

Proposal of BBS with Visual Representation for Online Data Analysis

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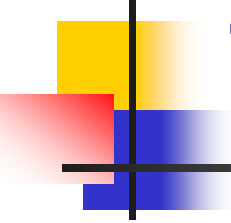
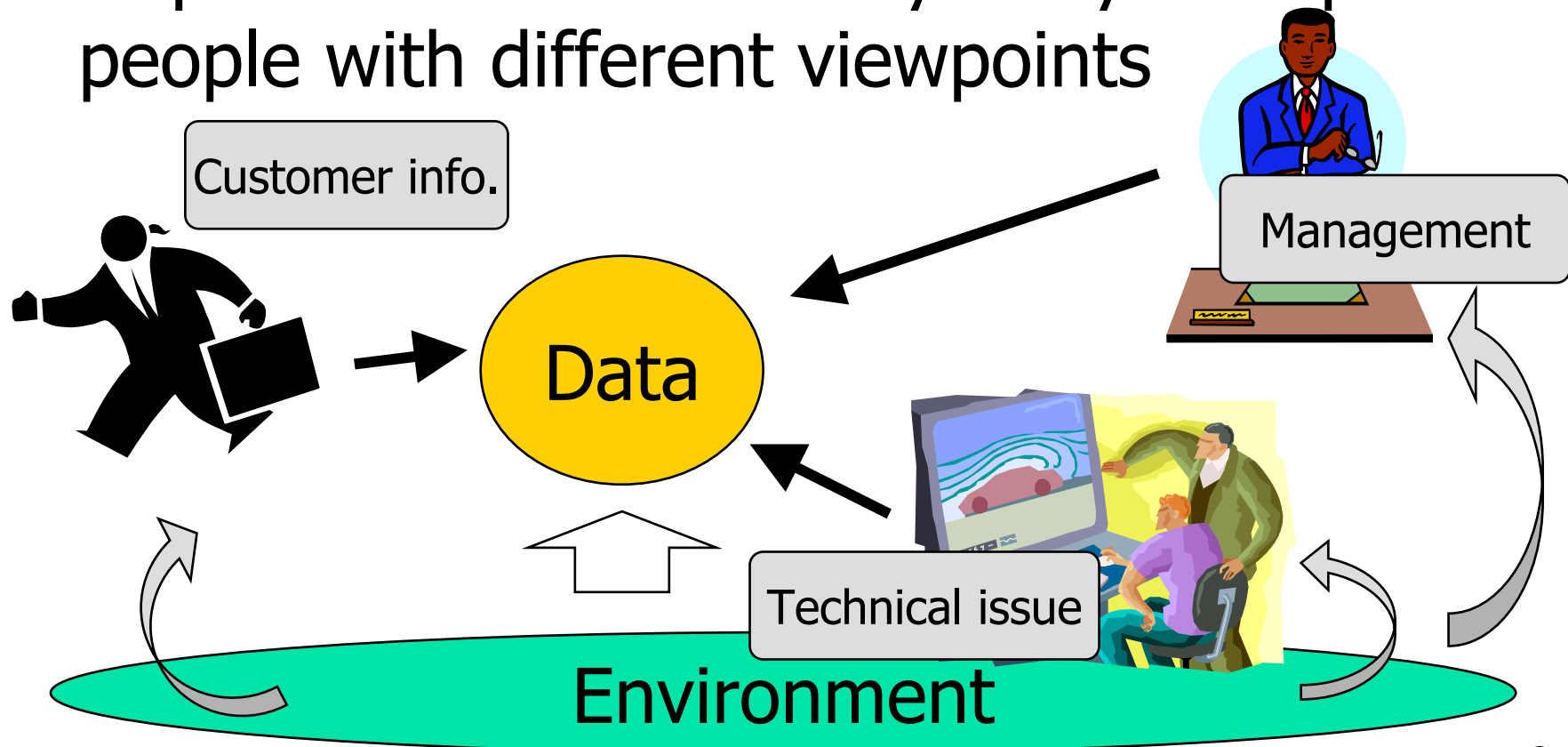


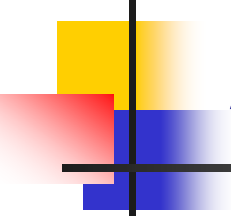
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Group Discussion for Data Analysis

