You've Got Mail From Your Agent

A Location & Context Sensitive Agent System

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Agenda

- A Large-scale Experiment in Nagoya
- The Shopping-support System
- Experiment Results
- Future Directions

The experiment in the news

(Nagoya, 2003)

The Shopping-support System

- Location Sensing
- Agent Platform
- Ad hoc Interaction Framework
- System Integration
- Application Scenarios

Location Sensing

A transmitter (left) and receiver (right)

KODAMA Agent Platform

- Not designed from scratch
- Aim for industrial-strength, network-aware MAS
- A separation principle
- A generic portal agent model

The Separation Principle

- What, when and how to interact with whom
- Separation of
  - Higher-level & low-level problem
  - Application-dependent and application-independent

The Portal Agent Model

- Definition

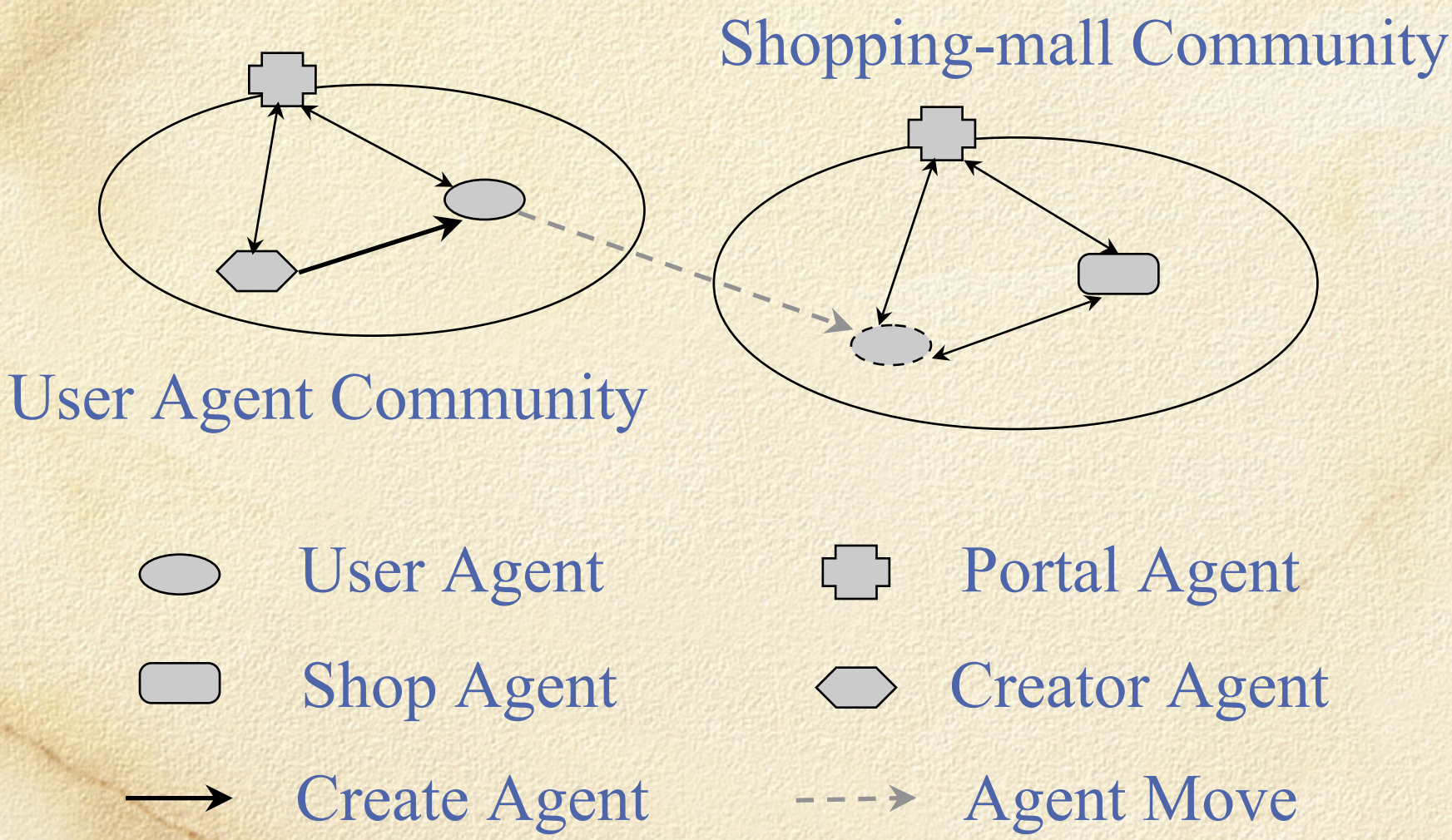
Portal Agent Definition

There is one and only one portal agent in one community which allows all agents in the community to be treated as one single normal agent --- the portal agent itself --- outside the community.

