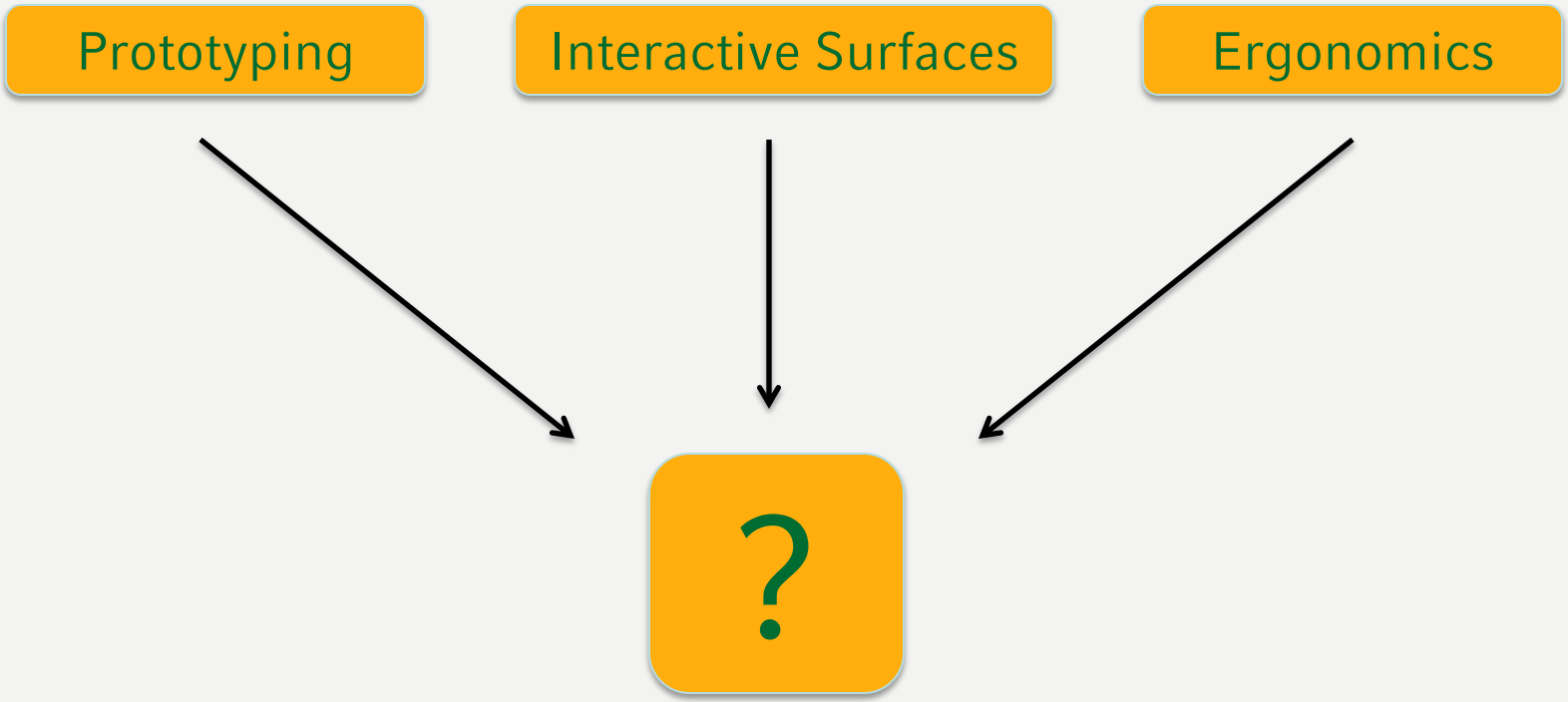
LFE Medieninformatik • Eduard Vodicka

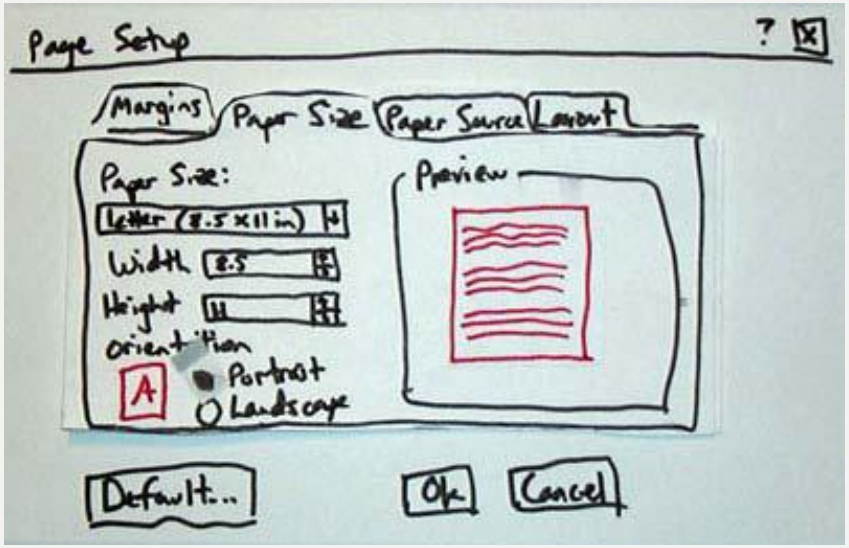
Prototyping for the Development