INFORMING A INFORMATION DISCOVERY TOOL FOR USING GESTURE

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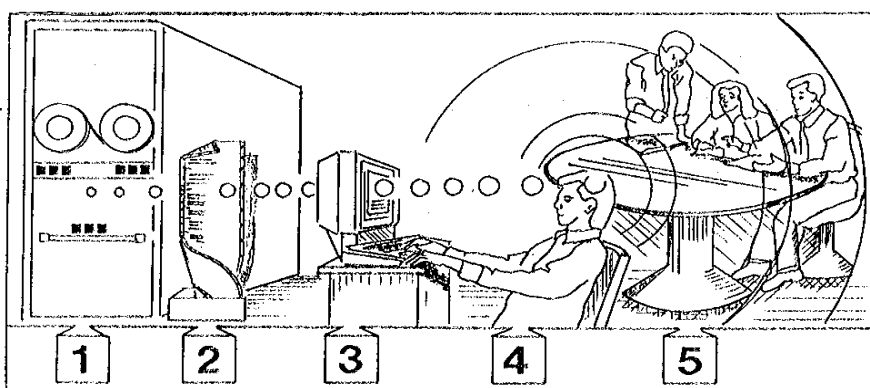Universidade Fernando Pessoa
Porto - Portugal

Presentation plan

- Issues on using computers to support people

- Information discovery tool

- System description

- Extend the system to support gesture

- Concluding remarks
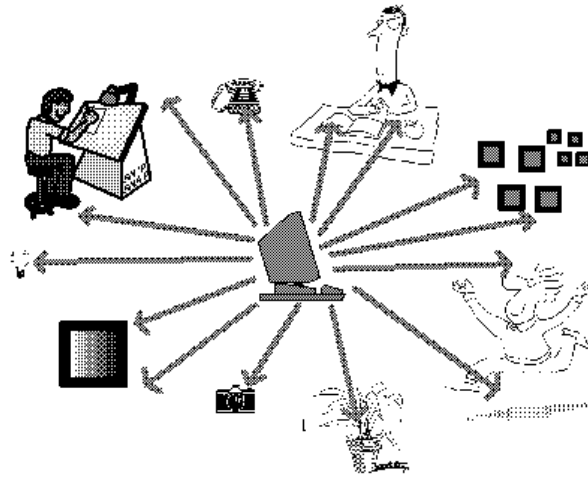
Presentation abstract

- use of computer interactive visualisations to develop a system that allows the sharing of a concept space for information discovering
- present a 3D interactive visualisation to support a shared construct based in a structured description of a concept space as an extension of a semantic map
- discuss how the system could be enhanced by include gesture recognition
  - as a more natural direction to improve the system, when compared with user embodiment

CSCW systems emerging

The machine (1)   **The terminal (3)**   **The group (5)**

     Data output (2)   **The user (4)**

Collaboration allows better performance

Way One: virtual reality

Way two: ubiquitous computing

"Two way" integration: visualisation

- <u>definition</u>: use of images and animations to convey information
- <u>goal</u> :effectively convey information to the user
  - transforms the abstract and symbolic into the geometric
 - harnesses the human perception system (visual?)

4
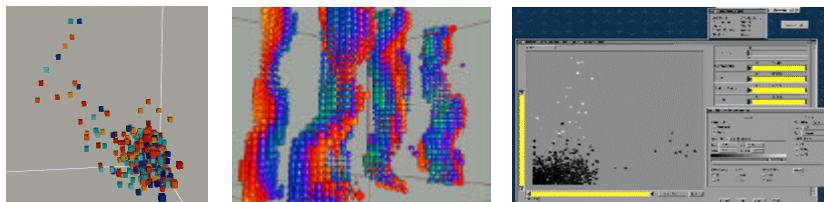
The system for information discovery support

- proposes a tool to deal with the problems of:
  - express our information needs to query a data source,
  - construct an useful data access model for a given domain subject and query results analysis
  - difficulties are greater when the data source do not have an underline structure and a query return a vast amount of results
- based on a shared interactive representation of a domain subject to construct queries and compare a data source with the domain representation
  - recurring to 3D visualisation facilities
  - allow reuse of each user efforts with basic support for collaboration to share the subject domain representation