The Portal Agent Model

- Definition
- Agent hiding
- Agent message filtering

Agent Society



VPC Communication Framework

- Push agent public profiles to service agents
- Pull back policy packages, which are
- Evaluated locally due to private profiles
- Services are packed in policy packages

Public & Private Profiles

- Stored as pairs of variable and value, or as digital certificates
- Can only be accessed by profile manager
- Be contained in tamper-resistant devices

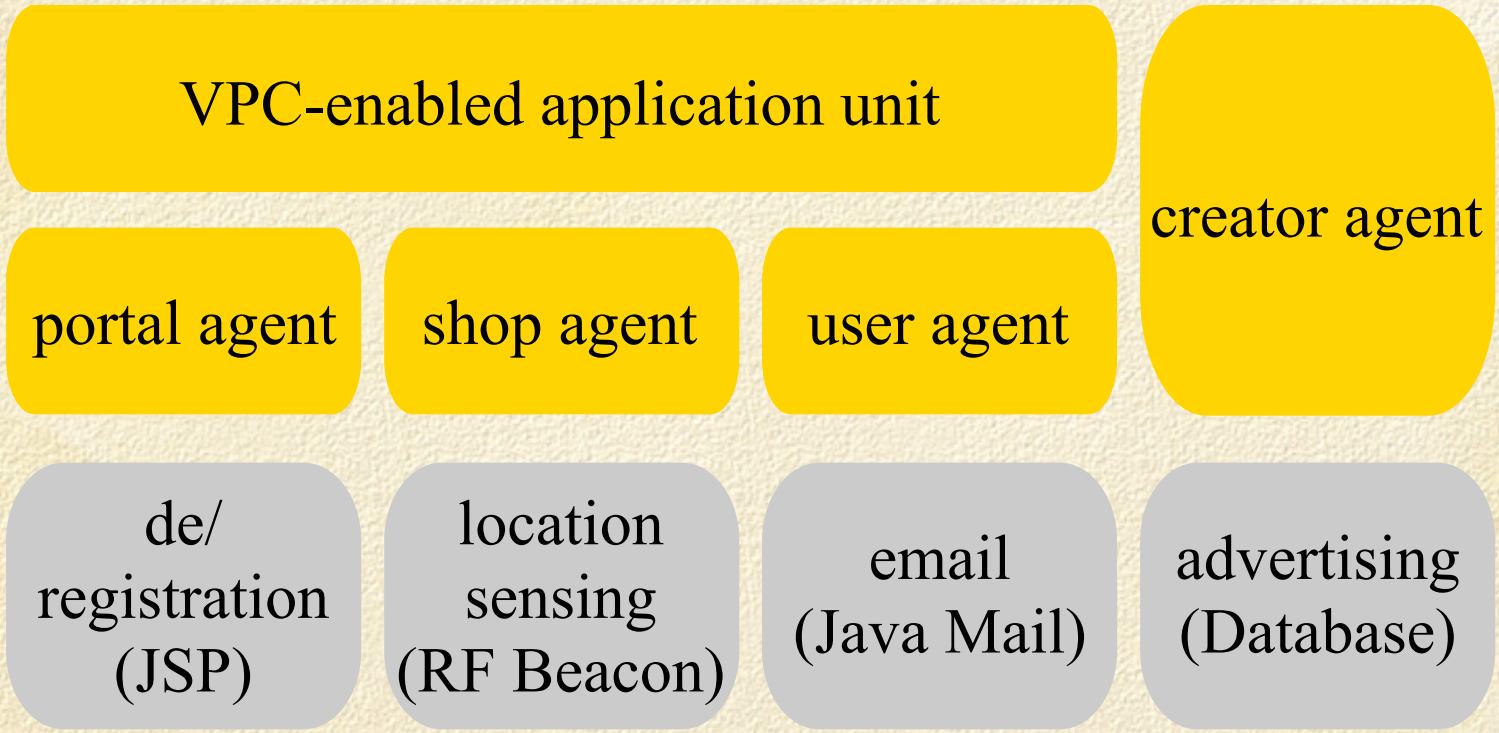
Policy Package Evaluation

```
function Policy-Package-Evaluation
input: a policy package p
    for each rule in p
        check conditions through a profile manager
        if TRUE
            load role programme with name and path
            initialise role programme
            start role
        endif
    endfor
end function Policy-Package-Evaluation
```