of Ergonomic Interactive Surfaces

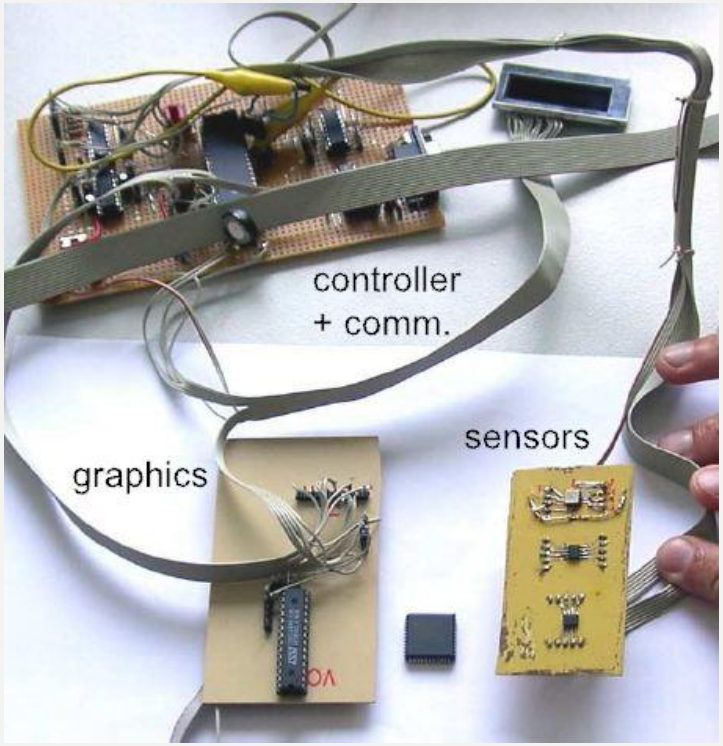
Medieninformatik Hauptseminar
Wintersemester 2009/10
„Prototyping“

