LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

31.05.2011

Proseminar „Medieninformatik“ SoSe 2011
lecturer: Sara Streng

Overview of CSCL Applications

Multi-display environments

speaker:
Anna Katharina Frison

Structure

1. General overview of Multi-display environments (MDE)

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2. Systematic presentation of MDE in CSCW → working setting
3. Analytical presentation of MDE in special case CSCL → learning setting
4. Discussion

ill. 2

General overview of MDEs

MDEs build a shared display space from variety of devices

- Tablets

ill. 3

- Projected surfaces

ill. 4

- Tabletops

ill. 5

- Traditional monitors

ill. 6

General overview of MDEs

- Problems of MDEs

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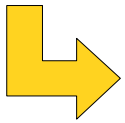
- Intrinsic characteristic of different-sized displays

- Discontinuity inherent in MDE interaction

General overview of MDEs

- Problems of MDE interaction
  - Traditional interaction technique mostly needs a physical access



  - Laser beam & finger-pointing techniques ill. 8
  - Providing a faithfull virtual of the actual display setting that can then be manipulated from a local device
  - Using the input-devices originally associated with one display to remotely control another

General overview of MDEs

- Challenge of design of multi-display systems

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Providing a way to support direct manipulation of different physical surfaces with interaction techniques that offer a seamless control

General overview of MDEs

- Techniques for Multi-display Reaching

  - Pick and Drop
  - Corresponding Gestures

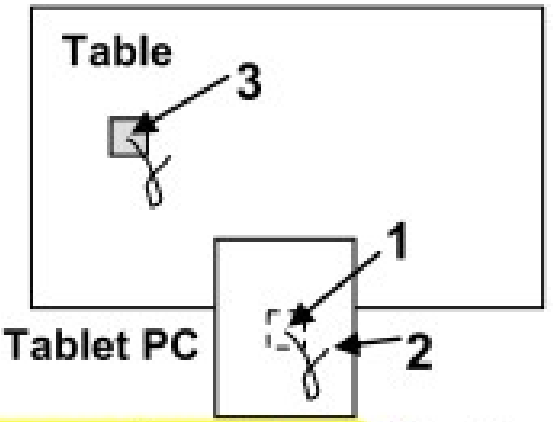

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Figure 2: Corresponding-Gestures. 1-Starting point of the selecting gesture, 2 – end point of the selecting gesture, 3 – dropping gesture.

  - Radar Views

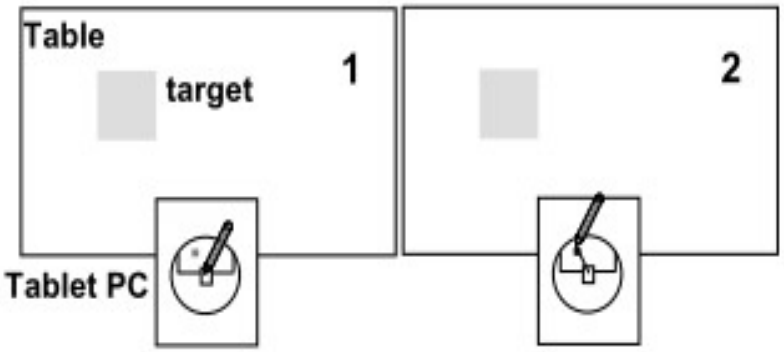

Figure 5: Radar. 1-Pen touches the object, reduced representation (map) of the surrounding environment appears, 2- user moves the pen to the representation of the target within the map and lifts the pen.

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General overview of MDEs

- Techniques for Multi-display Reaching
  - Slingshot
  - Pantograph

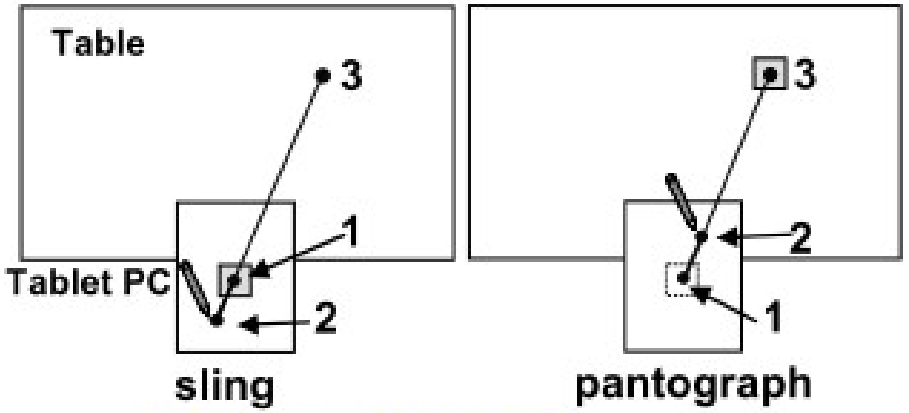

Figure 3: Slingshot and Pantograph. 1-initial position of the pen, 2-current position of the pen, 3-destination of the object.

