LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

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Enhanced Ergonomics for Interactive Desks using the Example of a Curved Multi-touch Surface

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CURVE - Outline

- Motivation
  - Overview
    - Related Work
      - First Steps
        - User Studies
          - Hardware
            - Scope

CURVE - Motivation

- used to work on vertical screens
- some tasks better done on horizontal surfaces
- connection of both might enhance the users' work-flow

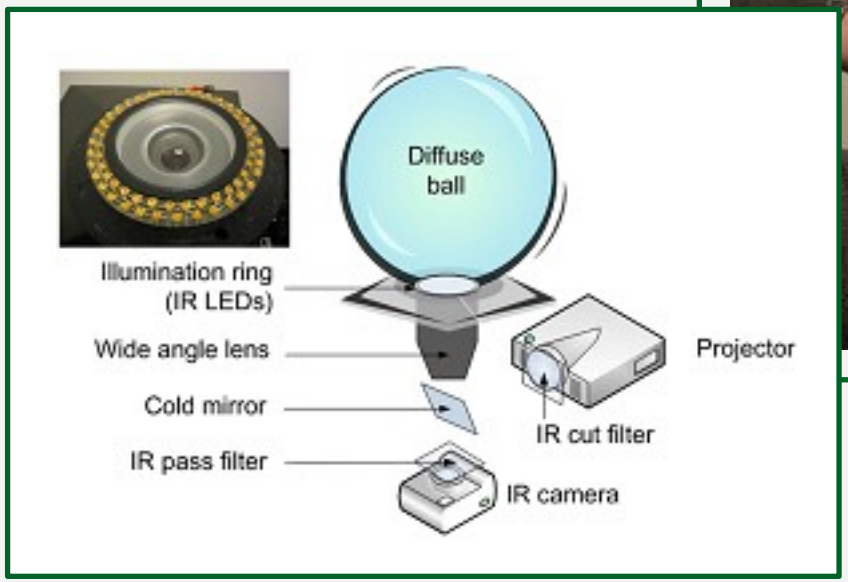
CURVE - Overview

First draft

- curved multi-touch display
- combining horizontal and vertical interactive surfaces
- application area: everyday (office) work