Ad hoc Interaction

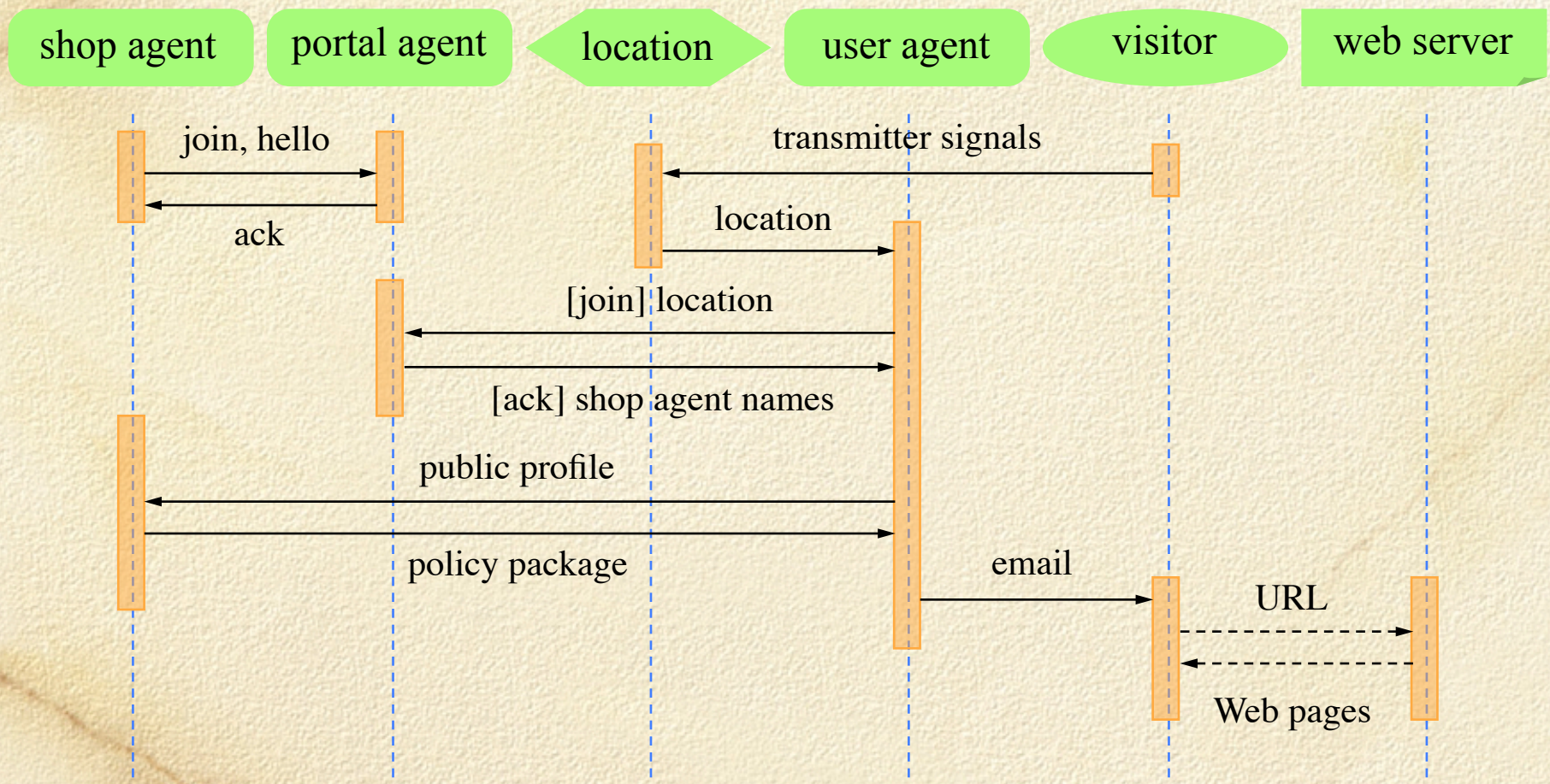
<table>
<tr><th></th><th>application independent</th><th>application dependent</th></tr>
<tr><td>what</td><td rowspan="3">kernel unit layer, portal agent</td><td rowspan="3">application unit layer, VPC, sensing, configuration</td></tr>
<tr><td>when</td></tr>
<tr><td>whom</td></tr>
<tr><td>how</td><td colspan="2">KODAMA middleware layer</td></tr>
</table>