Outline



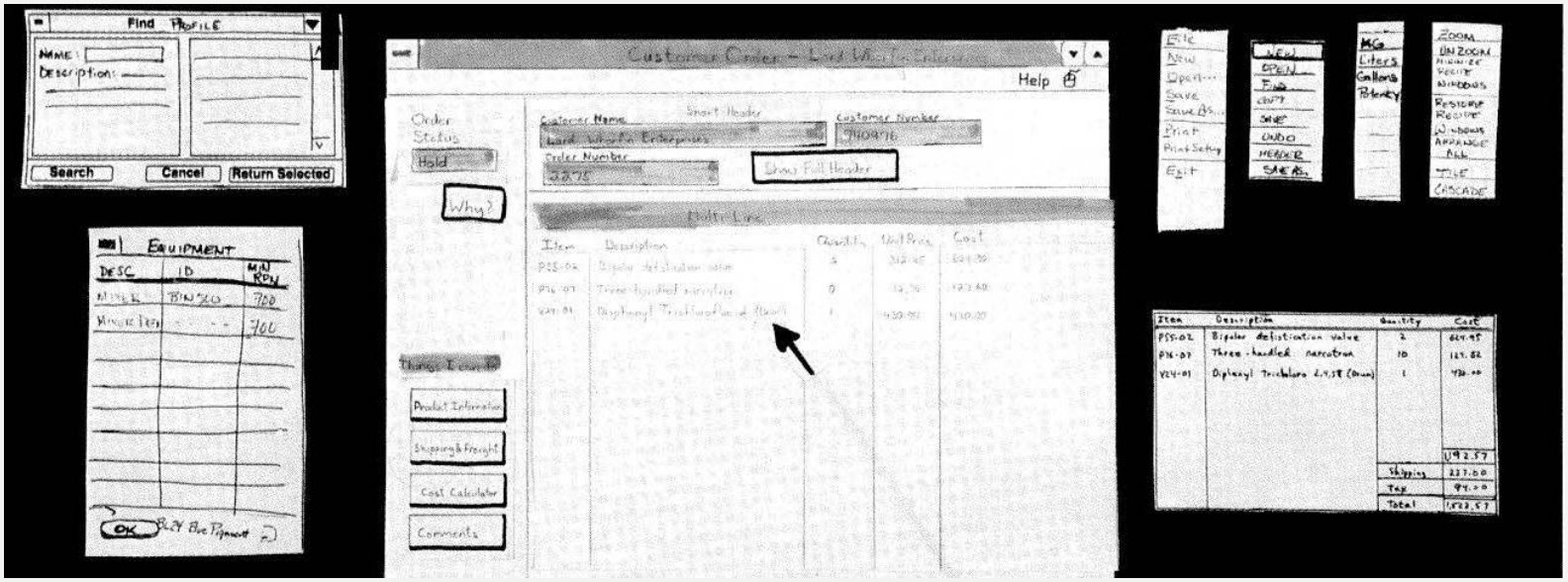
Prototyping





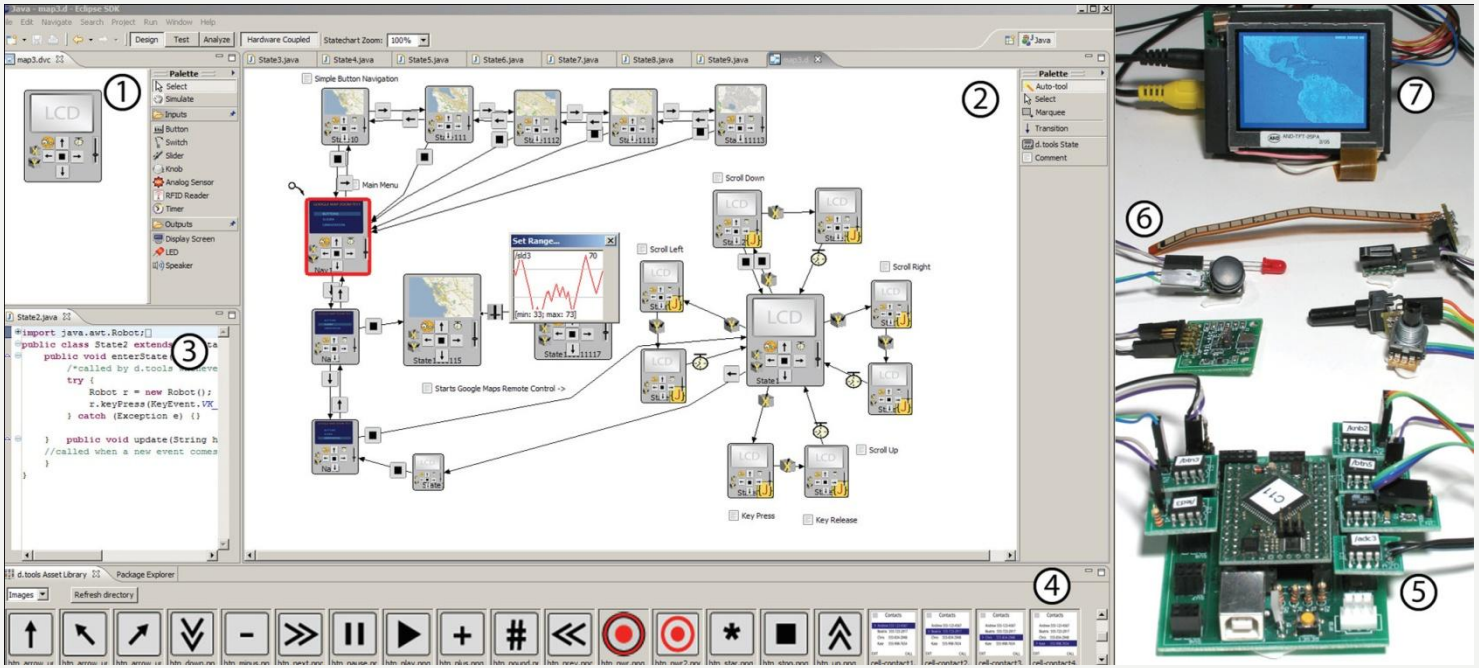
Paper Prototyping

- Low-fidelity
- Fast and cheap
