

ROADMAP: Role Oriented Agent Development from the Melbourne Agentlab Perspective

Shanika Karunasekera
Senior Lecturer

Leon Sterling
Adacel Chair of Software Innovation and
Engineering
Department of Computer Science and
Software Engineering,
University of Melbourne

Overview of Talk

- ROADMAP Objectives
- Agent 'Hello World'
- ROADMAP Models
- Applying ROADMAP
- Acknowledgements

ROADMAP Objectives

- Open, intelligent and/or adaptive systems
- Easily understood by industry practitioners
 - people from non-agent backgrounds
- Clear separation between analysis and design
- Support for all phases of the lifecycle
- Implementation independence
- Scalability

AOSE - Agent Concepts

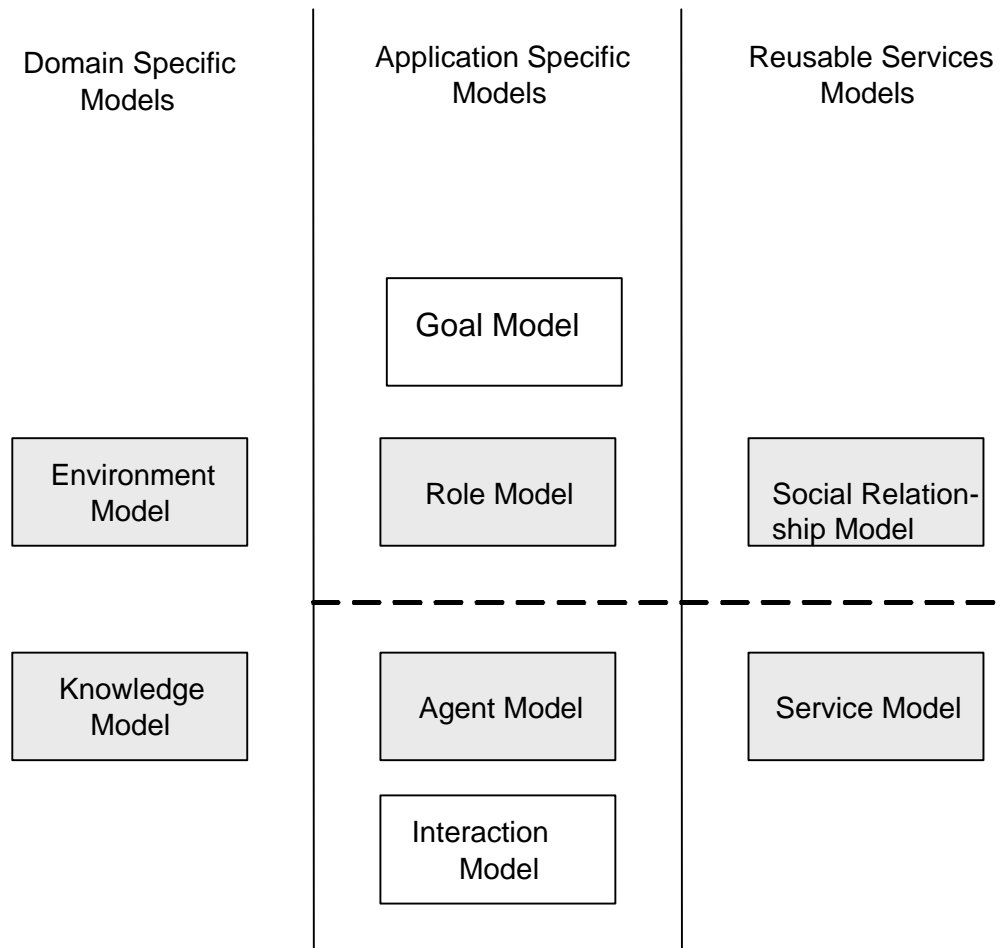
- Roles
- Goals
- Agents
- Tasks and Activities
- Protocols and Services