- Importance of Data Analysis by multiple people with different viewpoints



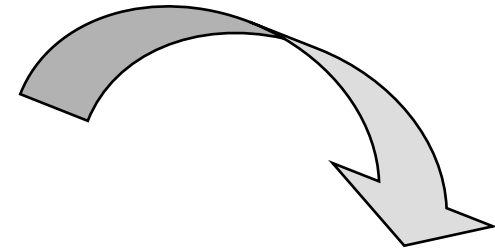


Online Discussion for Data Analysis

- Group Discussion Enables;
 - Data analysis from various viewpoints
 - Collecting various opinions
- Merit of Online Discussion
 - From meeting room to virtual space
 - Asynchronous meeting
 - No limitation on number of participants
- Online Discussion for Data Analysis is Promising

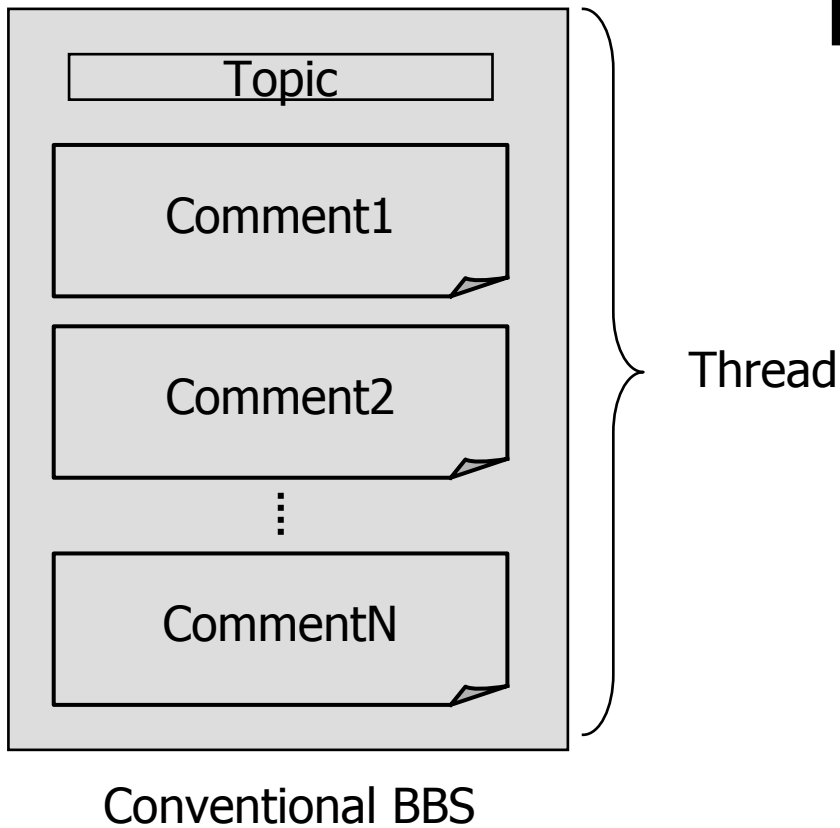
Various Tools for Online Meeting

- Video Teleconference
- Online Chat
- Instant Messages
- **BBS (Bulletin Board System)**
- etc...



- Asynchronous discussion
- Many participants familiar with BBS
- Simple for inexperienced participants
- Suitable for collecting comments