CURVE - Related Work

Sphere



Benko et al., 2008

CURVE - Related Work

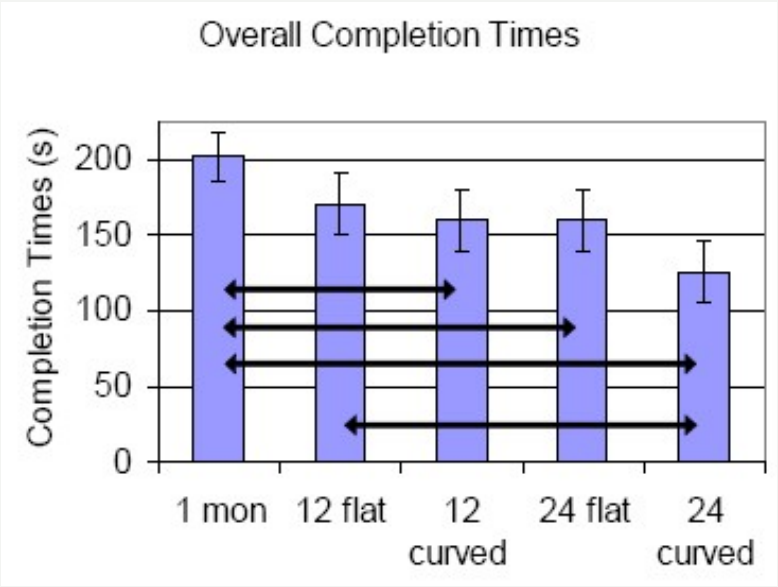
MS Surface

http://www.microsoft.com/surface/Pages/Product/WhatIs.aspx

Reactable

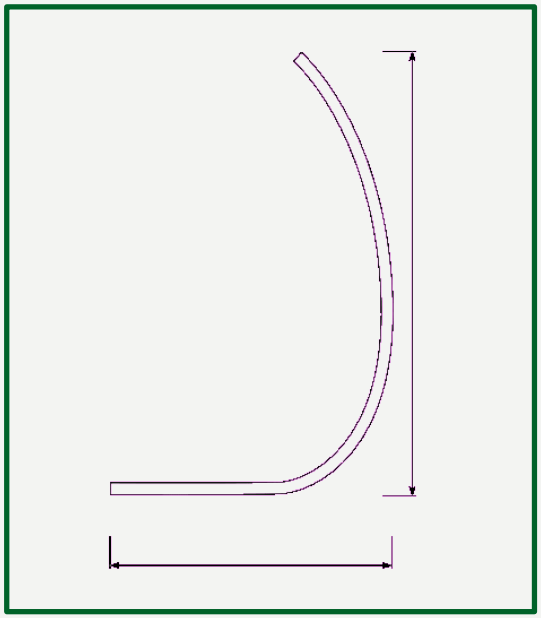
http://mtg.upf.edu/reactable/

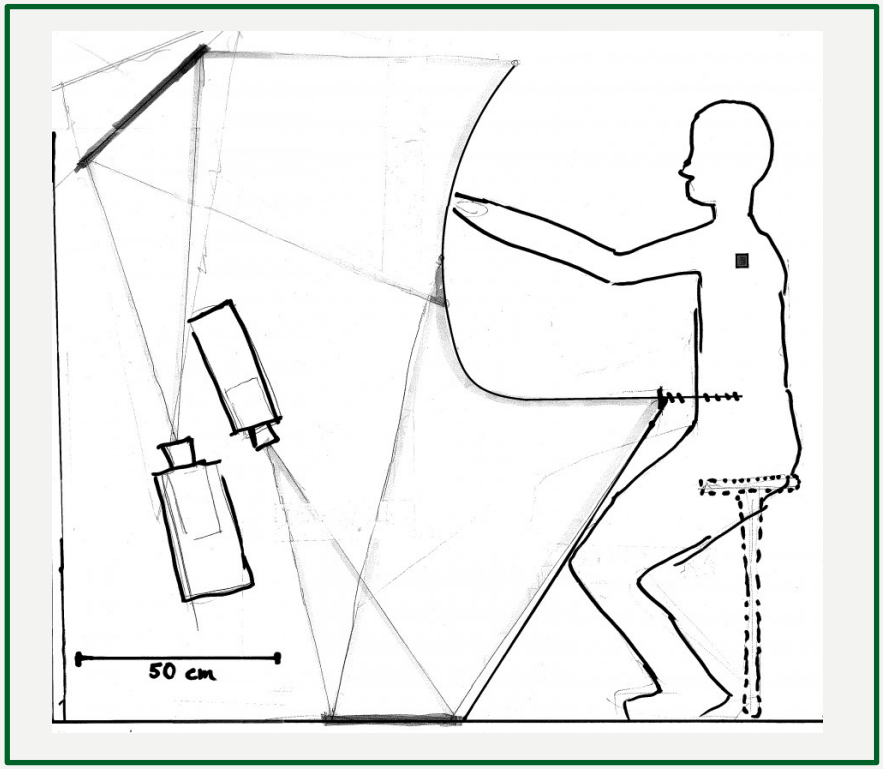
Evaluation of Viewport Size and Curvature