- Focuses on structure and interaction, not design



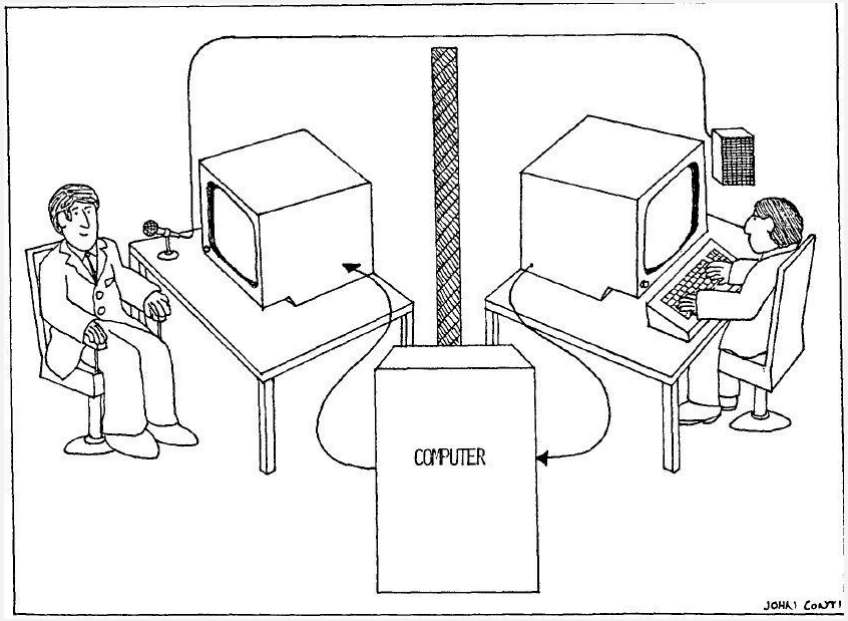
Hardware Prototypes

- Building a Prototype with given hardware
- Existing toolkits allow sketching with hardware