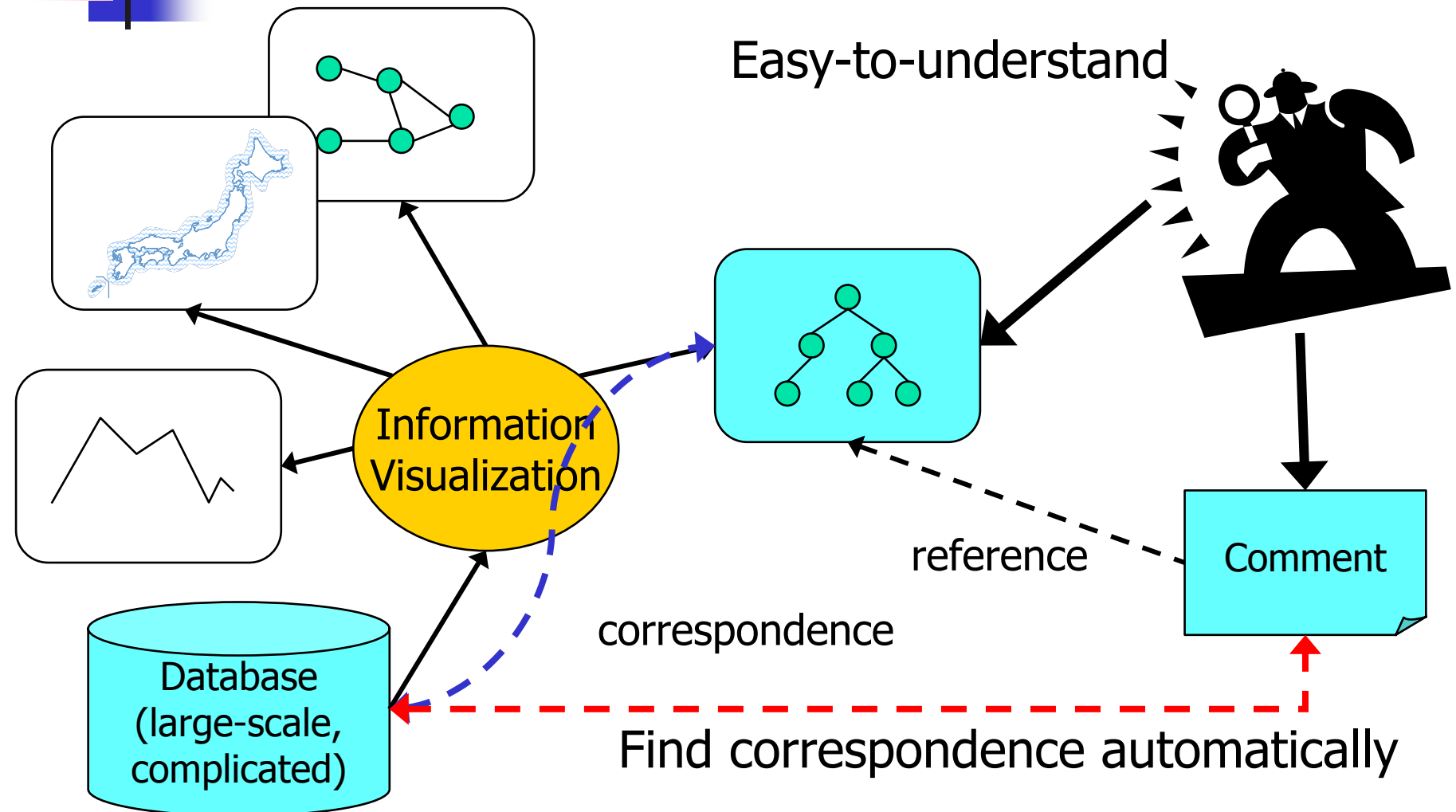
Improvements of BBS for Online Data Analysis