*Instead of objects, classes, methods,
etc.*

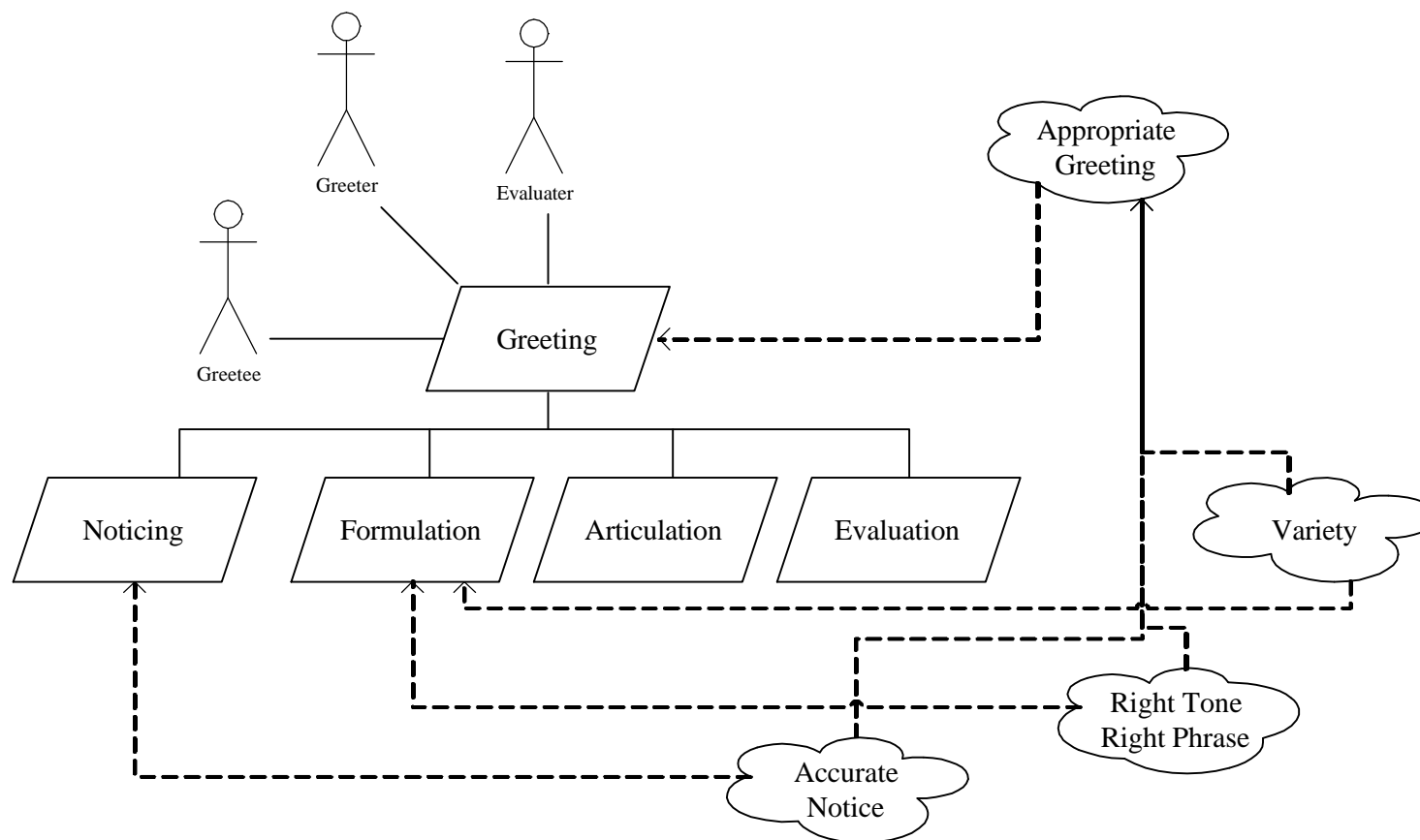
Greeting Example

- Agent version of 'Hello World'
- An agent is greeted by another agent and the greeting is evaluated as to whether it is good/appropriate
- Requirement for 'Intelligent Lifestyles'

