Topic Maps based application for the intellectual labyrinth

Michihiko SETOGAWA
Senior Engineer, Hitachi Systems & Services, Ltd.
<m-setogawa@hitachi-system.co.jp>

Topic Maps 2007
2007-03-21 Oslo
Agenda

• Background
  – intellectual labyrinth

• Knowledge Concierge
  – knowledge from Encyclopedia
  – profiling … tether knowledge and content
  – apply to various applications

• Conclusion
  – further work
Background

• One of our business is...
  – *provide one of the largest Japanese encyclopedia and various contents through the internet*
  – *provide solution service with customer’s content*

• Nowadays, people are facing difficulties in their intellectual activities...
  – *may get too much search results*
  – *can not find out what keywords have been used*
  – *can not recognize what they are interested in*
Knowledge Concierge
Knowledge Concierge

• We developed Topic Maps based application likes a “Concierge” for the intellectual labyrinth

• We would like to do with it
  – help people retrieve information based on knowledge, and learn it
  – provide serendipitous finding while they access information freely

• We named it "知のコンシェルジュ®" means “Knowledge Concierge”.

• It is composed of two key technologies
  – “Systemized Knowledge”
  – “Content Profiling”
About Knowledge Concierge

People can find appropriate things with using visualized knowledge indices

Knowledge Concierge

knowledge indices

Systemized Knowledge

Content profile

Knowledge sources
(Books & Dictionaries)

Content
Knowledge from encyclopedia

- Encyclopedia contains ...
  - definition of the thing
  - relationship between thing and others
  - location of information about the thing
- People look for the things with an indices and entries

"Indices" → relationship of things → Systemized Knowledge

Encyclopedia

"Entries" → location of a thing → Content profile

Content
Creating Systemized Knowledge

• analysis encyclopedia’s content
  – collect the “words” which define the thing
  – categorize the words: editorial work
  – it's based on content’s structure which come from author’s/editor’s point of view

• analysis encyclopedia’s indices
  – generate the relationship between thing and others
  – it reflects author’s/editor’s knowledge

• generate the Topic Maps as “Systemized Knowledge”
  – “words” to the “Topic”
  – “relationship” to the “Association”
  – “content profile” to the “Occurrence” … later description
Content Profiling process

(1) pick up one “knowledge” entry

Knowledge dictionary

(2) select corresponding contents

Contents

(3) calculate adaptive rate

Content Profile

(4) create and store a profile
System Architecture

**Server** (Windows/Linux)

- IIS/Tomcat
- OKS
- RDB

**Knowledge Concierge**

Java technology based generic intellectual content management platform

※OKS : Ontopia Knowledge Suite
Search topics by word
Visualize relationship between topic and others

- Relevant topics are represented as linkage
- Can traverse topic network with mouse operation
- As follow links, new relevant topics appear in it

Click “TOKUGAWA”

New topics will appear which related to “TOKUGAWA”

Double click “TOKUGAWA”

Topic “TOKUGAWA” will be focused and centered
Reach relevant information

abstract of the topic

relevant contents

content view
Various applications

• Knowledge Concierge is not only service for the providing encyclopedia content

• but also can be applied to various applications
  – *Education & Research*
    • based on good books and teachers lecture notes
    • really start the use in April at a Japanese University
  – *Knowledge and human capital management in the company*
    • developing for ourselves
  – *Publisher and Library*
    • as an editing tool of constitution of a book for an editor
    • as a support tool for a librarian
Case 1 Encyclopedia search service

People can find appropriate subject with traversing relationship between subjects

example of relationship between subjects

織田信長
本能寺の変
明智光秀

• Encyclopedia
• Digital map
• Scenery movie
Case 2 Educational use in the university

example of relationship between academic subjects

- Media
- Saussure
- Symbol

Knowledge Concierge

Content
- Dictionaries
- Thesis
- Lecture note
- Books
- etc.

Hitachi Systems
Case 3 Knowledge and human capital management

Example of relationship between things
- Business
- Qualification
- Experience
- Skill
- Affiliation

Knowledge Concierge

Content
- Personal information
- Customer relationship
- Project experience
- Skill
- Etc.
Personal Topic Mapping and Collaboration
Personal Topic Mapping

• The people who watched the demonstration of Knowledge Concierge strongly wanted to create one’s Systemized Knowledge by oneself
• And some people also wanted to exchange their own Systemized Knowledge with other people
  – from teacher to pupil
  – for the collaborate work in the team
  – import and extend other one’s knowledge

• Create personal Systemized Knowledge with a tool
  – A MS Excel based standalone tool as a topic map editor
  – generate Topic Maps automatically from the Excel file
  – do not need knowledge of Topic Maps and IT skill
  – easy to circulate knowledge with Excel file
  – Import the one’s knowledge into the other’s easily
Personal Topic Mapping and Collaboration

1. Read/write own Personal Topic Maps
2. Send Personal Topic Maps to others for assembly
3. Read/write Shared Topic Maps in File sharing system
4. Read/write Shared Topic Maps in File sharing system
5. Circulate Excel file from which Topic Maps generate
Define topics
Define topics

Created Topics

Topic Name & Type

Internal Occurrence
Make relationship between topics
Make relationship between topics
コンテンツリンクの入力

<table>
<thead>
<tr>
<th>日常システム</th>
<th>産業計画</th>
<th>各メニュー</th>
<th>常識</th>
<th>スパル特</th>
</tr>
</thead>
<tbody>
<tr>
<td>主任計画</td>
<td>常識等</td>
<td>スパル特</td>
<td>常識</td>
<td>スパル特</td>
</tr>
</tbody>
</table>

コンテンツリンクの入力

<table>
<thead>
<tr>
<th>アイテム</th>
<th>参照</th>
<th>件名</th>
<th>件名</th>
</tr>
</thead>
<tbody>
<tr>
<td>ファイル</td>
<td>doc/xls/pdf/png/jpegなど</td>
<td>ファイル</td>
<td>doc/xls/pdf/png/jpegなど</td>
</tr>
</tbody>
</table>

コンテンツタイトル（コンテンツタイトルを省略すると、コンテンツリンク先も省略される）

リリースノート.doc

コンテンツリンク先

腰部起立障害者

必ずお読みください！

すべて削除

コピー

貼り付け

HitachiSystems

All Rights Reserved. Copyright © 2007, Hitachi Systems & Services, Ltd.
Link content to the topic … Occurrence
Conclusion
Conclusion

- Organize information of encyclopaedia into a Topic Maps
- Link to relevant information through content profiling
- Conceptual navigation by Topic Maps
- Apply to various applications
Further work

• Methodology need to be developed
  – for creating “Systemized Knowledge” from various “Books”
  – process of “Content Profiling”

• Improve visualization & navigation features
  – grouping or clustering reflects subjects semantics
  – context & focus for filtering too much information
Reference

• Website
  • Hitachi Systems & Services, Ltd. ... [EN]
    • http://www.hitachi-system.co.jp/e_profile/
  • Knowledge Concierge ... [JP]
    • http://ds.hbi.ne.jp/concierge/

• Books ... [JP]
Q & A

Michihiko SETOGAWA
<m-setogawa@hitachi-system.co.jp>
Hitachi Systems

Mange takk