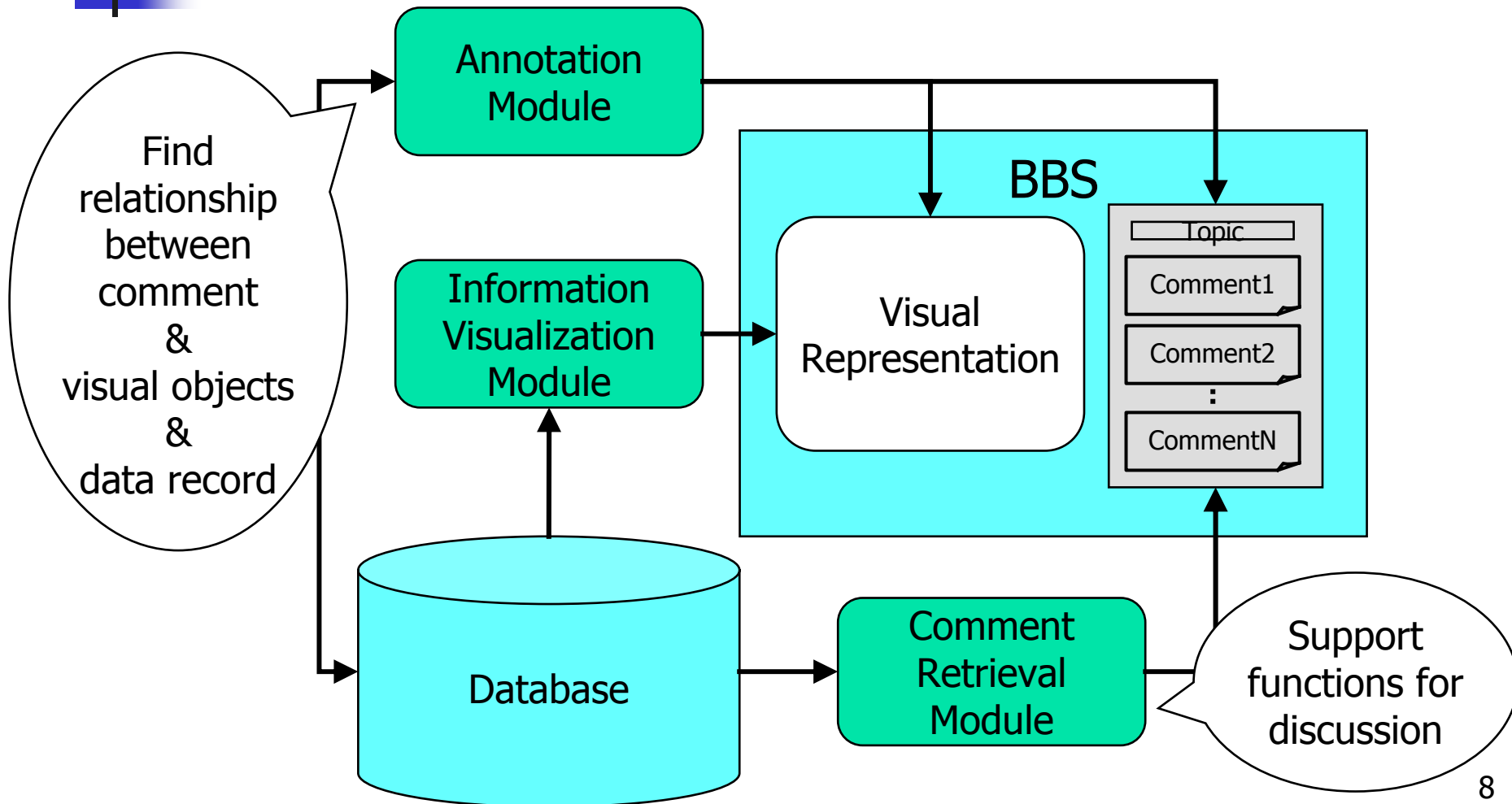
- BBS NOT designed for Data analysis
 - Text information
 - No capability of sharing data

Proposal:
Introduction of
visual representation
for sharing target data

Visual Representation for Online Data Analysis with BBS



System Architecture of BBS with Visual Representation



- Client (Flash)



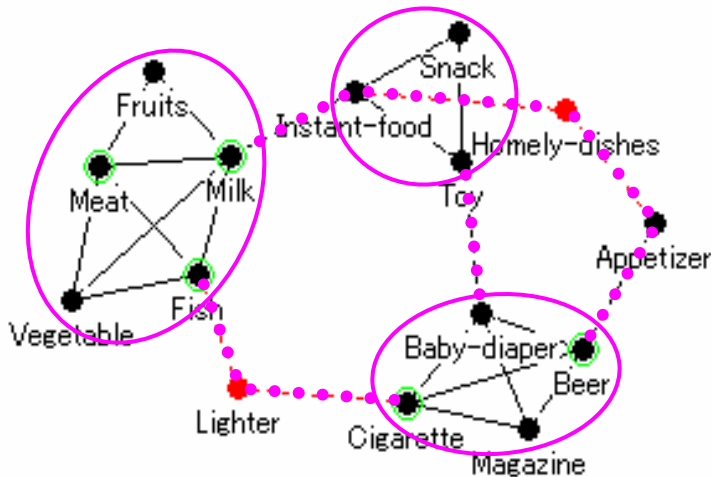
KeyGraph

[Osawa03]

Visualize Frequency & Relationship of items

Visual Objects

- Black nodes: Frequent items
- Red nodes: Items not occurred so frequently
- Double-circled nodes: Items co-occurred with black nodes frequently
- Links: Frequent co-occurrence of item pair
 - Solid line form an *island*.
 - Dotted line connect *islands*.