Wizard of Oz

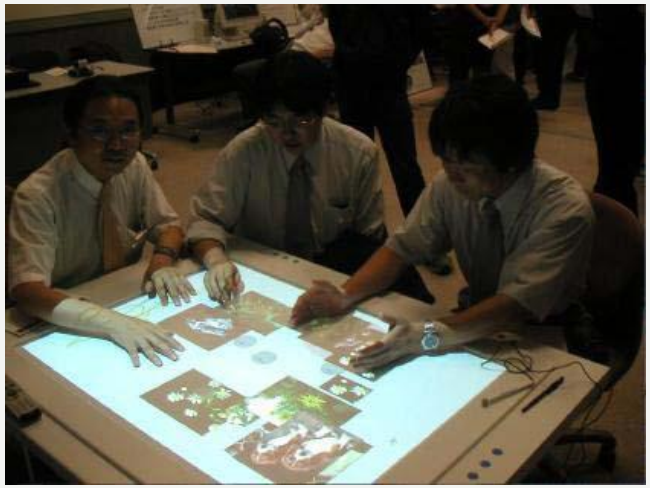
- Simulating a computer
- Works well for input forms that give the operator enough time to react
- Problems with unpredictable user input that requires an instant precise reaction



Interactive Surfaces

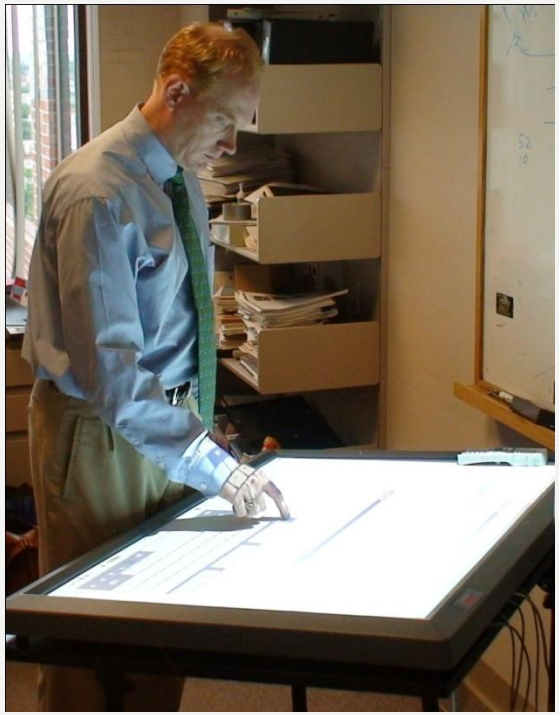
Interactive Surfaces - Concepts

- Planar
  - Horizontal
- Vertical
- Non-planar



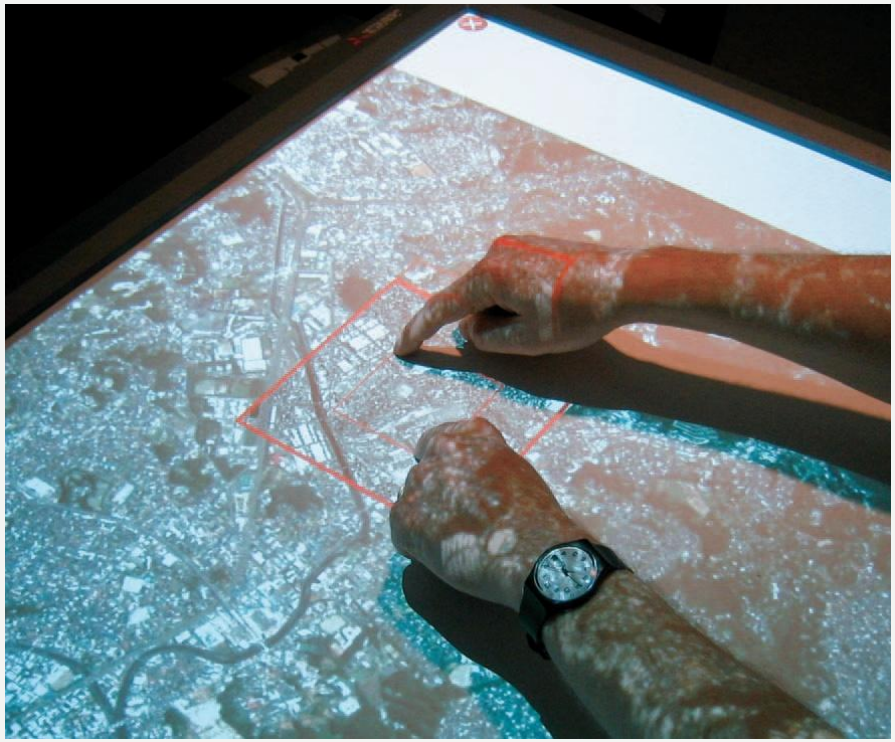
