

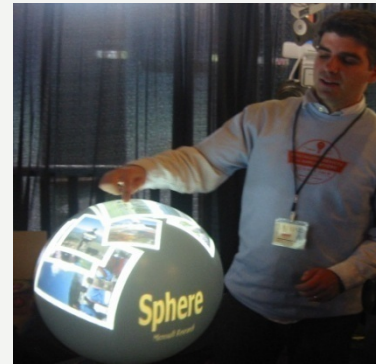
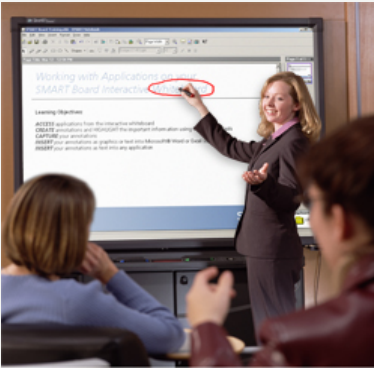
LFE Medieninformatik • Renata Willi

Interaction Metaphors on Interactive Surfaces

Medieninformatik Hauptseminar
Sommersemester 2009
„Interactive Surfaces“



Motivation



- Multiple users → multiple control points + user identification
- Direct interaction with the system (e.g. by fingers or digital pens)
- Group work → interface should provide private and shared workspaces



New challenges for user interface designers

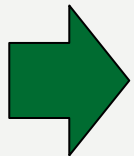


Agenda

- **User Interface Metaphor**
- **Design of Interaction Metaphors**
- **Examples of Interaction Metaphors on Interactive Surfaces**
 - Horizontal Surface
 - Vertical Surfaces
- **Conclusion**

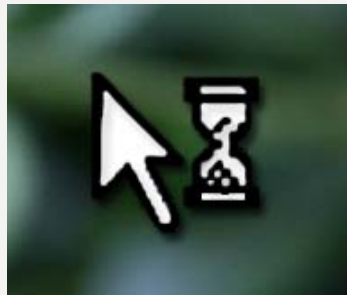
User Interface Metaphors

Definition: The general term metaphor is derived from the Greek word *metaphrein* which means *to transfer* → metaphors are mappings from one domain to another.

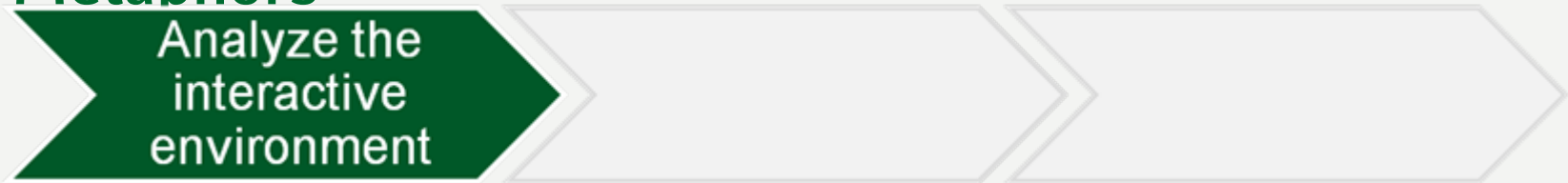


- Easy Human-Computer-Interaktion
- Imitate look and function of well-known everyday items

Examples:



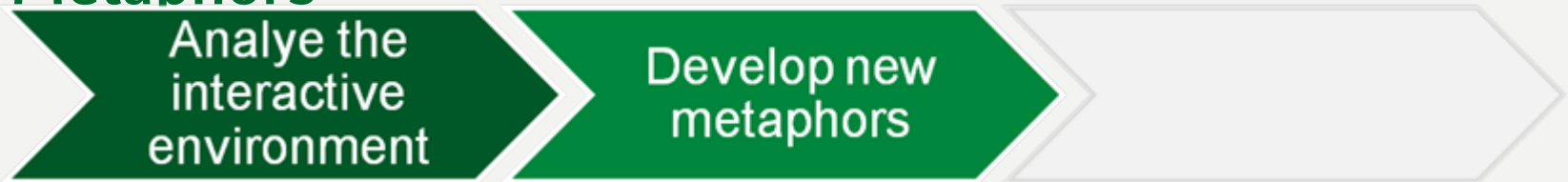
Design of new Interaction Metaphors



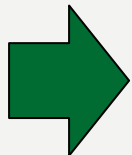
- Misunderstanding occur when metaphor is quite old (e.g. telephone) → might not suitable any more



Design of new Interaction Metaphors



- Misunderstanding occur when metaphor is quite old (e.g. telephone) → might not suitable any more
- Search for new possible and more appropriate metaphors
- **BUT:** Always have in mind the customers' needs!