Island

Items occurred and co-occurred frequently

➡ Widely known context

Bridge

Weak connection of islands

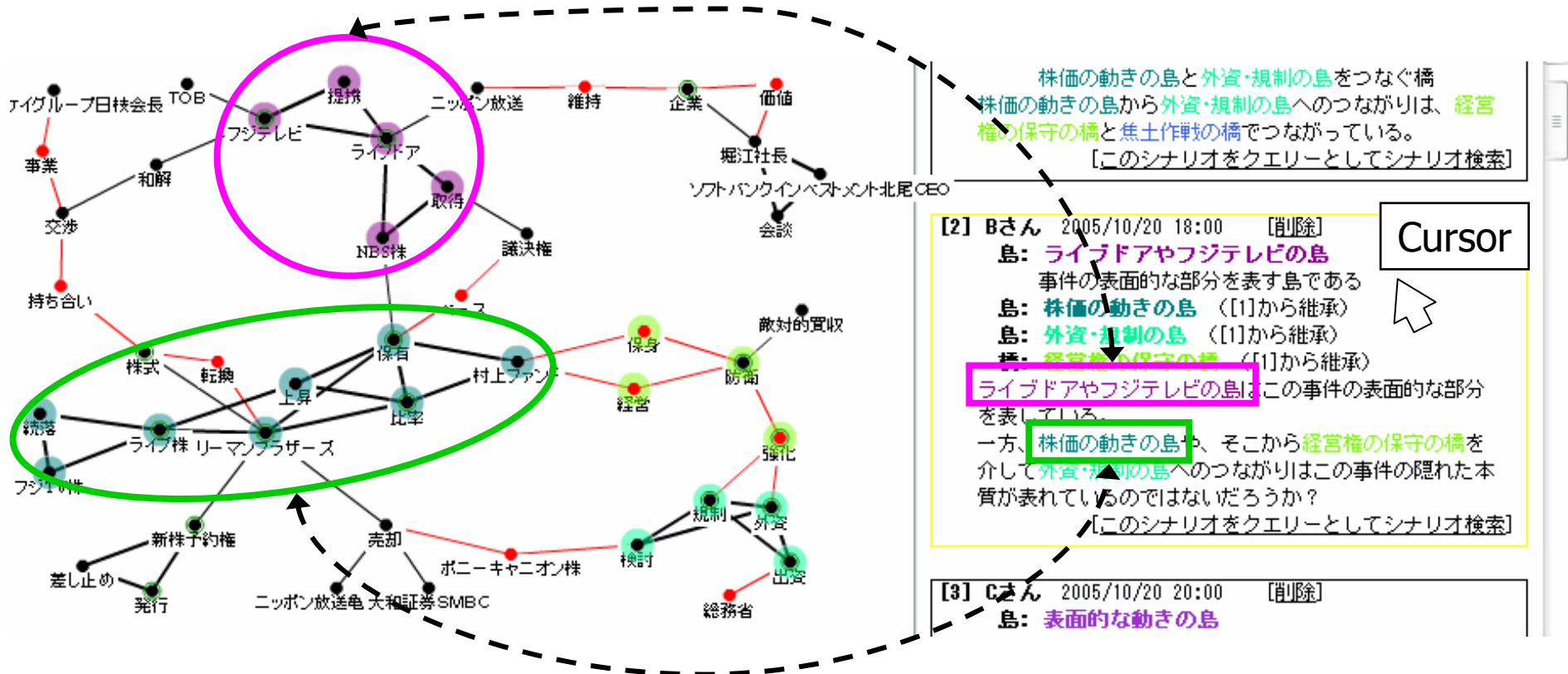
➡ Unknown relationship

User Interface

Display Correspondence between Comment & KeyGraph

Defined island & bridges

Show correspondence with same color



User Interface

Support for Defining Reference Island/Bridge

Thread

