

Mensch-Maschine-Interaktion 2

Interactive Environments

Prof. Dr. Andreas Butz, Dr. Julie Wagner



MMI2 exam

context and
task

- February 20th, 2014 (11:15 - 12:45)

challenges

- register in UniWorX until February 13th

input
technologies

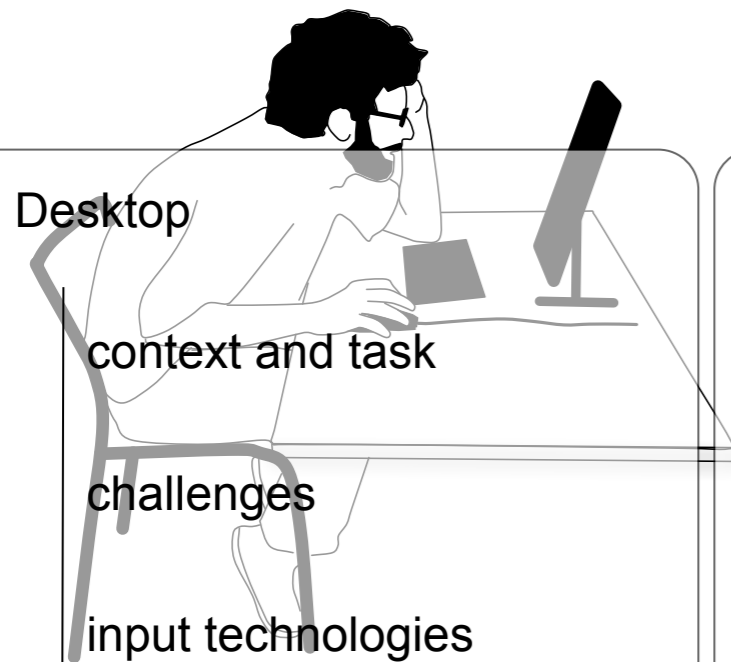
challenges in
interaction
design

output
technologies

Mensch-Maschine Interaktion 2

Mobile Technologies

Desktop Environments



Desktop

context and task

challenges

input technologies

challenges in interaction design

output technologies

Mobile

context and task

challenges

input technologies

challenges in interaction design

output technologies

Interactive Environments

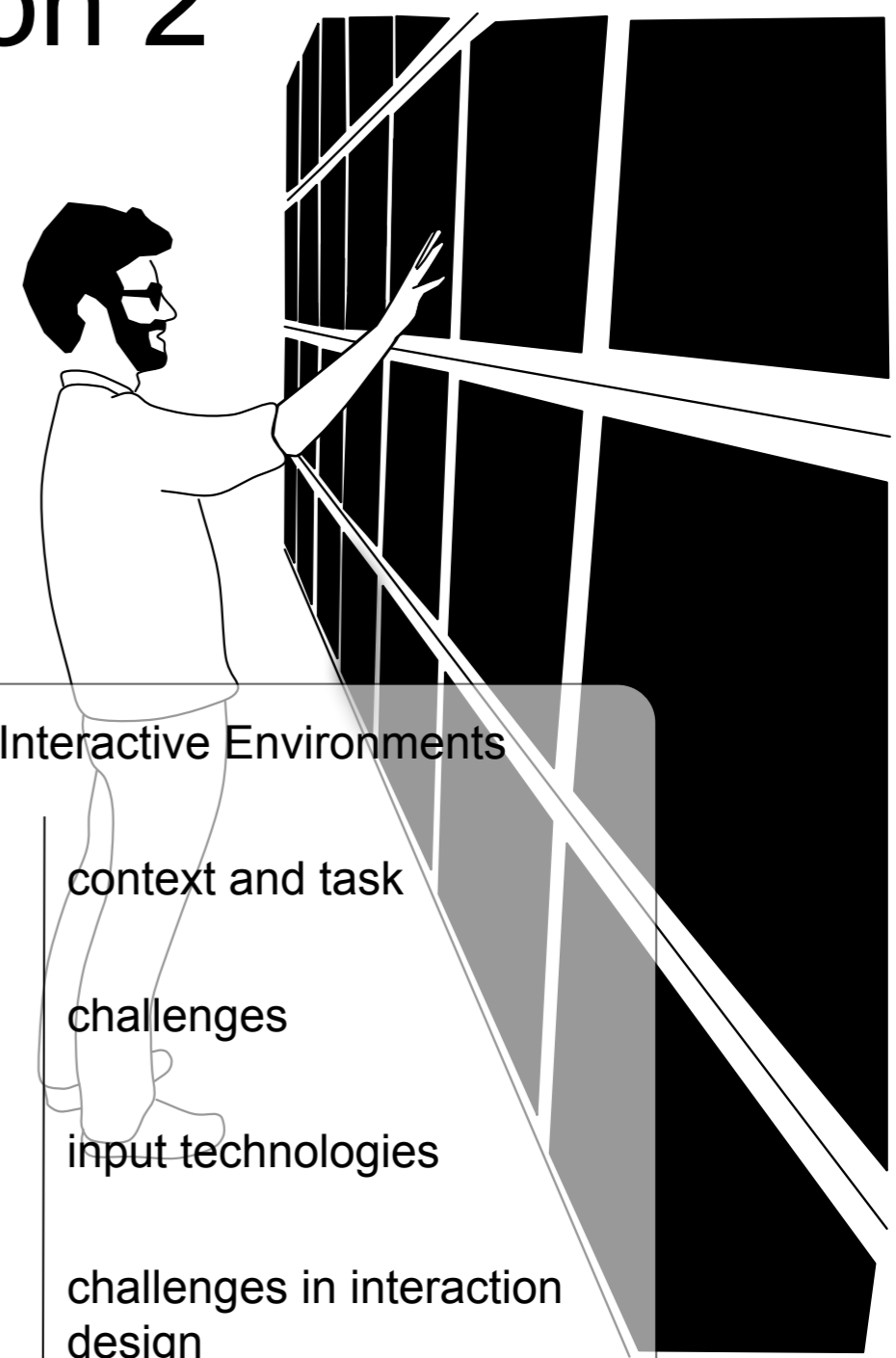
context and task

challenges

input technologies

challenges in interaction design

output technologies



Interactive Environments

context and task

challenges

input technologies

challenges in interaction
design

output technologies



Changing Social Environments using Technology

**context and
task**

challenges

input
technologies

challenges in
interaction
design

output
technologies

- **community work**
- **citizen activism**
- **entertainment**

Community work in rural India

context and task

challenges

input technologies

challenges in interaction design

output technologies

- goal: support health workers employed in villages to persuade pregnant women to utilize health services
- problem:
 - resistance to change in the village
 - health workers have limited education and training for their task
- suggestion:
 - deploy short videos on mobile phones for motivation and persuasion
 - health workers record their own videos
- result: creation and use of videos help
 - engage village women in dialogue
 - health worker were more motivated and learning
 - motivate key community influencers to participate in promoting the health workers



Literature: Ramachandran et al.: *Mobile-izing Health Workers in Rural India*. CHI 2010

Citizen Activism

context and
task

- Goal: understand what burglars look for when deciding to burglarize a home.

challenges

- Findings:

input
technologies

- existing technologies such as security systems, alarms, and cameras do not dissuade burglars

challenges in
interaction
design

- “noisy neighbors” was named the strongest deterrent.

output
technologies

Literature: Sheena Lewis Errete: *Protecting the Home: Exploring the Roles of Technology and Citizen Activism from a Burglar's Perspective*. CHI 2013

Citizen Activism

context and task

- Burglar's process:

challenges

- choose a quiet suburban neighborhood

input technologies

- choose target: dress up as electricians, handymen, construction workers... etc. (1 burglar uses google earth)

challenges in interaction design

- choose entry point: "I'd just kick in the front door", no concern about witnesses.

output technologies

- High risk deterrents:

- noisy neighbors: neighbors who talk to each other, ask how the burglar questions because they have not seen him before.

- "I prefer when neighbors don't communicate and don't call the police."