- **Usefulness**
- **Easy to use**

Design of new Interaction Metaphors



- Misunderstanding occur when metaphor is quite old (e.g. telephone) → might not suitable any more

- Search for new possible and more appropriate metaphors
- **BUT:** Always have in mind the customers' needs!



- **Usefulness**
- **Easy to use**

- Evaluate new metaphors in a user study → improve usability

Examples of Interaction Metaphors on HORIZONTAL Interactive Surfaces

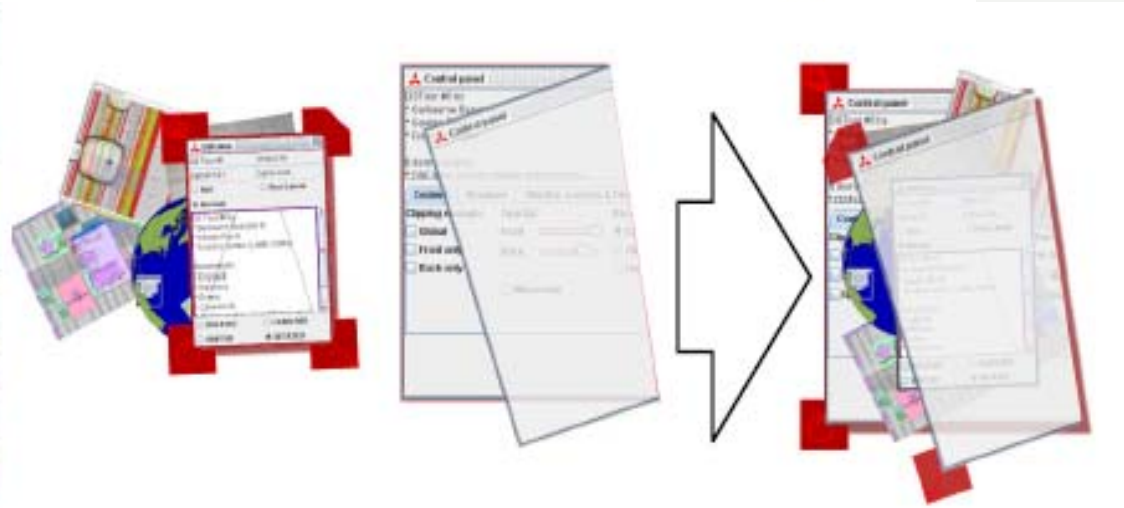


- **Additional requirements:**

- Different views on the display → arbitrary document orientation
- Existence of non-reachable areas → tools for document duplication, sharing and passing
- No fixed number and position of people → private and public workspaces are adjustable