ROADMAP Models



Greeting Goal Model



Role Model

- Role Name
- Description (Useful forced abstraction)
- Responsibilities
- Constraints

Greeting Role Model

- Greetee:
 - *To be greeted by greeter*
 - Responsibilities:
 - To be noticed by greeter; To perceive greeting
 - Constraints: None
- Greeter:
 - *To greet another agent coming within environment*
 - Responsibilities:
 - To notice greetee; To formulate greeting; To articulate greeting
 - Constraints: Articulation within 10 seconds of noticing; Formulation must be appropriate to greetee + environment
- Evaluator:
 - *To evaluate the greeting*
 - Responsibilities:
 - To observe greeting; To evaluate greeting; To publish report
 - Constraints: timeliness

Proceeding to Design

- Map roles to agents
- Three obvious alternatives for greeting example
- Want agent design patterns
- Evaluate alternatives

Applications of ROADMAP

- Secure Identity Management
- Pedagogical Agents
- Intelligent Lifestyles
- Real Estate Agent System
- 682 projects

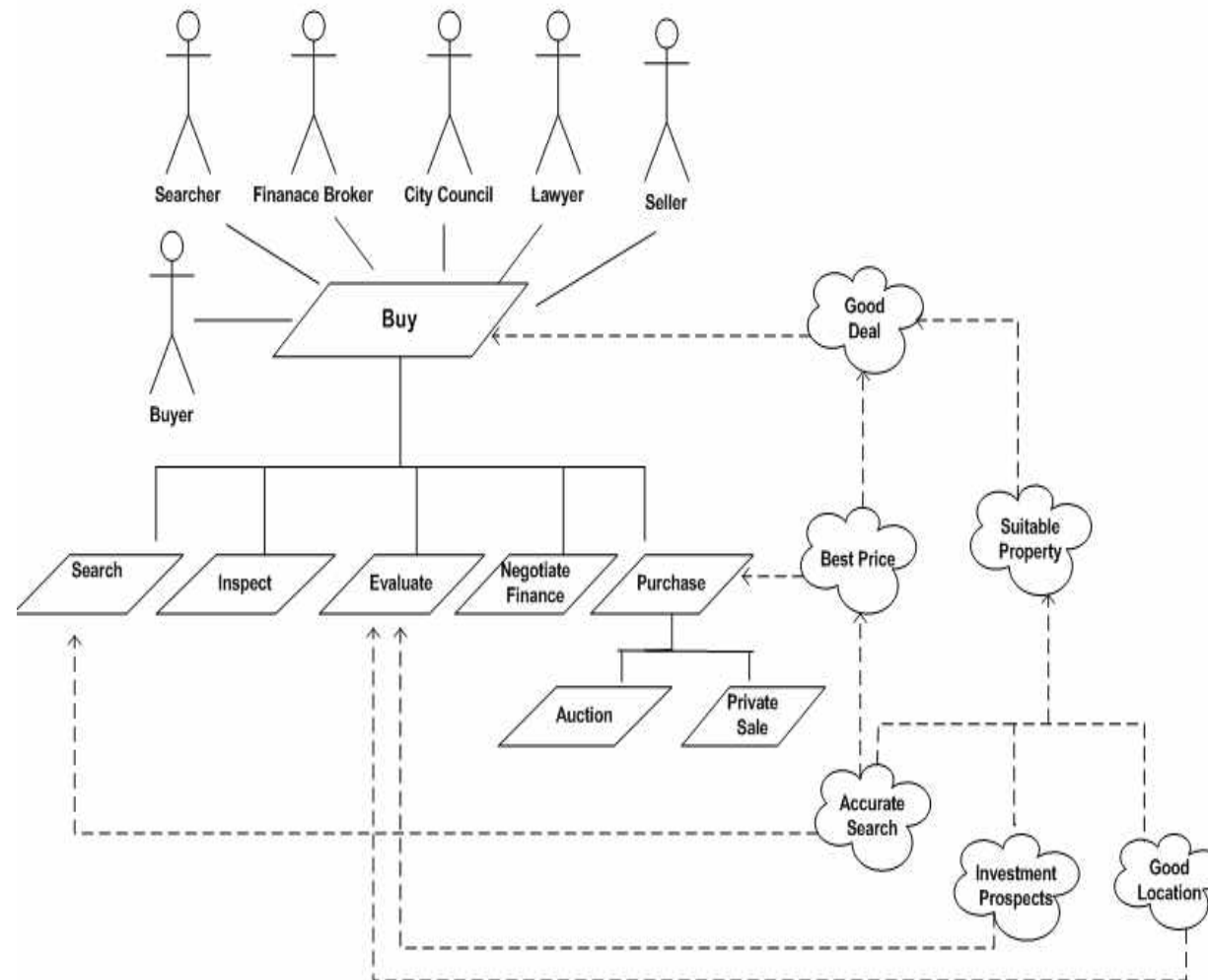
Experiences Teaching Methodologies in Intelligent Agents (682) Subject