Literature: Sheena Lewis Errete: *Protecting the Home: Exploring the Roles of Technology and Citizen Activism from a Burglar's Perspective*. CHI 2013

Citizen Activism

context and
task

challenges

input
technologies

challenges in
interaction
design

output
technologies

- most effort to stop burglars have focused on the physical area of the domestic space.
- findings suggest that technology should enhance interaction amongst neighbors and encourage citizen activism

Literature: Sheena Lewis Errete: *Protecting the Home: Exploring the Roles of Technology and Citizen Activism from a Burglar's Perspective*. CHI 2013

Citizen Activism

context and
task

challenges

input
technologies

challenges in
interaction
design

output
technologies

- most effort to stop burglars have focused on the physical area of the domestic space.
- findings suggest that technology should enhance interaction amongst neighbors and encourage citizen activism

Sometimes we focus on instrumenting our environment where an alternative solution might be to create a social cohesion and to support citizen engagement instead.

Literature: Sheena Lewis Errete: *Protecting the Home: Exploring the Roles of Technology and Citizen Activism from a Burglar's Perspective*. CHI 2013

Entertainment - hole in space (Galloway, 1980)

context and
task

challenges

input
technologies

challenges in
interaction
design

output
technologies



<http://www.medienkunstnetz.de/assets/img/data/2665/bild.jpg>

Entertainment/Work - Media Spaces

context and
task

challenges

input
technologies

challenges in
interaction
design

output
technologies

- Results show that video links:
 - effective for problem solving
 - enhance cooperation
 - enhance mutual trust and confidence
 - support new forms of communication in the virtual shared office



Literature: Pagani and Mackay. (1993): *Bring media spaces into the real world.*
ECSCW'93