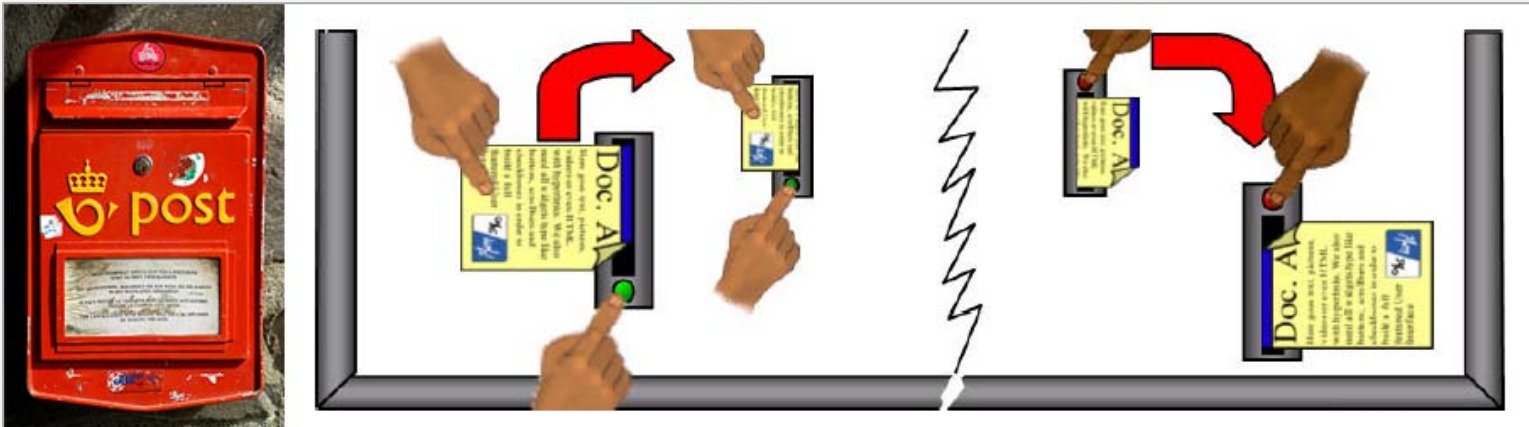
Paper Metaphor – Peel-Metaphor

- **Peel** = fold a digital document
- Documents' folded state only temporary state
- **Handling:**



Paper Metaphor – Slot-Metaphor

- **Metaphor:** different kinds of slots (e.g. letterbox, copy machine, paper shredder, etc.)



Interface Currents



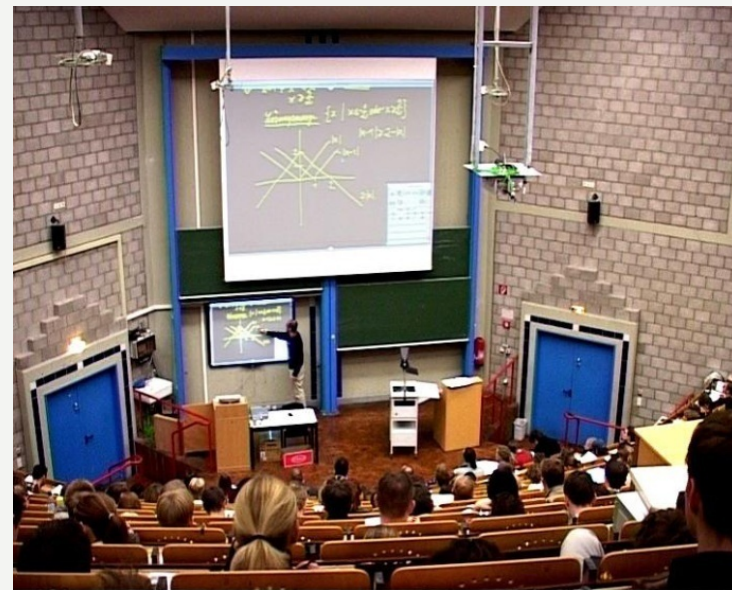
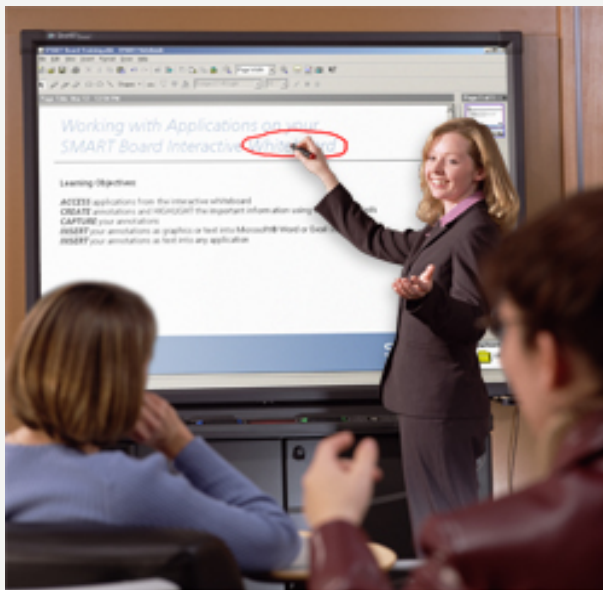
- Function: distribution and storage of elements
- Fluid currents as flexible containers for surface items
- Elements inside containers moved by controllable flow along a path