Interactive Surfaces - Scenarios

- Single-User / Multi-User
- Single-Touch / Multi- Touch
- Casual using / Real work

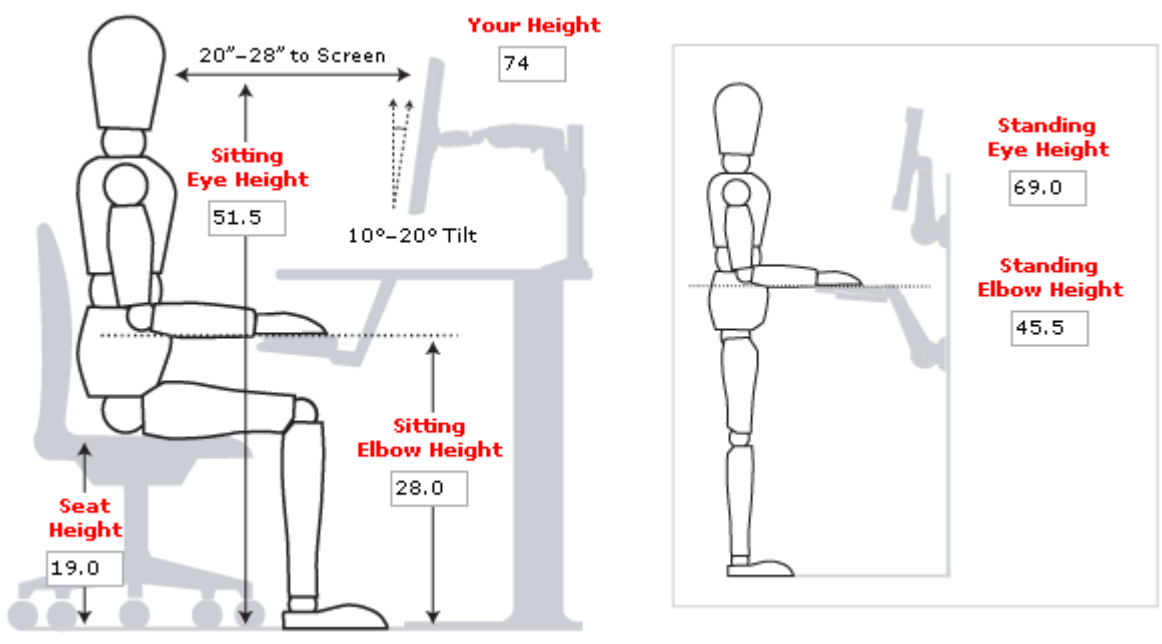


Interactive Surfaces - Technology

- Display vs. Projection
- Projecting on curved surfaces
- Touch recognition



Ergonomics


Your Height
74
20”–28” to Screen
Sitting
Eye Height
51.5
10°–20° Tilt
Sitting
Elbow Height
28.0
Seat
Height
19.0
Standing
Eye Height
69.0
Standing
Elbow Height
45.5