Shupp et al., 2006

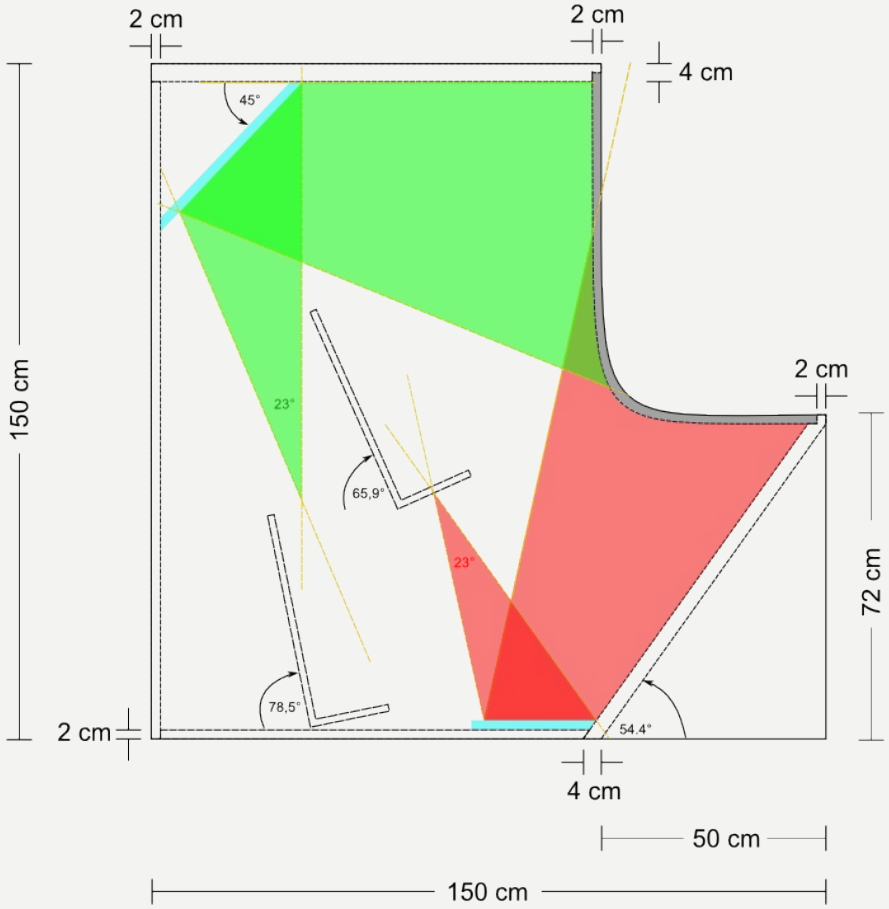
CURVE - First Steps



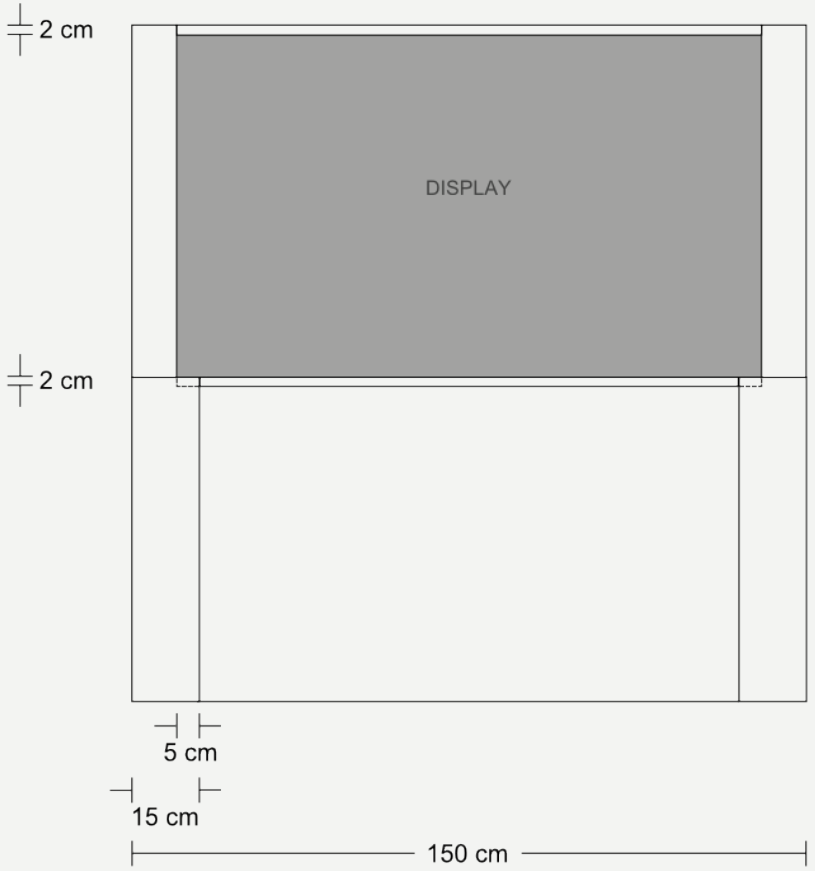