Interface Currents – Interaction techniques



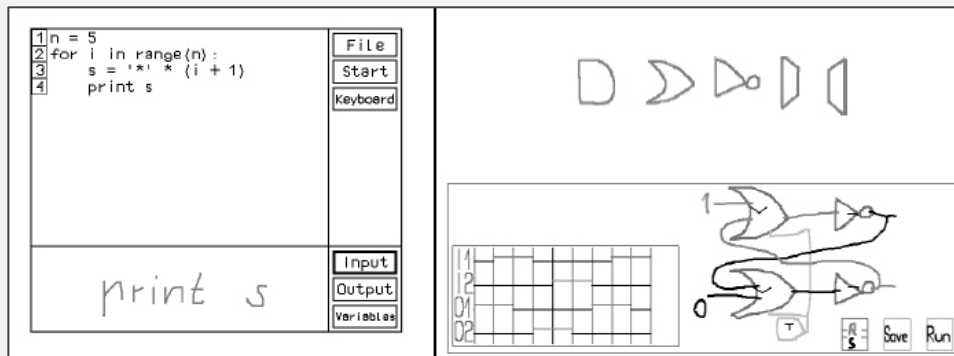
Examples of Interaction Metaphors on VERTICAL Interactive Surfaces

- Stronger presentation character
 - Support face-to-face and distance teaching + business presentations
- presentations



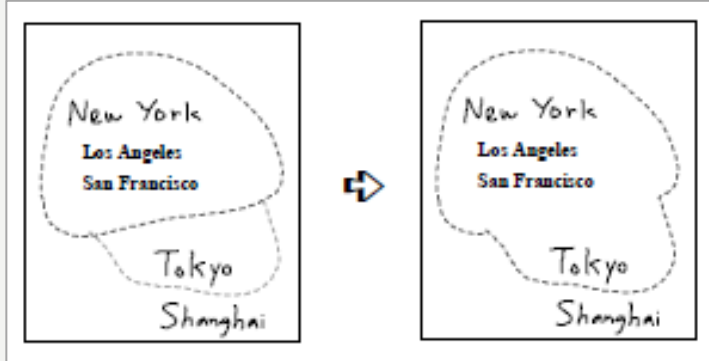
E-Chalk, Chalklets

- **E-Chalk:** based on chalkboard metaphor → can be used in lessons
 - Advantages of an electronic device: present multimedia + record board action and teacher's voice
- **Chalklets:** small Java application dynamically embedded in host application
- **Examples:** Python Interpreter + Graphical simulator for logic circuits



Tivoli Application (electronic whiteboard application)