- Three different methodologies were introduced
 - ROADMAP
 - Prometheus
 - Gaia
- 34 students in class
- students chose 2 out of 3 projects
 - paper review
 - designing a multi-agent system using one of the methodologies
 - implementing an agent based system

Experiences Teaching Methodologies in Intelligent Agents (682) Subject

- Design Project
 - ROADMAP - 21
 - Prometheus - 5
 - Gaia - 4

Real Estate Multi Agent System- Goal Model

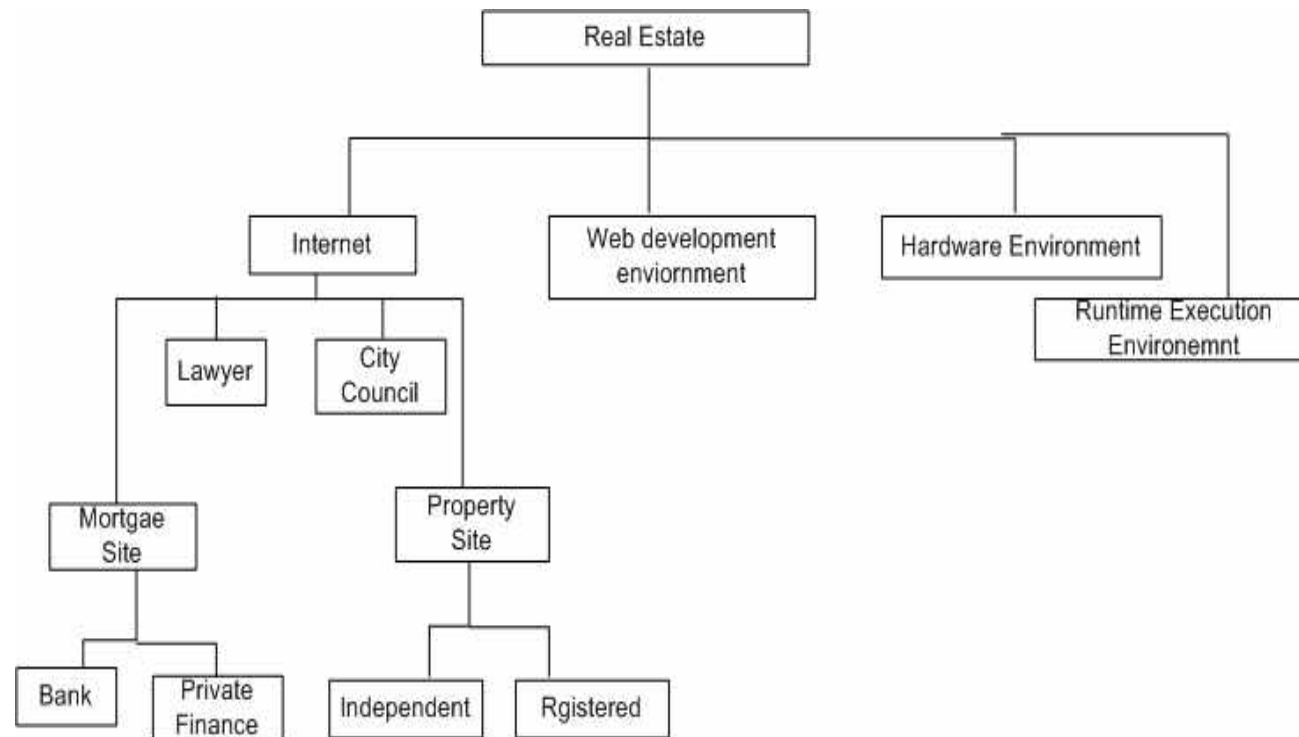


Real Estate Multi Agent System – Role Schema

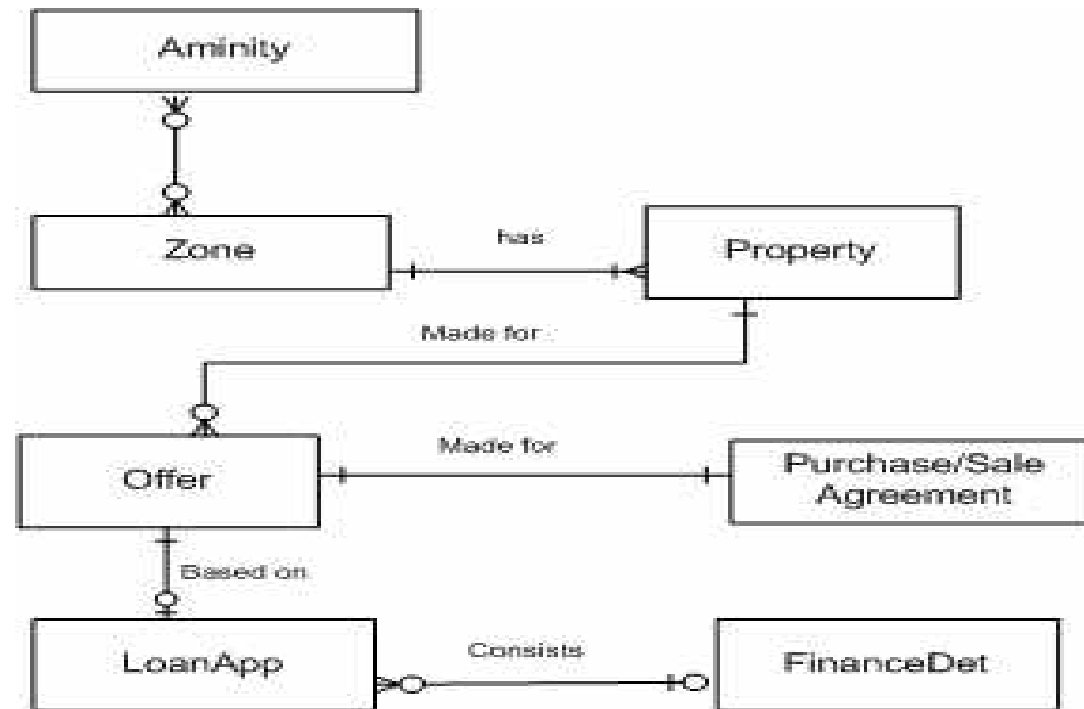
Role	Name Finance Broker
Description	Provides financial services to buyer
Responsibilities	<ul style="list-style-type: none">• Interacts with buyer• Publish its capabilities with the searcher• Provides financial documentation• Checks buyer's financial status, such as, gross income, existing property details, dependencies, credit check• Organizes finance• Negotiates finance• Stores user inquires• Shows results to buyer
Constraints	<ul style="list-style-type: none">• Fast loan approval• Must respect communication behavior to comminute with the information provider• Provide timely response to buyers or response should be made within X seconds