Island/bridge inheritance is possible

Click nodes

Define & refer

Write scenario here

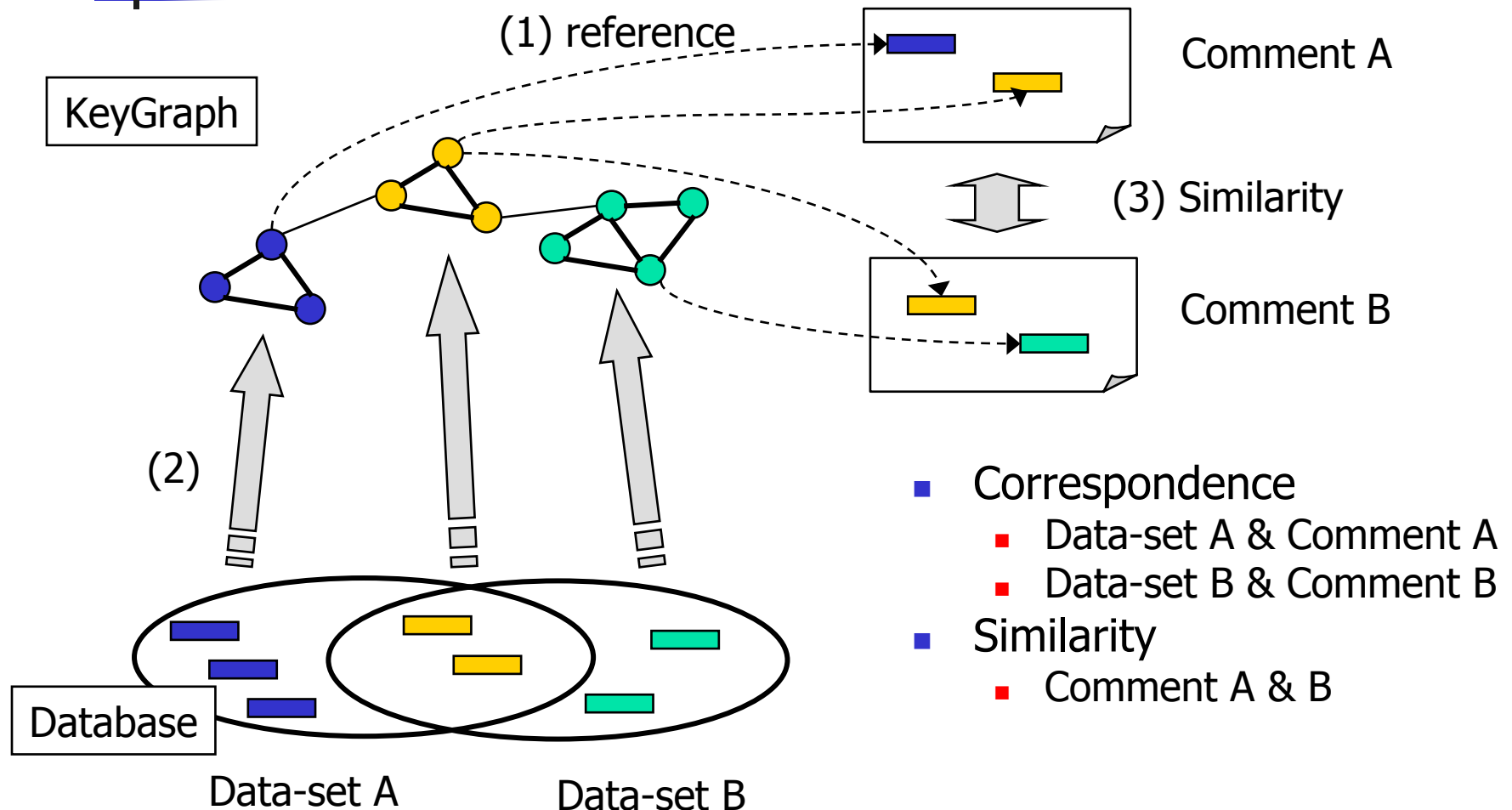
Post

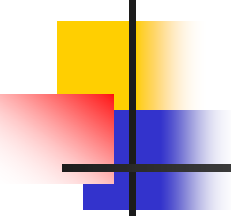
[1] Aさん 2005/10/19 1:47 [削除]
島: **株価の動きの島**
リーマンブラザーズ、村上ファンドなど
島: **外資・規制の島**
橋: **経営権の保守の橋**
株価の動きの島と外資・規制の島をつなぐ橋
経営、保身など
橋: **焦土作戦の橋**
株価の動きの島と外資・規制の島をつなぐ橋
株価の動きの島から外資・規制の島へのつながりは、**経営権の保守の橋**と**焦土作戦の橋**でつながっている。
[このシナリオをクエリーとしてシナリオ検索]