System Integration

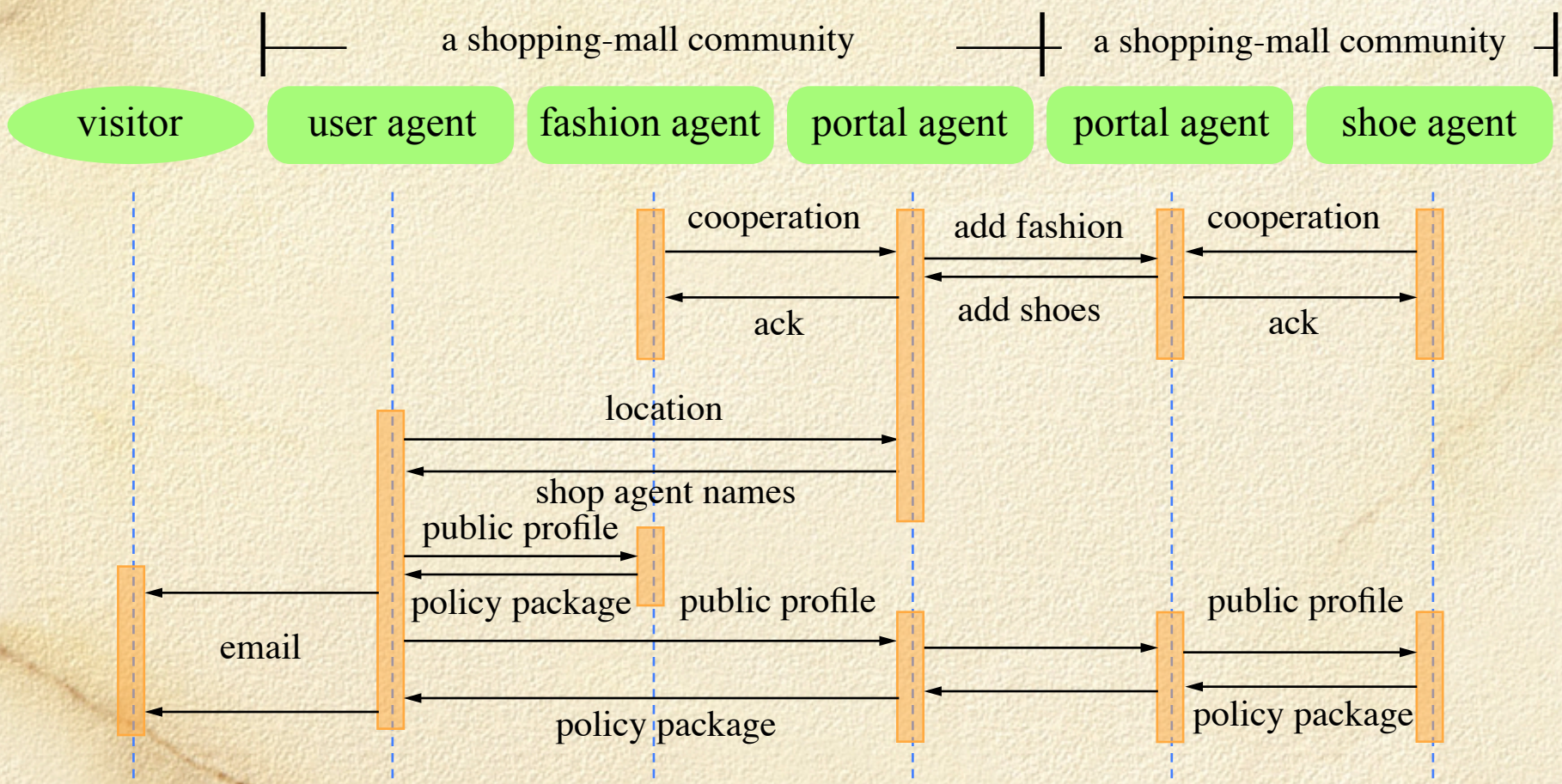


Two Application Scenarios

Location- and context-aware