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General overview of MDEs

- Techniques for Multi-display Reaching
  - Press-and-Flick
  - Perspective Cursor

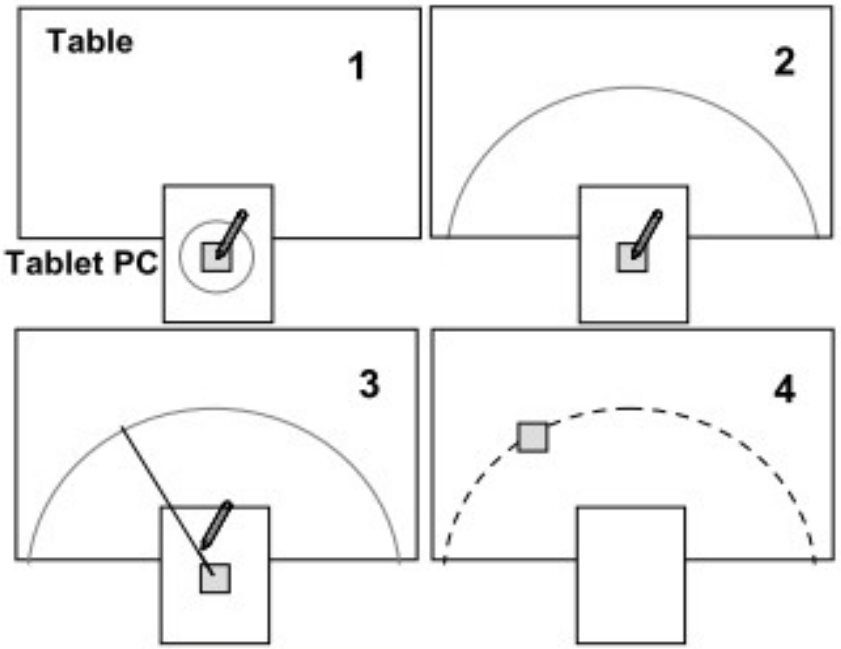

Figure 4: Press-and-Flick. 1-Pen touches the surface (low pressure); 2-user increases the pressure; 3-user starts to move the pen - the distance is automatically fixed, the color of the circle changes and the line which indicates where the object will end up is displayed; 4-pen is released.

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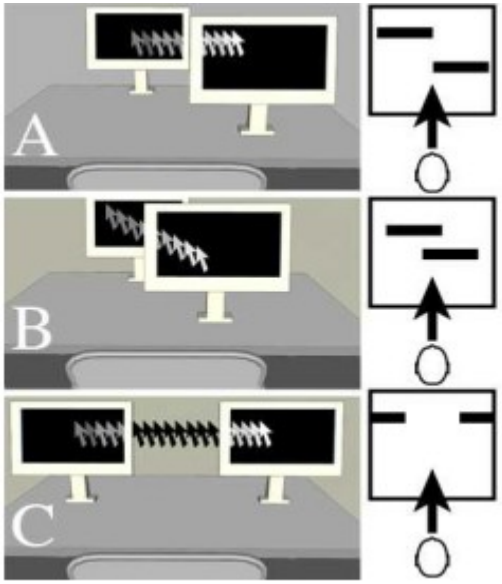

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Systematic presentation of MDE in CSCW

- CSCW → Computer- Supported Collaborative Work
  - Archetyp of MDE: **Smart Office** → interconnected tablets

wall-mounted displays

laptops

projected surfaces

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- **The Pod** (1993):

  purpose-built room with a series of projected “information faces” surrounding a round table and accompanied by a technician’s workstation

Systematic presentation of MDE in CSCW

- **Today:** spaces (meeting rooms) for 6-10 people with:
  - Several PCs
  - Whiteboards
  - SMARTBoardTM
  - Big visual displays
  - Telephone-videoconferencing facilities

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➡ **information ecologies**:

System of people, practices and technologies in a particular “local“ environment

Systematic presentation of MDE in CSCW

Advantages of MDE in CSCW

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- Enriching the presentation of informations
- Finding new ways of interaction with datas
- Supporting new opportunities for collaboration
- Optimization of collaboration prozesses
- Improvement of identity, self-confidence, language and tools & practices