Entertainment- Manhattan Story Mashup

Environment

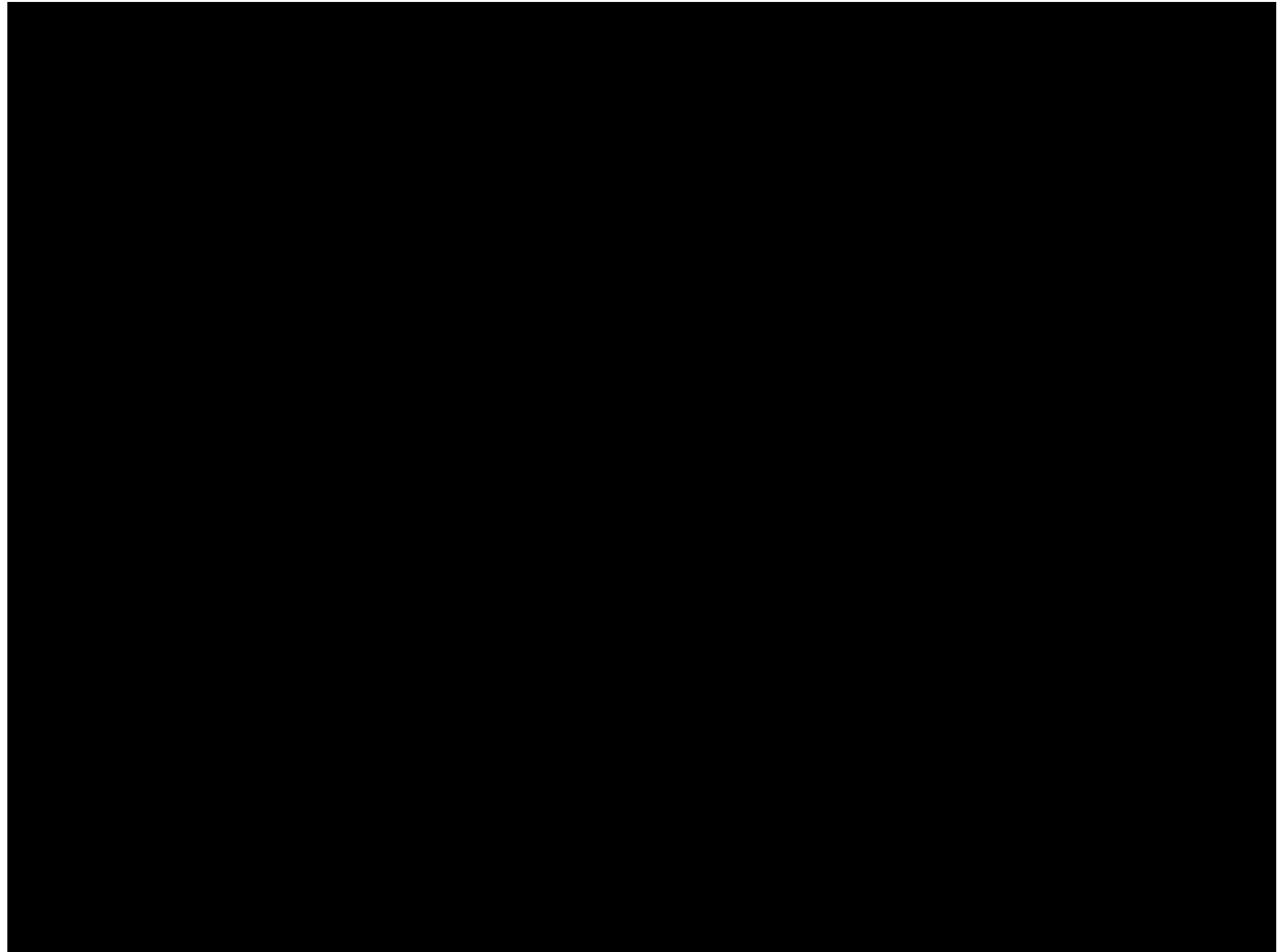
**context and
task**

challenges

input
technologies

challenges in
interaction
design

output
technologies



<http://www.youtube.com/watch?v=3ozUNUTNMT4>

Interactive Environments

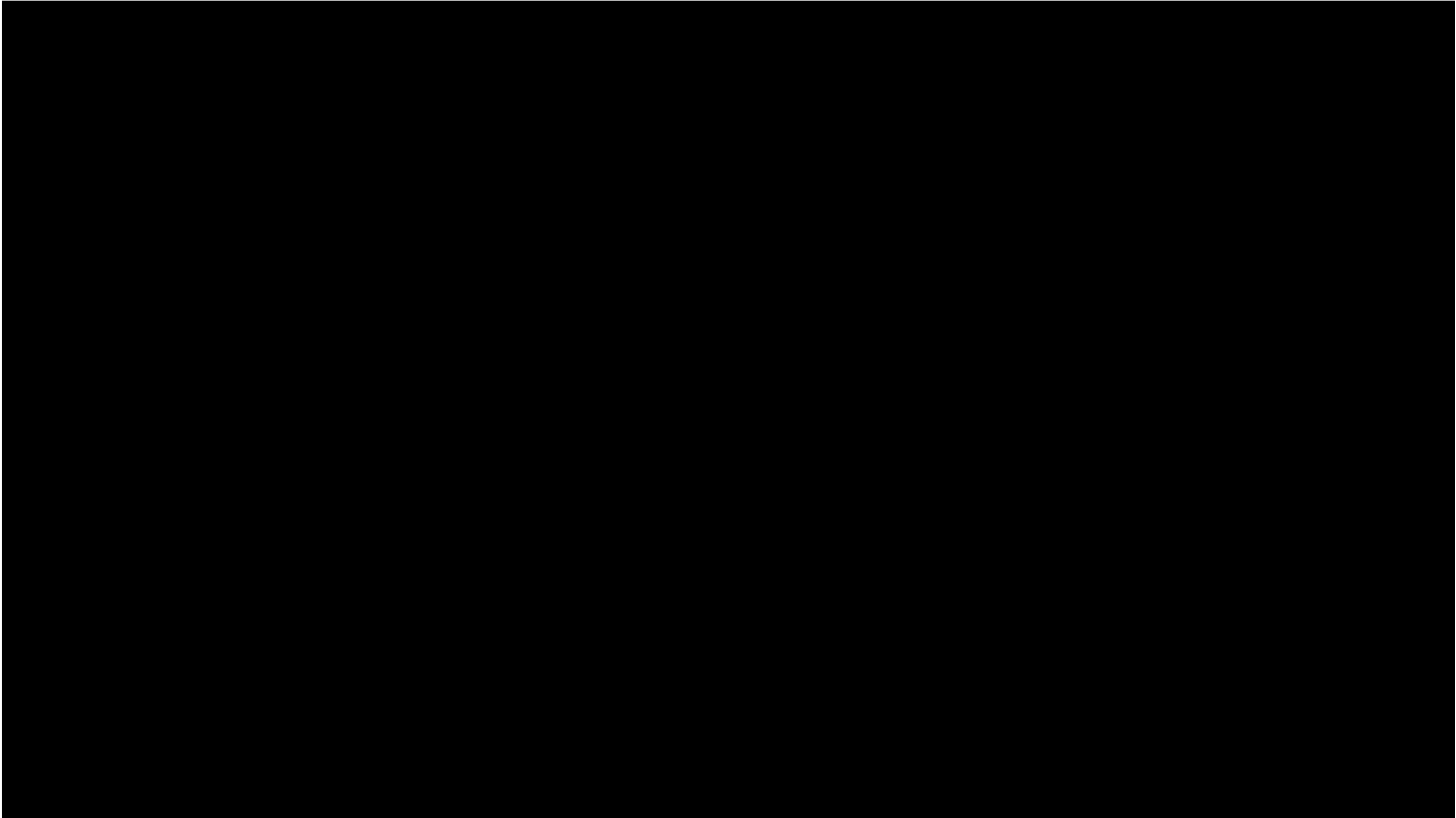


http://joergmueller.info/lookingglass/ipd_files/glass_fig1.png

Interactive environment

- the place we live in
 - smart home and eHealth
- the place we work in
 - future control center
 - large data set visualization
 - support collaborations

eHealth



<http://www.youtube.com/watch?v=IAnmpswTCa0>

Vision: Interactive Work Environments

**context and
task**

challenges

input
technologies

challenges in
interaction
design

output
technologies

Vision: Interactive Work Environments

context and task

- NASA
- ALMA - largest astronomical project

challenges

input technologies

challenges in interaction design

output technologies



[0124-0609-2010-0605_monitorsor_data_at_the_shuttle_flight_control_room_m.jpg](http://www.nasa.gov/images/content/0124060920100605monitorsor_data_at_the_shuttle_flight_control_room_m.jpg)