The system provides the means for

- rendering an interactive visualisation of the concept space and supporting its use (by direct manipulation)
- mapping concepts in a criteria space based on their keywords
  - allows analysing the concept space relationships
- use a information visualisation integrated with the criteria space visualisation to represent a data source
  - allows analysing the data source and compare it with the concept space
- support concept space sharing and user collaboration to improve it
  - using a voting tool and a chat system to support discussion

Concept space

Concept

R

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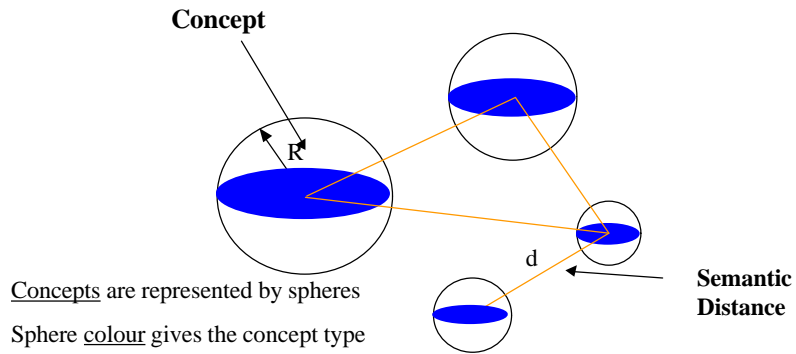
Semantic Distance
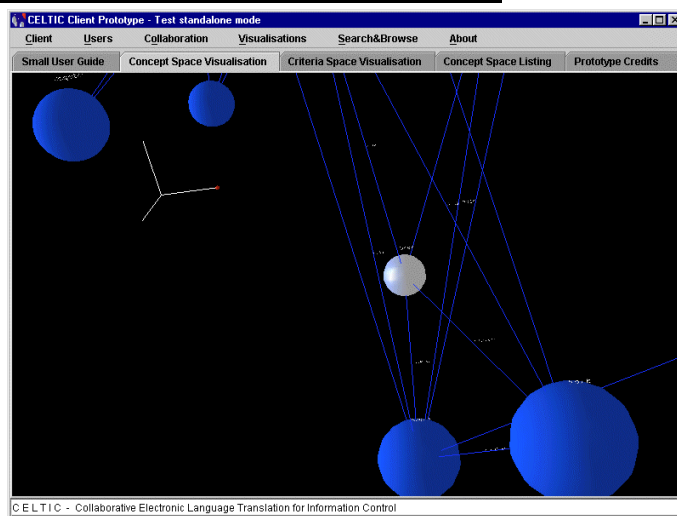
Concepts are represented by spheres