information notification



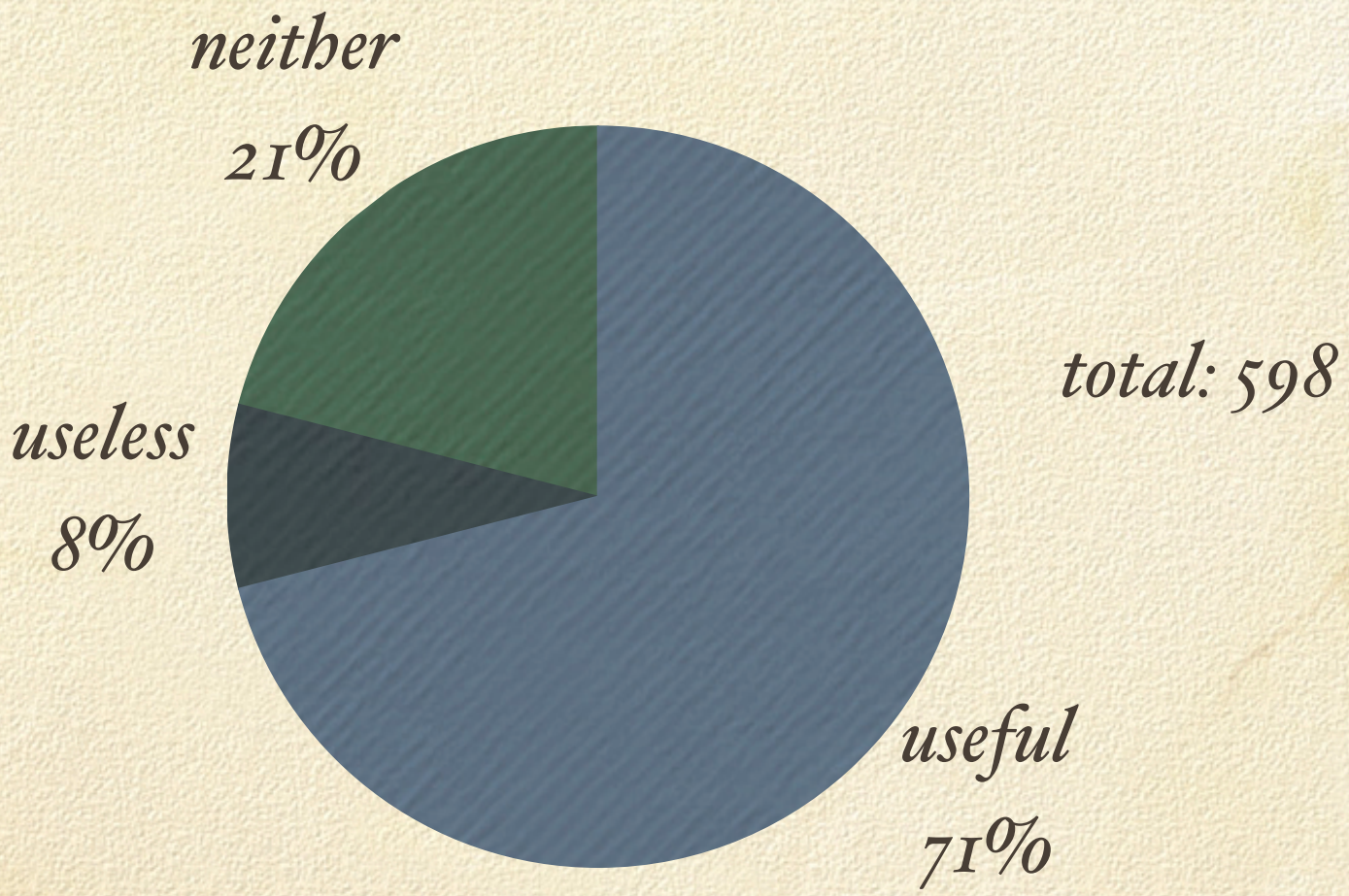
Cooperation between two shop agents in two communities