CURVE - First Steps

View LEFT



View FRONT

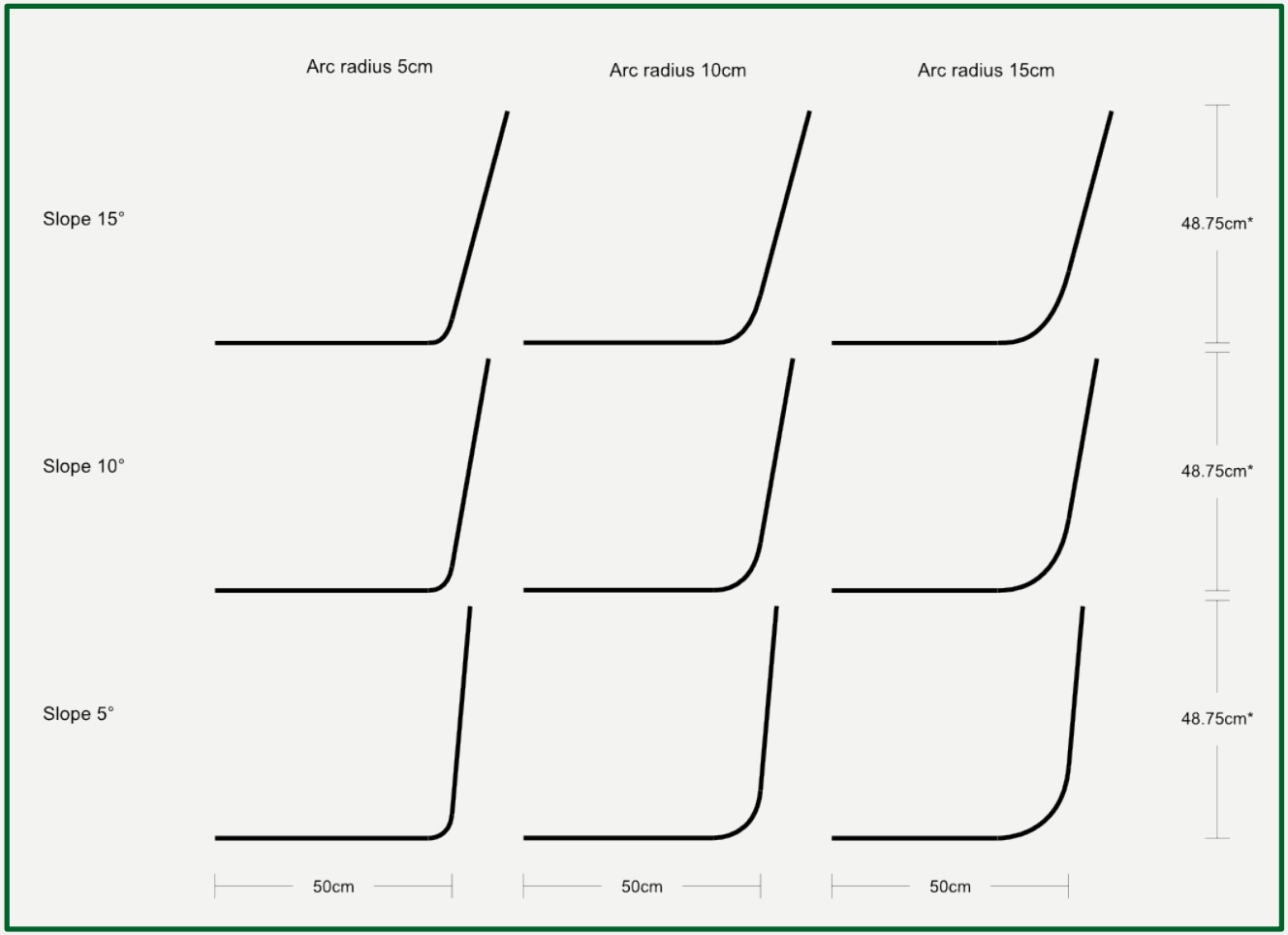


CURVE - First Steps

→ Review:

- too big
- no slope
- general challenge of vertical (touch) display

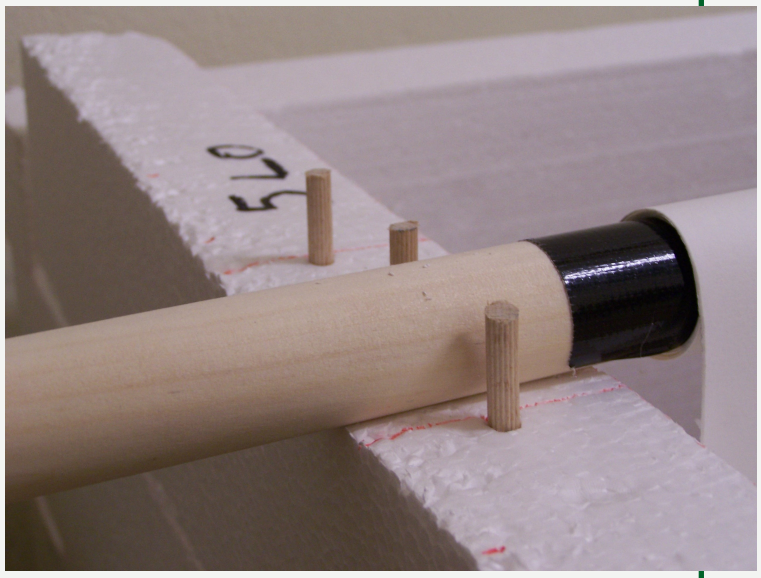
CURVE - Study 1



- height
- slope
- curve

CURVE - Study 1

→ 18 paper prototypes to be evaluated

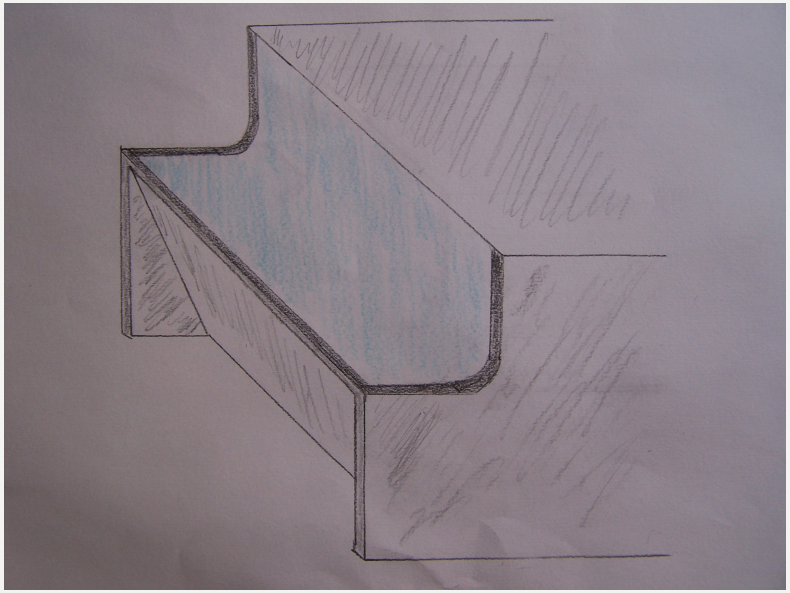


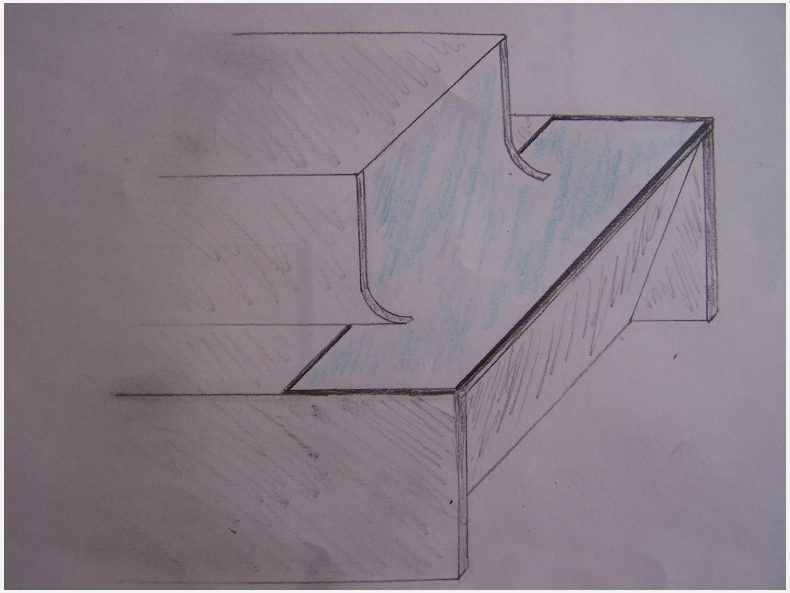
CURVE - Study 1

Experimentation:

- qualitative user study
- nine participants
- participants have to follow different paths on the paper screens
- short questionnaires after each task

enhance horizontal workspace?





VS

CURVE - Hardware

- case made from wood or metal
- screen made from acrylic glass
- two Sony VPL-HW10 projectors (1920 x 1080 px)
- four Point Grey Firefly MV cameras (640 x 480 px at 63 fps)
- optical tracking using FTIR or DI

CURVE - Scope

- how should a curved display look like?
- how to evaluate the shape using paper prototyping?
- what films are best to be used?
- how to build a working prototype? (and build it)
- does it really increase the users' performance? → if so, where?
- software framework *not* part of this thesis!

CURVE - Questions?

Thank you

References

H. Benko, et al. (2008). `Sphere: multi-touch interactions on a spherical display'. In UIST '08: Proceedings of the 21st annual ACM symposium on User interface software and technology, pp. 77-86, New York, NY, USA. ACM.

