A recommendation mechanism for distributed agents environment

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Background

- Getting information through the Internet
  - Full text search
    - trial and error by creating plain text set
    - matching keyword? or not?
  - Category search
    - Preparing category tree with manual labor
    - User surf the tree by clicking mouse

- Less operation and much correct answers are needed.
- Computer environment should infer users' circumstance

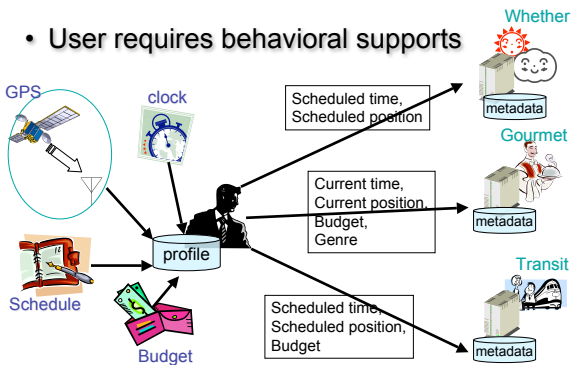## Ubiquitous Scene

- **User requires behavioral supports**

GPS
clock
Schedule
Budget
profile

Whether — metadata
Scheduled time, Scheduled position

Gourmet — metadata
Current time, Current position, Budget, Genre

Transit — metadata
Scheduled time, Scheduled position, Budget

Requirements

- Utilizing metadata
  - A query
    - based on user metadata
  - A response
    - based on content metadata
- Care for scalability
- Recommendation mechanism
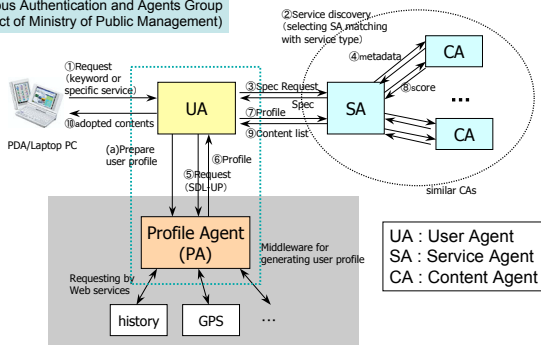 - Reflecting user's circumstance
  - Reflecting user's preference
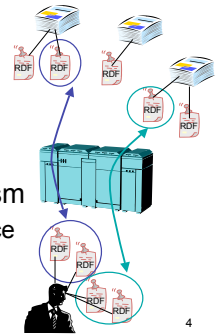
Metadata matching system utilizing agents

Ubiquitous Authentication and Agents Group
(A project of Ministry of Public Management)

①Request (keyword or specific service)
②Service discovery (selecting SA matching with service type)
③Spec Request
④metadata
⑤Request (SDL-UP)
⑥Profile
⑦Profile
⑧score
⑨Content list
⑩adopted contents
(a)Prepare user profile

PDA/Laptop PC
UA
SA
CA
CA
similar CAs

Profile Agent (PA)
Middleware for generating user profile

Requesting by Web services
history   GPS   …

UA : User Agent
SA : Service Agent
CA : Content Agent

Variation of recommendation

- Palatable ⇔ Surprising
  - Recommending user's prefer
    - stationary service
  - Reminder service
    - User don't need memorize in ordinary
  - Recommending surprising information
    - such as…
      - time services
      - direct mail

Palatable

Surprising

## Consideration of palatable recommendation

- ○ In situation that user have no background of his location
  - – User cannot do some shopping in a mall at sight
- × Possibility of ennui
  - – User knows fine about hangout mall
  - – The mechanism cannot recommend useful information when a user discloses less circumstance

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Consideration of surprising recommendation

- ○ The recommendation may provide new interest for users
  - – inspiring from…
    - • word of mouth model
    - • watching news
- × User feels inconvenience about rather unexpected information
  - – SPAM candidacy

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Symmetry of recommendation type

- • Giving priority to Surprising recommendation
  - – The amount of results
    - • surprising < palatable
  - – Giving a higher score to surprising recommendation

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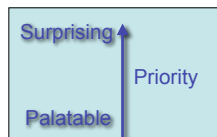
A plan for experience

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- • Substantiation experience in a real mall
  - – Location：Aomori "Elm no machi"
  - – Period：2006/2/5〜2006/3/5 (*for a month*)
  - – Expected count of recommendation:
    10(person) x 40(terminal) x 30 (day) = *12000 (times)*

- • Recommendation type
  - – Palatable recommendation
  - – Wishlist recommendation
  - – Time sales recommendation

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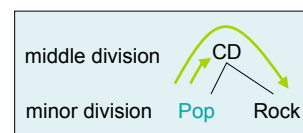## Palatable recommendation mechanism

- • Add score when each parameters matched (user metadata and content metadata)
  - – Age (+2)
  - – Gender (+2)
  - – Job (+2)
  - – Preference keywords (+2)

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Wishlist recommendation mechanism

- • Following the category tree
  - – strictly match (+10)
  - – 1 hoped match (+7)
  - – 2 hoped match (+5)

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Time sale recommendation mechanism

- Time parameter matching
  - Contents have metadata of valid time and a quantity of stock
    - current time is in a valid duration (+20)
    - quantity of stock < 5 (+15)

Display image

Evaluation plan

- Evaluating which is better method human initiative or machine initiative
  - Push type: Recommendation mechanism
  - Pull type: Clicking a map
- Tuning scoring parameter