Table1: Role Model

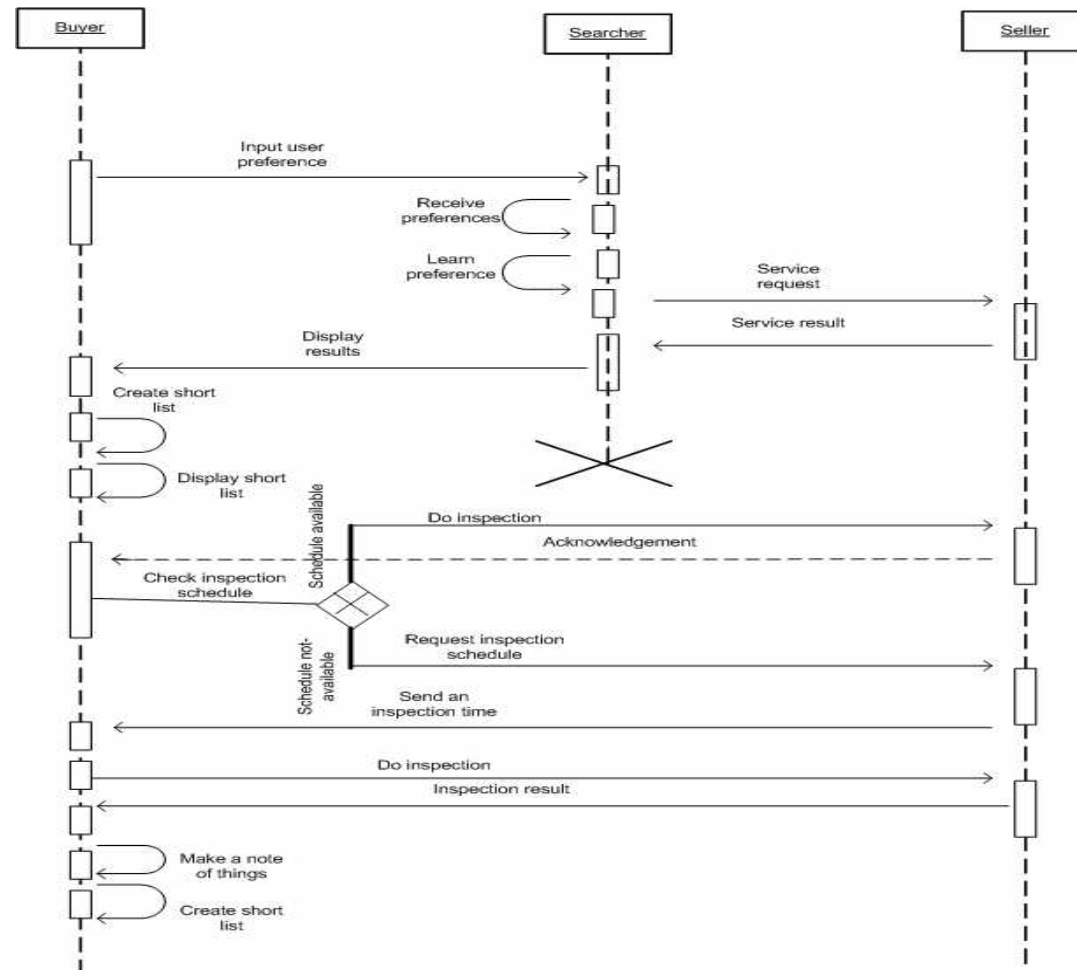
Real Estate Multi Agent System – Environment Model



Real Estate Multi Agent System – Knowledge Schema



Real Estate Multi Agent System – Interaction Model



Implementation Status

- ROADMAP 1.0 being frozen
- CASE Tool under development
- ROADMAP.NET experiments
- Evolving ROADMAP 1.x

Acknowledgement

We like to acknowledge

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- Australian Research Council
- Smart Internet Technology CRC

Conclusion

- Described objectives for ROADMAP
- Described a range of ROADMAP models
- Several active projects applying ROADMAP
- Very promising and exciting



Questions?