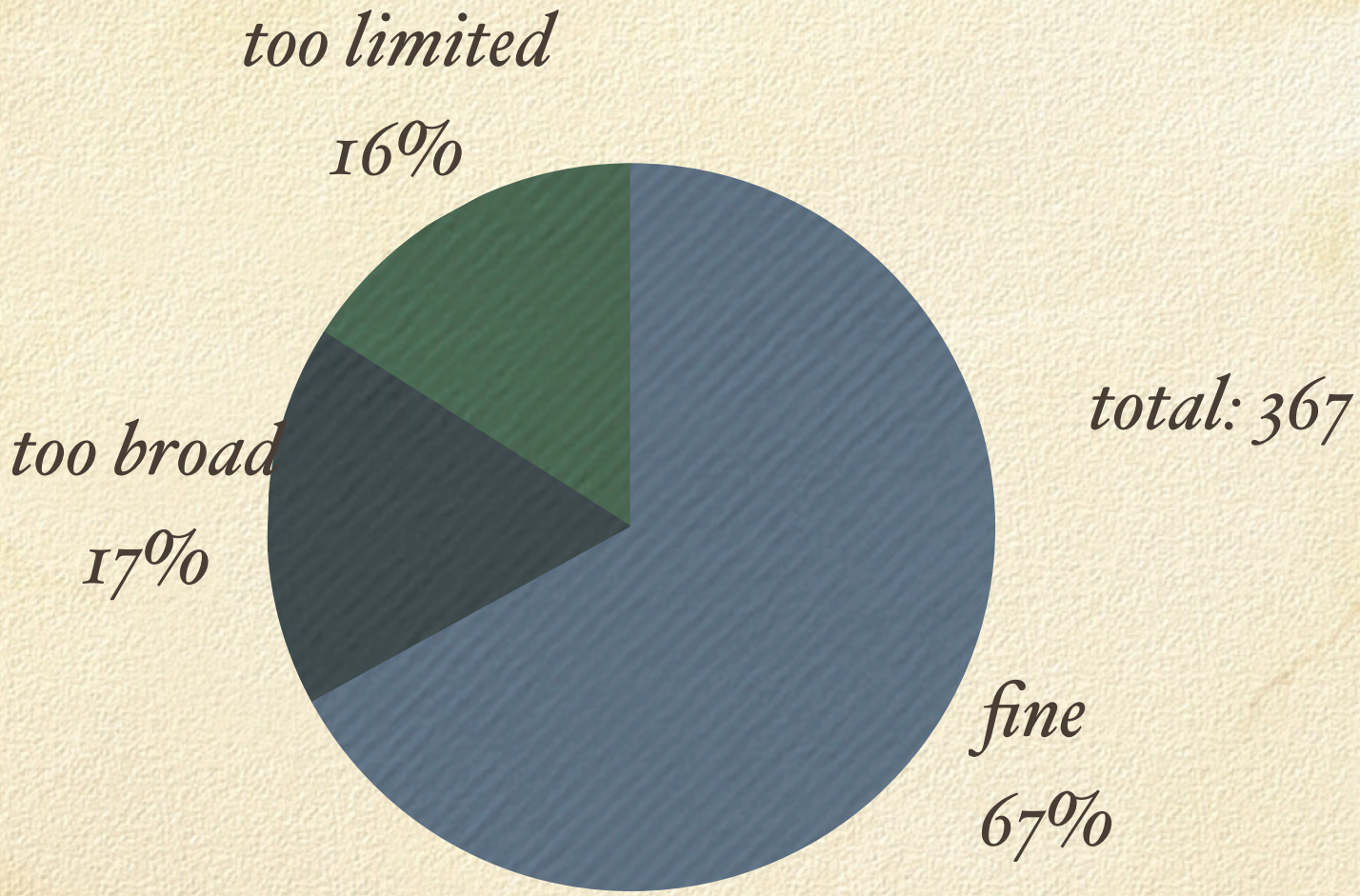
Experiments

- 56 shops
- 901 people
- 10579 email messages
- 1625 times URLs visiting

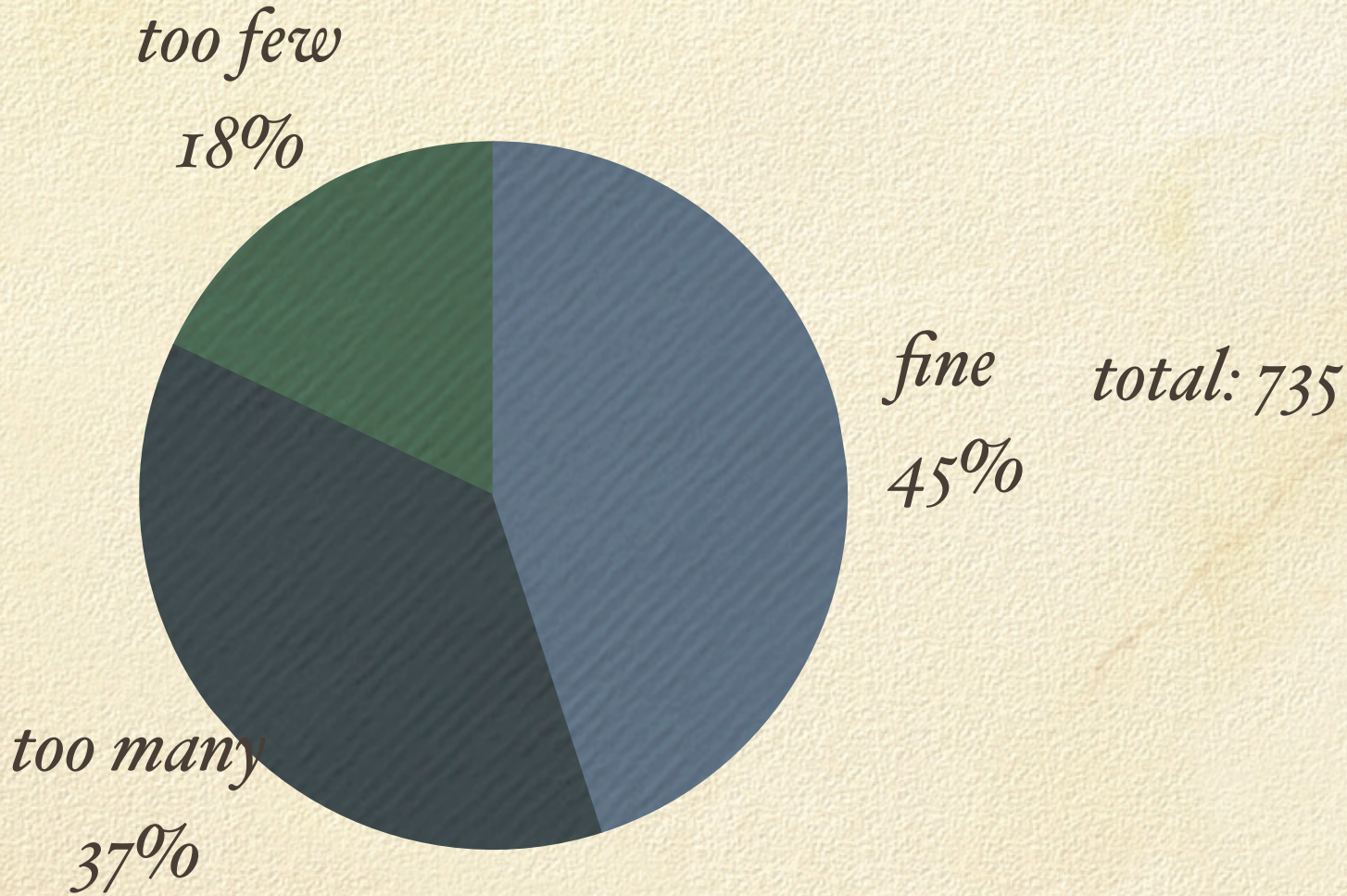
Response in General



Location Sensitivity



Message Quantity



Future Directions

- A second-generation prototype
- Web services infrastructure
- Agent standardisation effort

Acknowledgments

A grant from Telecommunications Advancement Organisation (TAO) of Japan

Thanks, Q&A