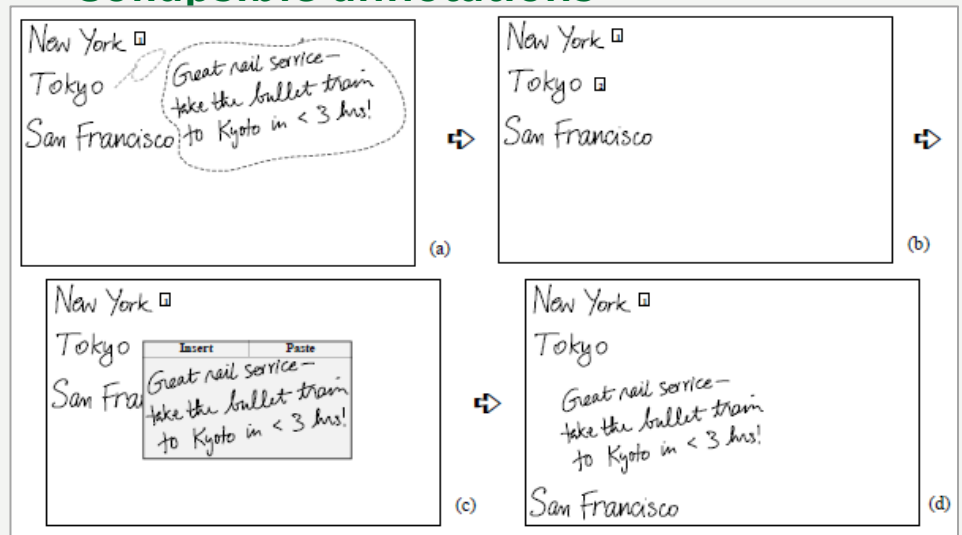
- Basic selection and editing



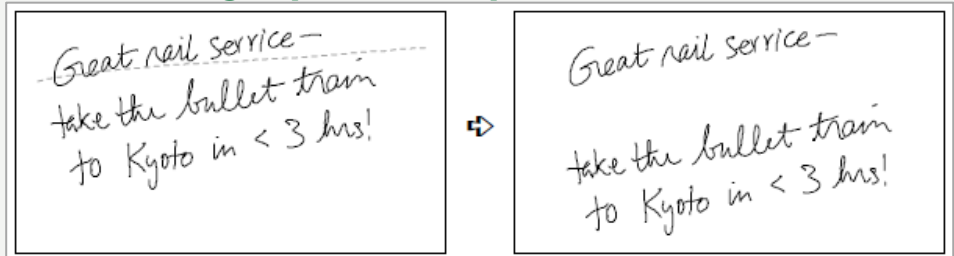
- Structured borders

Tokyo	Toronto	Moscow
Shanghai	Vancouver	
Singapore	New York	London
Hong Kong	Los Angeles	Paris
	San Francisco	Rome
Honolulu	Buenos Aires	San Luis Obispo
Sydney	Brasilia	Berlin

- Collapsible annotations



- Creating Spatial Gaps

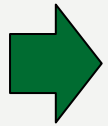


Conclusion

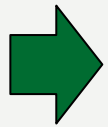
Appropriate interaction metaphors important for the usability



Need for designing new interaction metaphors for interactive surfaces – BUT: Desktop metaphor can still be used



Interactive Surfaces not used regularly in daily life → costs still too high, usability still not very comfortable



Merely prototypes → Evaluation



BUT: DiamondSpin and Chalklets encourage faster improvements

**Thank you
for your attention!**



References

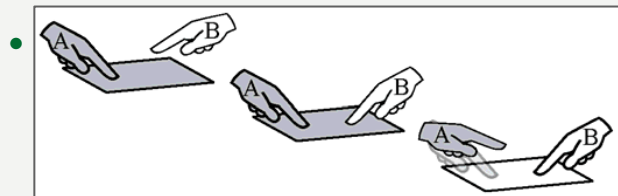
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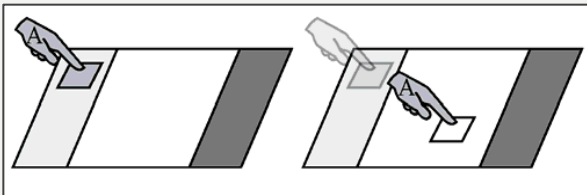
Back
up

DiamondSpin Framework

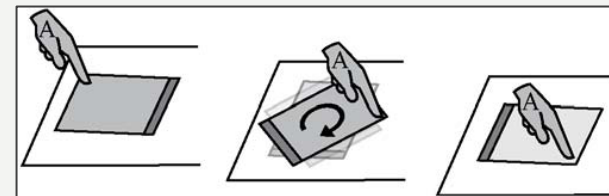
- Used for the implementation of multi-user interface prototypes
- Toolkit has own DiamondSpin API
- **Features:** color coded frames, relocatable workspaces, free-hand annotation mechanism



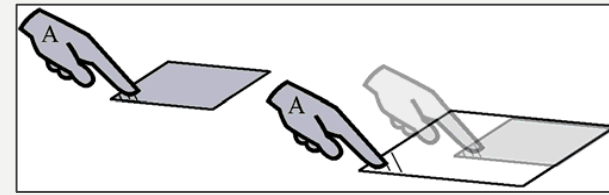
- **Release**



- **Relocate**



- **Reorient**



- **Resize**