Sphere colour gives the concept type

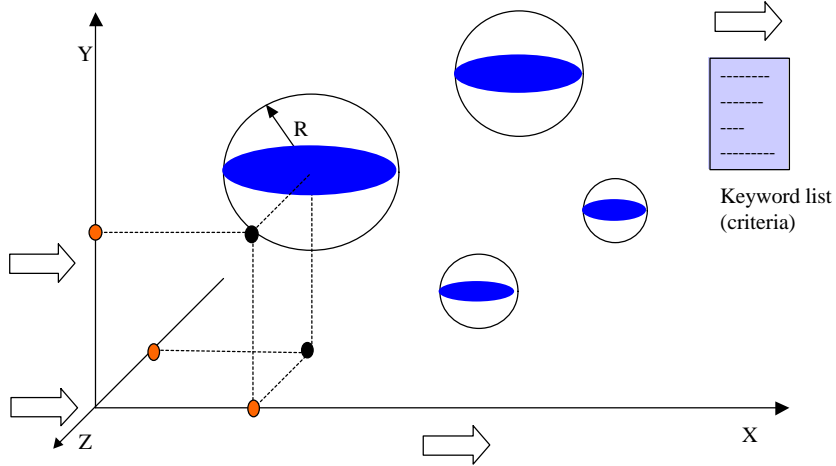Sphere size gives the concept importance

Semantic Distance is represented by lines between spheres

Spatial position is used with no other meaning than to place concepts for increase readability
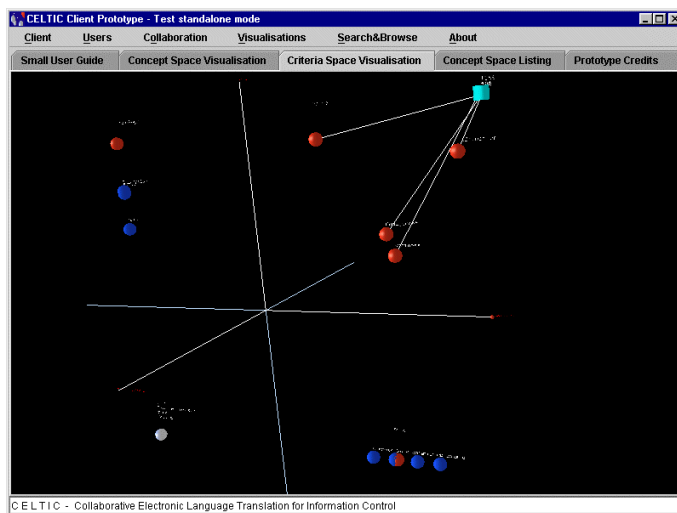

Concept space Interactive Visualisation

CELTIC Client Prototype - Test standalone mode

Client   Users   Collaboration   Visualisations   Search&Browse   About

Small User Guide | Concept Space Visualisation | Criteria Space Visualisation | Concept Space Listing | Prototype Credits

C E L T I C - Collaborative Electronic Language Translation for Information Control
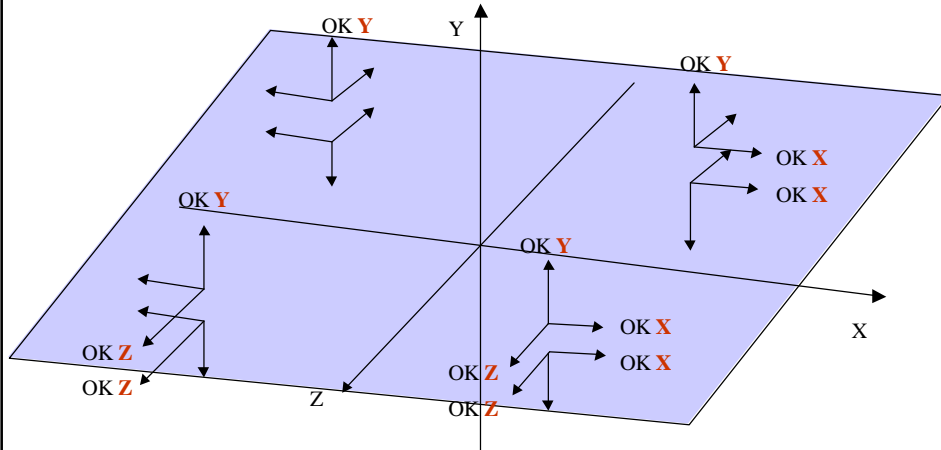
Criteria space

Keyword list
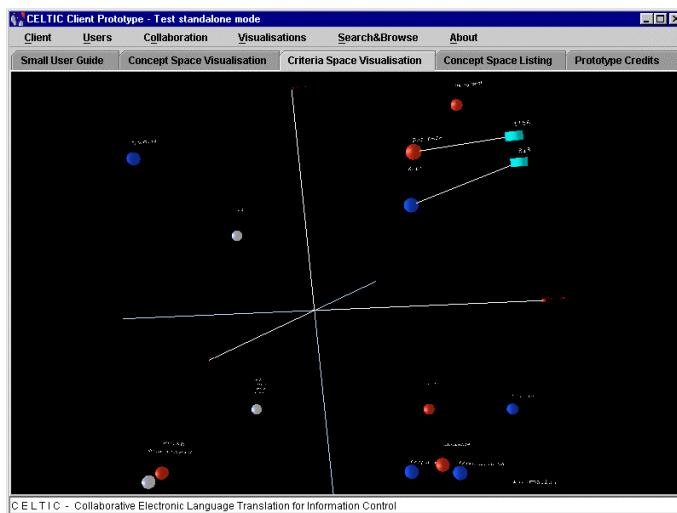(criteria)

