goal: prescribes preferences among alternative behaviors

Figure 7.2 – A taxonomy of goal types
Explaining Figure 7.3

- Behavioral goal prescribes system behaviors declaratively
- “A system behavior is composed of parallel behaviors of the agents…”
- “An agent behavior is captured by a sequence of state transitions for the items that the agent controls”

Figure 7.3 – Behavioral goals prescribe intended system behaviors
Achieve/Maintain Behavioral Goals

- (Temporal logic lurking in the background)

Figure 7.4 – Behavioral goals: Achieve and Maintain goals
And/Or Goal Refinement

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