Systematic presentation of MDE in CSCW

- Examples of MDEs in CSCW
  - PARC's CoLab Project:
    - 'public windows' on personal workstations
    - Provides a large shared public space using lifeboard display

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  - Roomware (i-Land):
    - Provides a set of artifacts to support individual and group work
  - iRoom:
    - Uses platformindependent approach which emphasizes the ability to easily create and add new displays and input devices

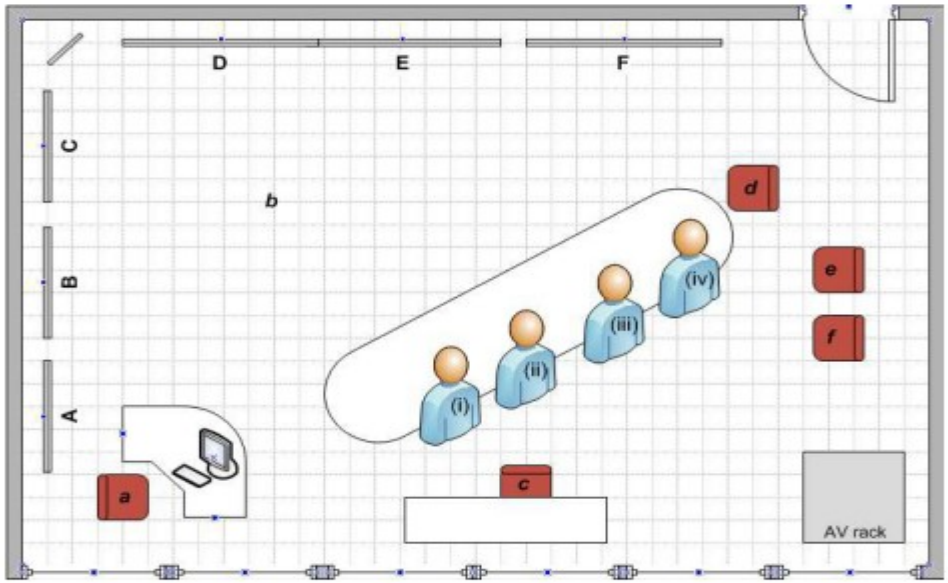
Analytical presentation of MDE in CSCL

- CSCL → computer-supported collaborative learning
- MDEs generate a new setting for communication, education and performance

  ↳ can support interactions between teachers and learners during small group activity in innovative and useful ways

Analytical presentation of MDE in CSCL

- Description of the Multi-display Learning Space



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  - Six large screens on two adjacent walls
  - Oblique Orientation for a good view
  - Teacher can go around
  - Learners have enough space to make gestures
  - Learnes can participate by means of laser

Analytical presentation of MDE in CSCL

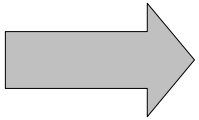
- Examples of MDEs in CSCL
  - Classroom 2000:
    - Experiment to determine the impact of ubiquitous computing technology in education in an instrumented classroom

      → teacher writes on public display

      → teacher presents supplemental information in class via the World Wide Web

      → Using dynamic teaching aids such as videos, physical demonstrations or computer-based simulations

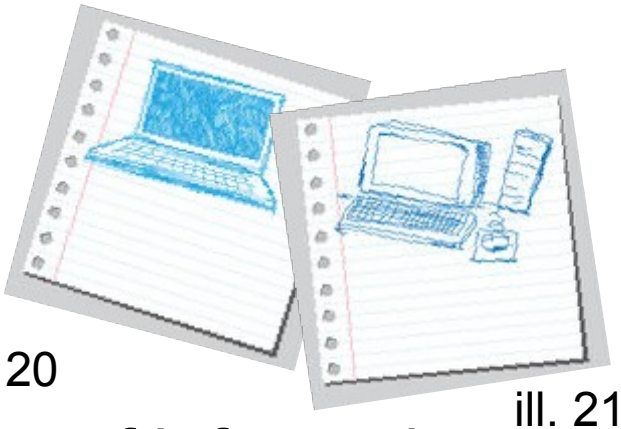
Combination provides for info-intensive experience



Learners comprehend more easily

Analytical presentation of MDE in CSCL

- Examples of MDEs in CSCL
  - Group Scribbles (2006):