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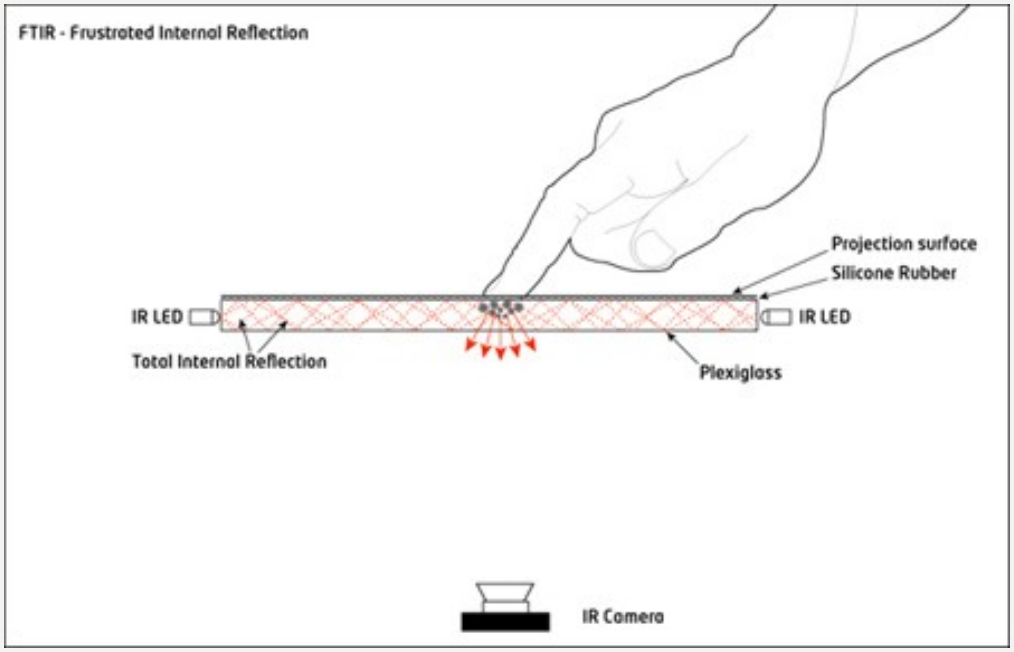
B. A. Po, et al. (2004). `Mouse and touchscreen selection in the upper and lower visual fields'. In CHI '04: Proceedings of the SIGCHI conference on Human factors in computing systems, pp. 359-366, New York, NY, USA. ACM.

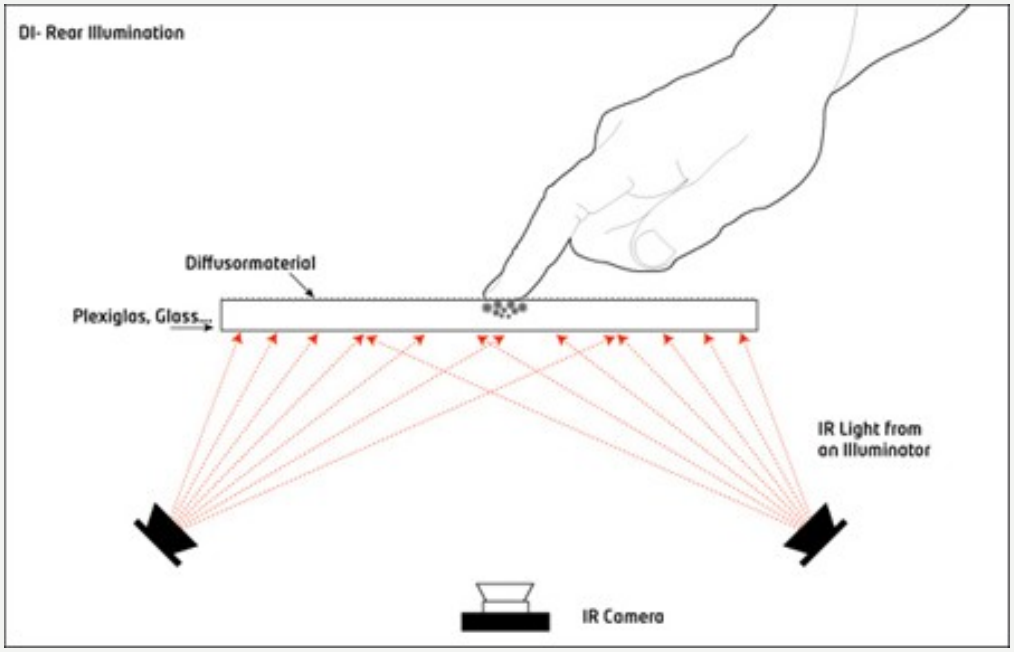
L. Shupp, et al. (2006). `Evaluation of viewport size and curvature of large, high-resolution displays'. In GI '06: Proceedings of Graphics Interface 2006, pp. 123-130, Toronto, Ont., Canada, Canada. Canadian Information Processing Society.

Frustrated Total Internal Reflection (FTIR)



nuigroup.com

Diffused Illumination (DI)



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