[2] Bさん 2005/10/20 18:00 [削除]
島: **ライブドアやフジテレビの島**
事件の表面的な部分を表す島である
島: **株価の動きの島** <[1]から継承>
島: **外資・規制の島** <[1]から継承>
橋: **経営権の保守の橋** <[1]から継承>
ライブドアやフジテレビの島はこの事件の表面的な部分
を表している。
一方、**株価の動きの島**や、そこから**経営権の保守の橋**を
介して**外資・規制の島**へのつながりはこの事件の隠れた
本質が表れているのではないだろうか？
[このシナリオをクエリーとしてシナリオ検索]

[3] Cさん 2005/10/20 20:00 [削除]
島: **表面的な動きの島**
新株予約権、ライブドア株、保有、比率など
島: **ライブドアやフジテレビの島** <[2]から継承>
島: **外資・規制の島** <[1]から継承>
表面的な動きの島は、株式という資本主義での「道具」を
めぐる動きであり、世間の人の目に見える表面的、現象
的なものである。
ライブドアやフジテレビの島は、「事業」という点からみ
た時のつながりを示していると解釈できる。**外資・規制の**

Comment Retrieval based on Comment-Data Correspondence





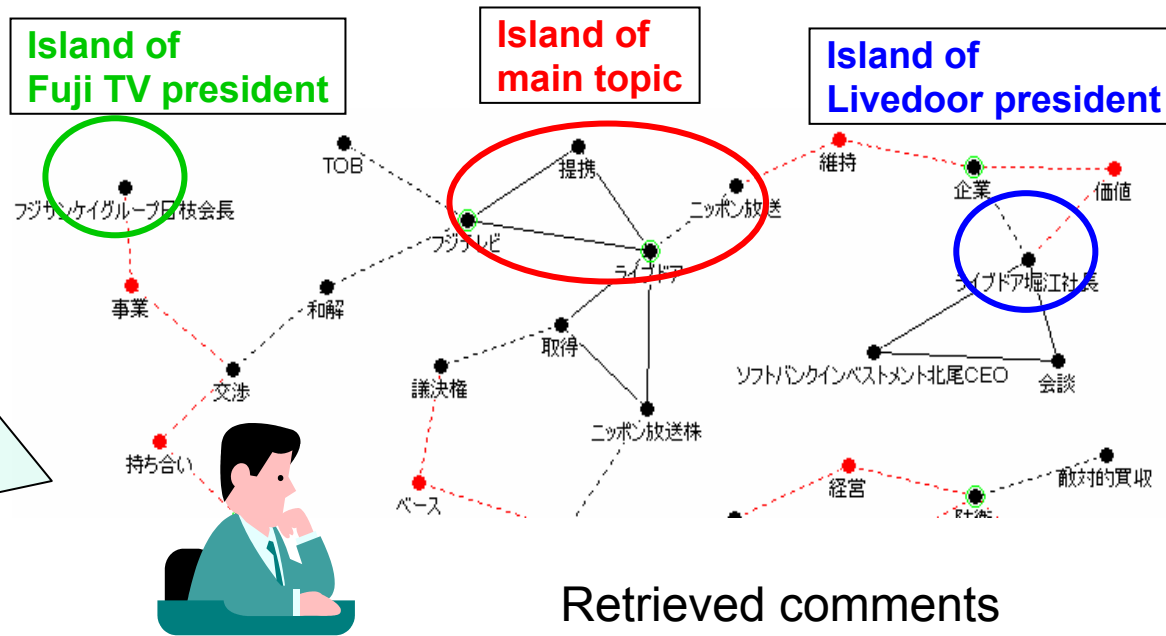
Summary of Experiments

- **Used Data: 214 headlines of Nikkei News**
M&A issue between livedoor Co., Ltd. & Fuji Television Network, Inc.
(From 12 Jan. 2005 to 26 Jun. 2005)
- **Evaluation based on BBS Log and Questionnaires from 13 test subjects**
 - **Number of using functions**
 - Island/bridge definition: 2.8 times / user
 - Island/bridge inheritance: 0.8 times / user
 - **Comment Retrieval**
 - Data records corresponding to comments can be used for retrieving Comments

Example of Comment Expansion with retrieved comments

Initial comment

Island of the main topic contains keywords appearing in newspaper headline. The keywords play a roll to attract readers' attention.