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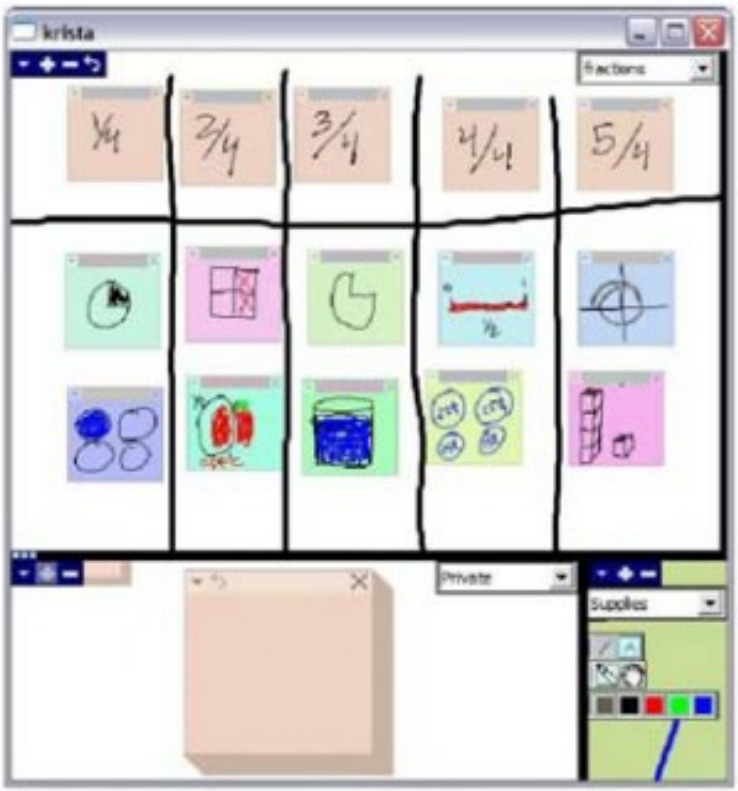
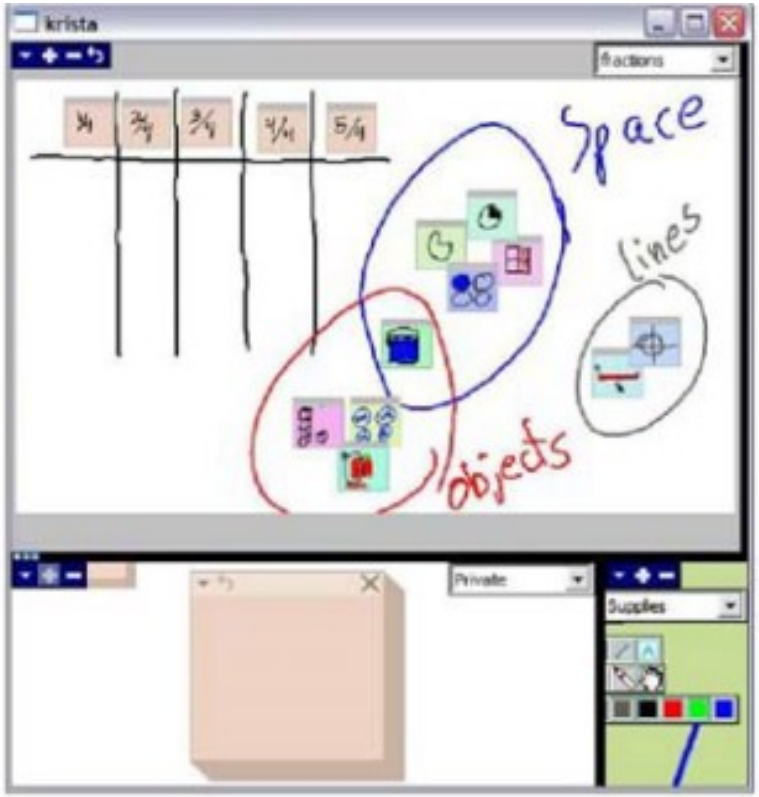
    - Creating flexible shared arrangements of informations more easily
    - Moving between public and private spaces compfortably
    - Allows teacher to design, present and edit presentations of processes
    - Based on common physical artifacts of the classroom

Analytical presentation of MDE in CSCL

- User-Interface of Group-Scribbles:





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Analytical presentation of MDE in CSCL

Pro & Contra of MDEs in CSCL

- Possibility to present a lot of material
- Learners can be better involved
- Material can be compared
- Experiences can be exchanged

- Learning situation is determined by the teacher
- Learning process is not creative

Discussion

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Do MDEs in CSCL support the learning process?

What do you think?

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Thank you very much for your attention!