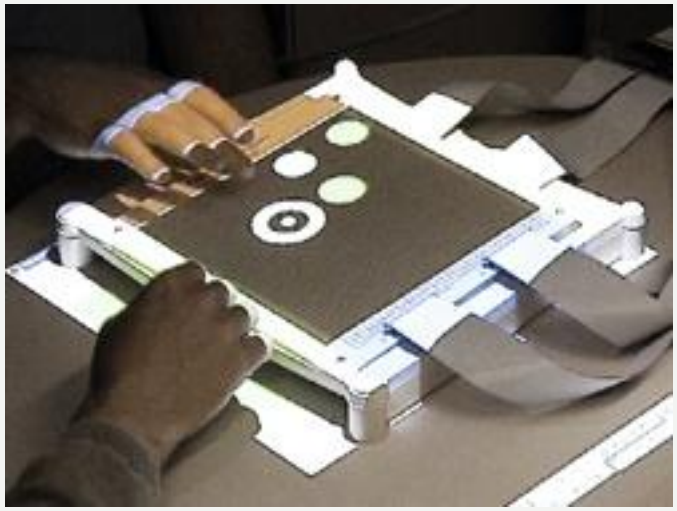
Ergonomic Issues

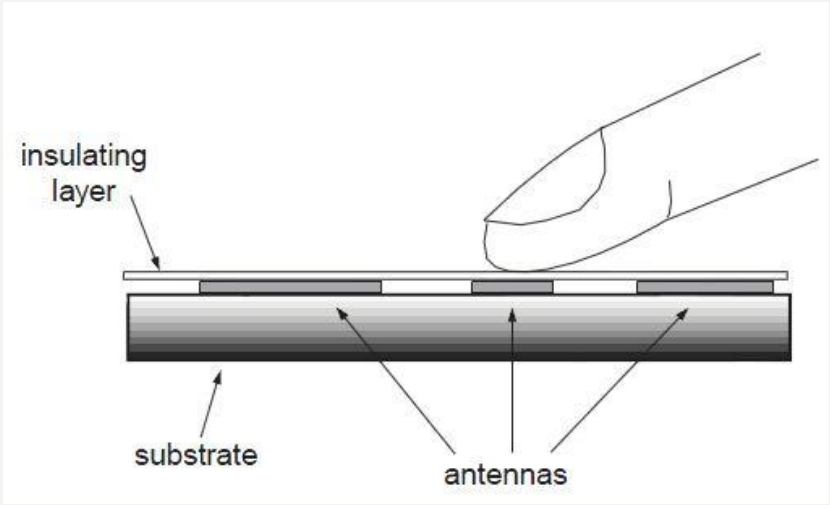
- Size / adjustment
- Brightness / contrast
- Types of Gestures
- Surface characteristics

Projects

DiamondTouch

- Technology that supports multi-touch and multi-user capable surfaces

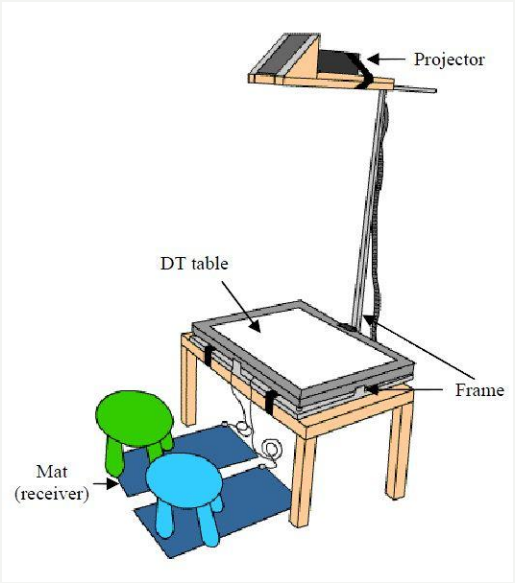




- Can be used in different sizes and resolutions
- No study concerning dimensions