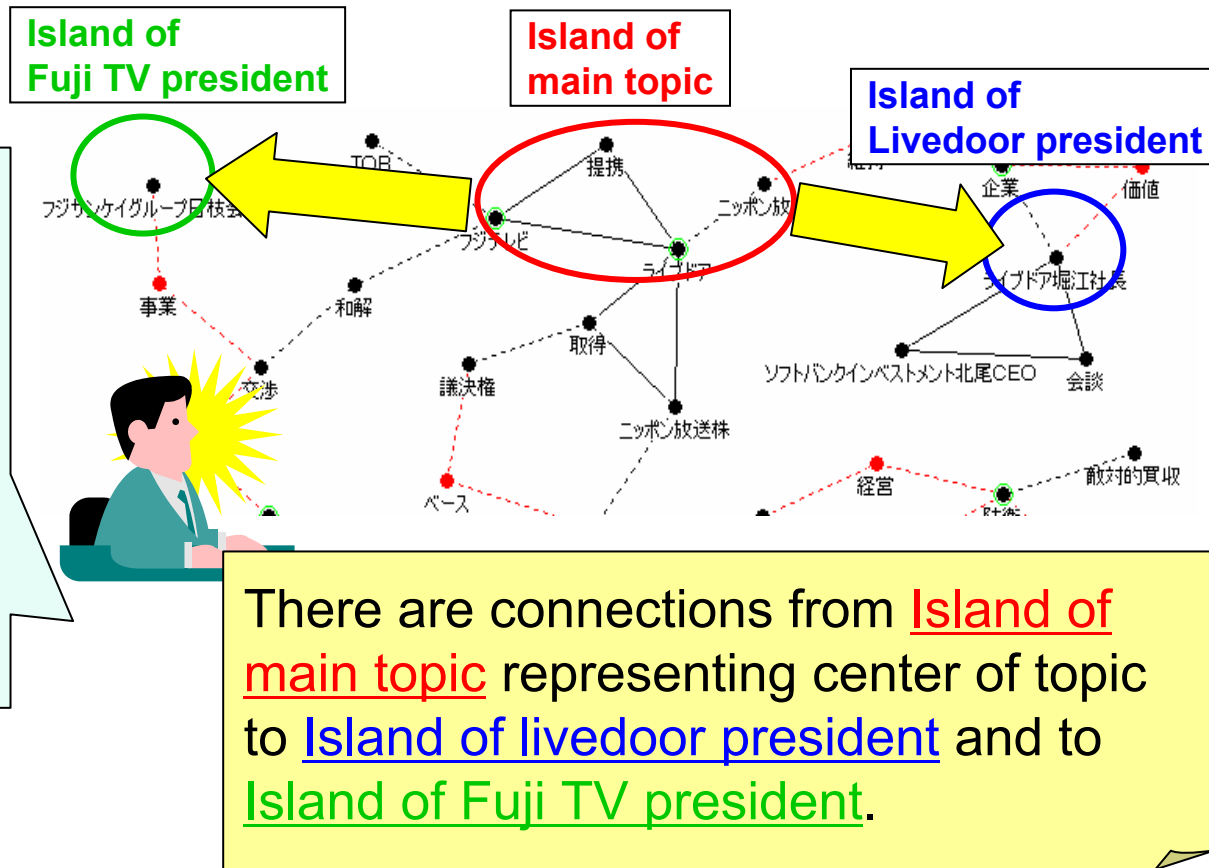


There are connections from Island of main topic representing center of topic to Island of livedoor president and to Island of Fuji TV president.

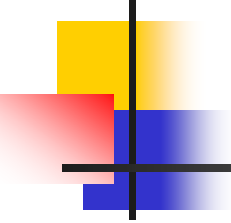
Example of Scenario Expansion with retrieved comments (2)

Revised comment

Bridge connecting Island of livedoor president & Island of Fuji TV president through Island of main topic might represent the conflict between 2 presidents behind main topics.



Retrieved Comment give new interpretation



Conclusion

- Proposal of
 - Concept of BBS with Visual Representation for Online Data Analysis
 - Prototype BBS with KeyGraph for Online Chance Discovery
- Future Work
 - Evaluation by Business People
 - Development of BBS with Visual Representation other than KeyGraph