Criteria space Interactive Visualisation
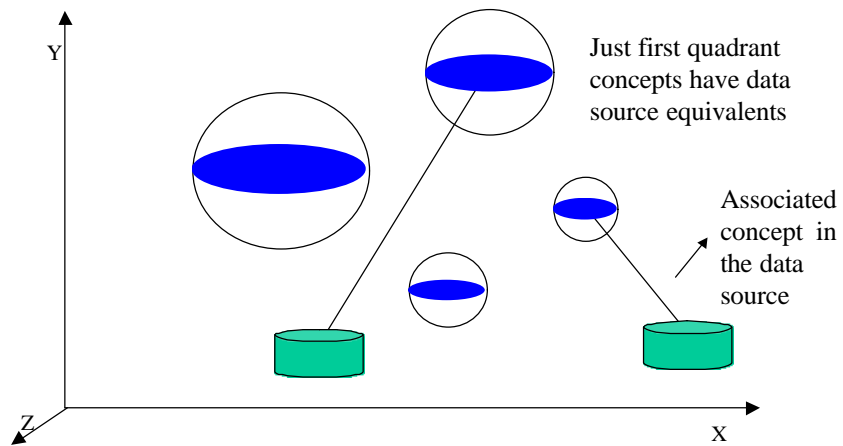
Criteria space quadrants analysis

Criteria sequences: for three dimensions, eight possible sequences
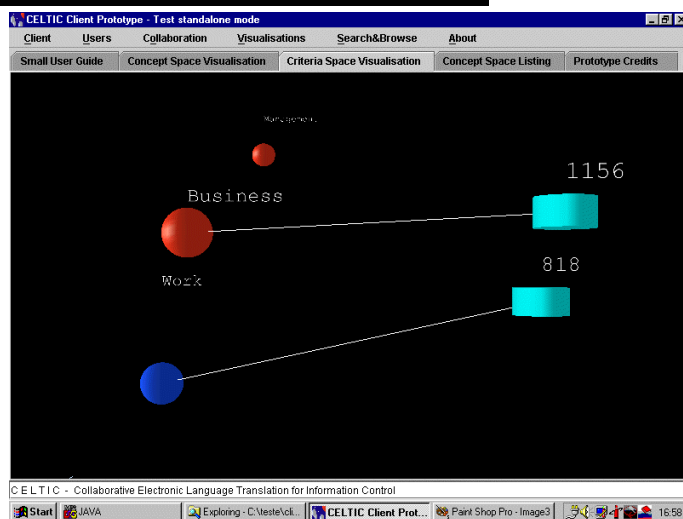
Mapping concepts in criteria space quadrants

Information Visualisation in criteria space

Just first quadrant concepts have data source equivalents

Associated concept in the data source

Information Visualisation in criteria space

Accessing results

User embodiment in VR

- user embodiment allows an awareness of other users, and their activity within the system
  - user representation to complement the shared concept space with information of which users are inhabiting the system and where are they in the concept space
  - current systems that use virtual reality technology propose user embodiment, by representing each active user in the virtual space with a dynamic representation that maps user activity within the system
  - more important for systems that use a synchronous collaboration model

Extend the system to support gesture

- an alternative for easing the user interface
  - integrate gesture has an offer for augmented user involvement
- made possible by integrated with each system client the means to allow novel ways of interaction
  - direct gesture imput: gesture recognition as head and hands movement
  - turn the system interaction more natural and provide the system itself with user awareness
- may lead to an opportunity for using gesture in information discovering

Concluding remarks (need to be tested)

- gesture provides reality augmentation by offering more natural forms for human interaction
  - decreasing the effort needed to interact with (and within) the system; where the visualisation becomes a manipulation object
- gesture support instead of embodiment is the choice for a system without "intermediaries" between users and data
  - in the real world we do not see neither ourselves neither we see all the other people when working using their efforts but focus on relevant information