Fantasy Table

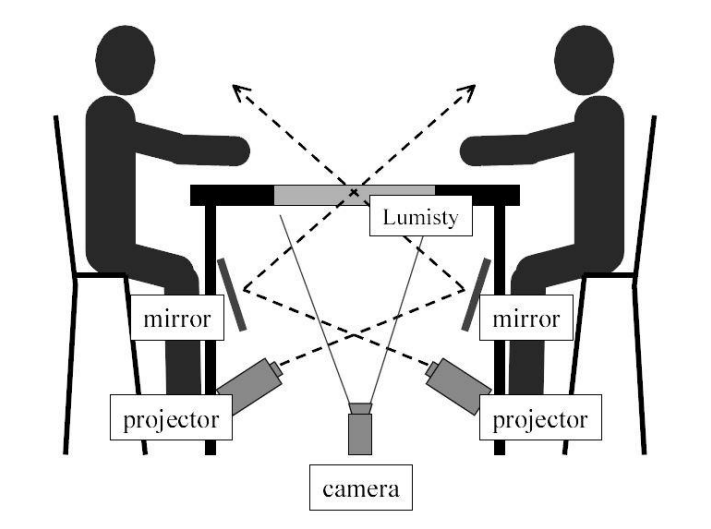
- Uses DiamondTouch technology
- Shall support playful learning for small children



- No initial prototyping
- Errors in the first study could have been avoided

Lumisight Table

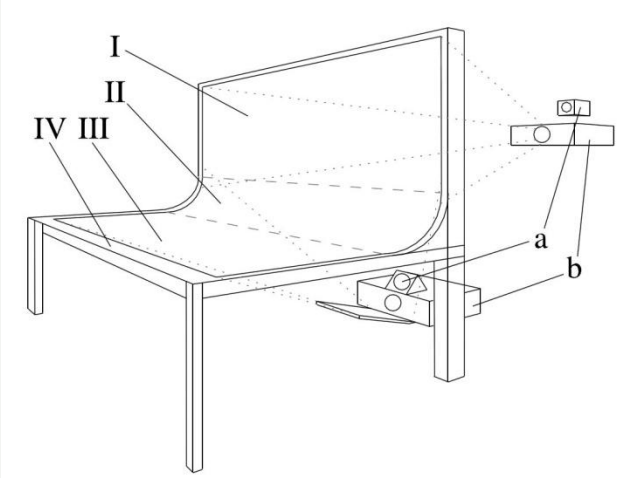
- Deals with the problem of orientation on interactive surfaces



- No considerations of ergonomic aspects

BendDesk & Curve

- Blending horizontal and vertical surfaces



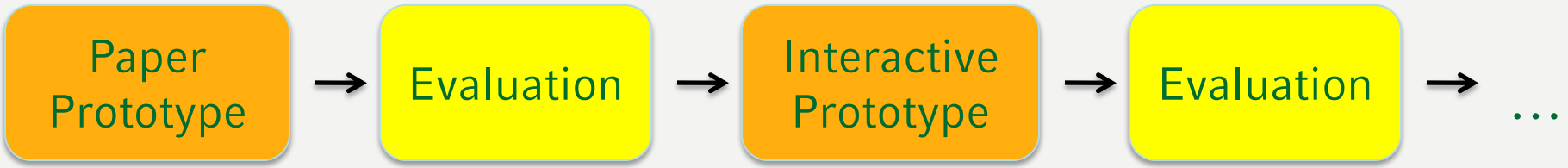
- No information on the derivation of the dimensions

- Paper prototyping
- User study to find out dimensions

Results

- Very few projects
  - consider ergonomic issues
  - build early prototypes
- Working interactive prototypes are used for studies
- Wizard of Oz is not used
  - not suitable for interactive surfaces?
  - user input is unpredictable for the operator

Results


Paper Prototype
Evaluation
Interactive Prototype
Evaluation
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Thank You!

References

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