<http://pages.saclay.inria.fr/emmanuel.pietriga/pictures/alma2012/>

Interactive Walls in Research

context and task

challenges

input technologies

challenges in interaction design

output technologies

- HyperWall at UCSD
- WILD in Paris



<https://www.lri.fr/~mbi/WILD/>

Multisurface Interaction in the WILD room

Video supplement
IEEE Computer, April 2012

© |in|situ| 2012

<https://www.lri.fr/~mbl/WILD/>

context and
task

challenges

input
technologies

challenges in
interaction
design

output
technologies

Feedback systems

- Awareness Tools
- Group Mirrors
 - Use Case: Lectures

Awareness Tools

context and task

challenges

input technologies

challenges in interaction design

output technologies



Alavi et al. (2010): Flag

Group Mirror

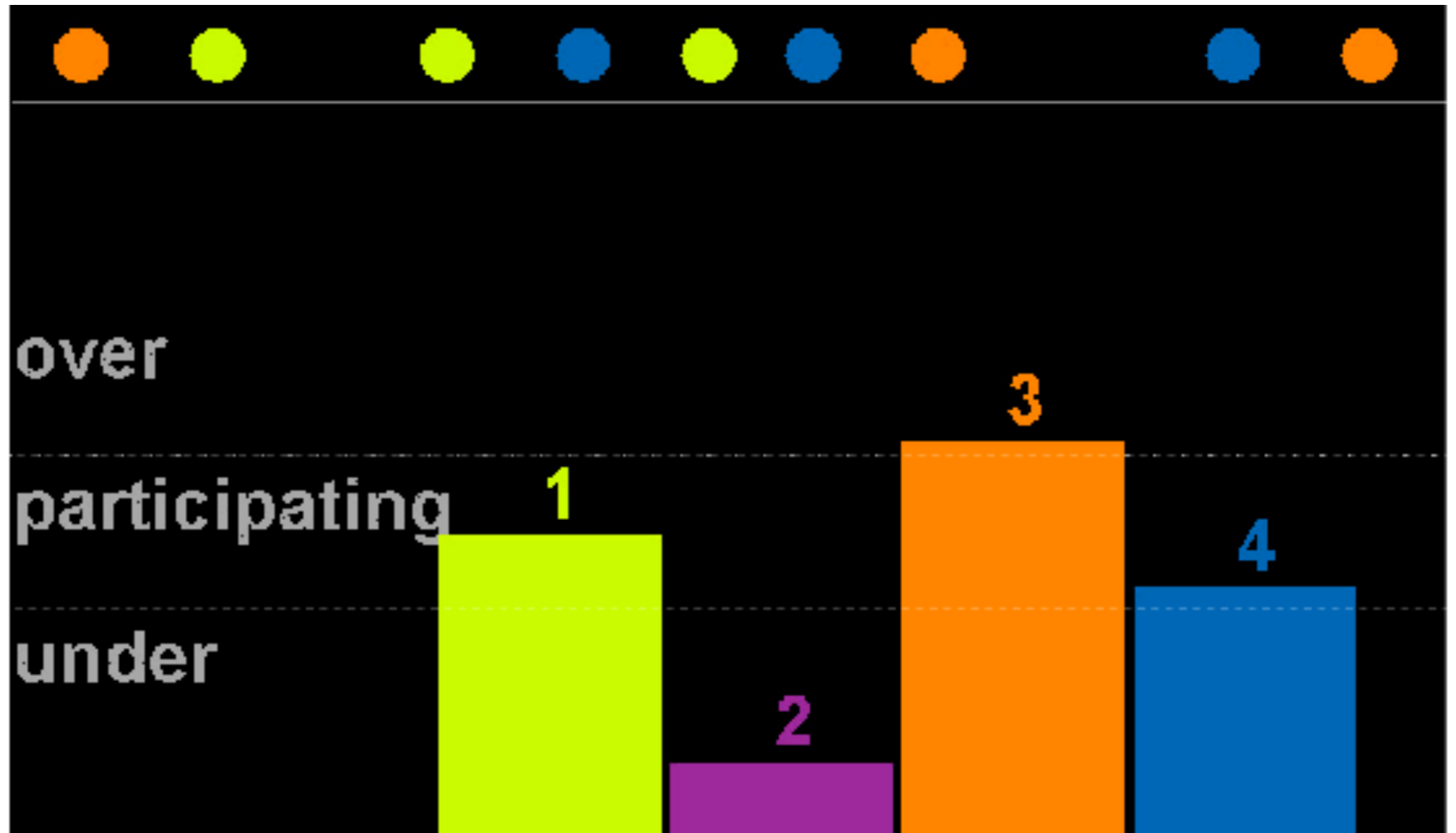
context and task

challenges

input technologies

challenges in interaction design

output technologies



DiMicco et al. (2004): Second Messenger

Group Mirror

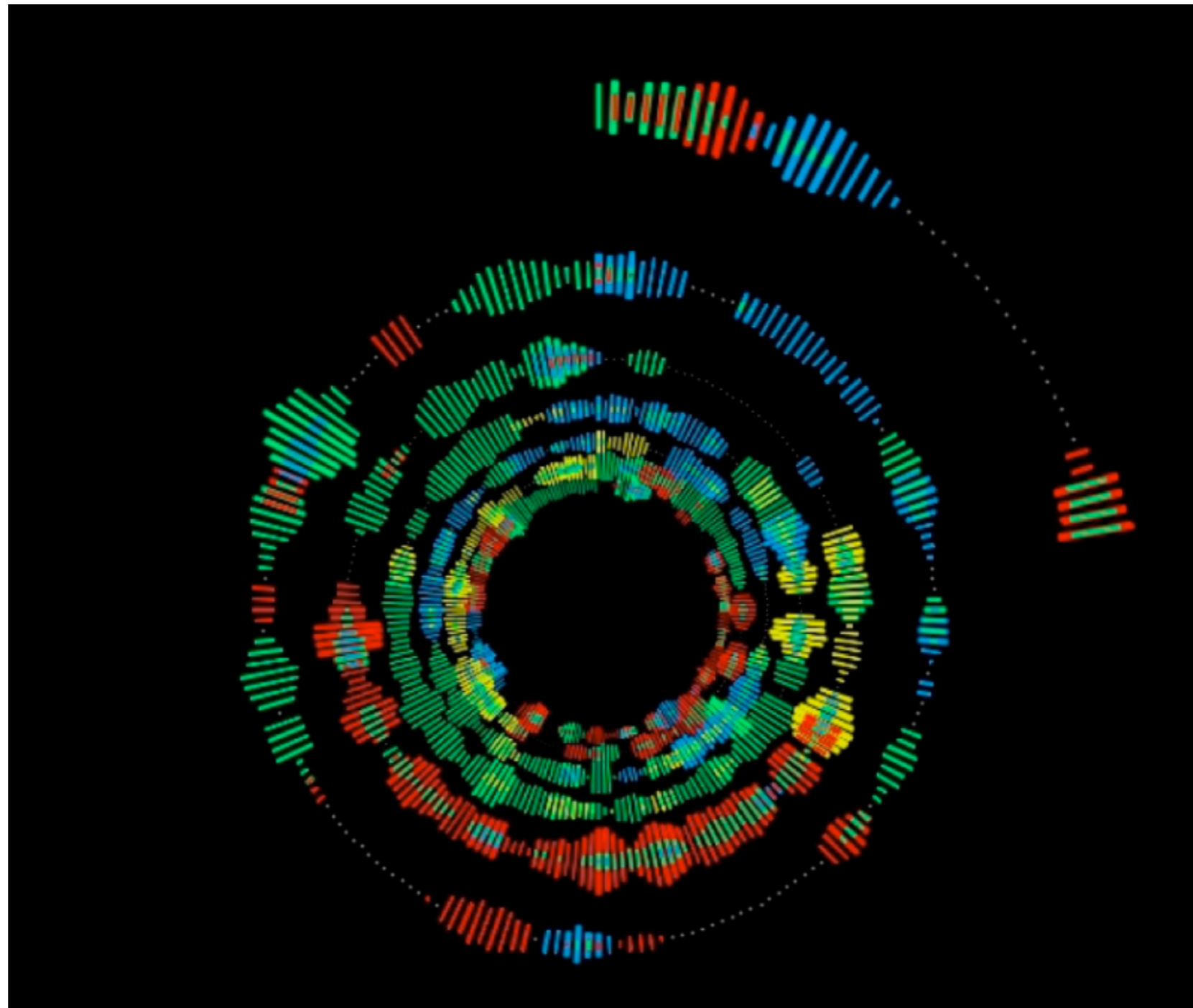
context and task

challenges

input technologies

challenges in interaction design

output technologies



Bergstrom et al. (2007): Conversation Clock

Group Mirrors in Lectures

context and task

challenges

input technologies

challenges in interaction design

output technologies

Microblog

140

Senden Anonym Feedback

Mit Sicherheit!
user02 R 17:30

Klar, hier ist alles anonym
user03

glaube schon
user04 R

Sind die Umfragen anonym?
user01

Ist das Web absichtlich gesperrt?
user03

etwas langsamer bitte
user01 **Geschwindigkeit : zu schnell**

wir sind schon längst weiter,,, ich schalte mal auf langsamer moment
user01 R

Thorndike
user04 R

Das ist wie in Inception
user03

Frag doch per Feedback nach
user02 R

Survey

An Befragung teilnehmen **Teilnehmen**

Umfrage

Latein
Wofür erweist sich (It Haag und Stern, 2000) Latein als hilfreich?

- Für das logische Denken*
- Für ein genaueres Hinsehen bei Grammatik und Rechtschreibfehlern*
- Für die allgemeine Intelligenz*
- Lehrer gehen davon aus, dass Lateiner allgemein besser sind*

Richtig (%)

Option	Percentage
1	20%
2	60%
3	0%
4	0%

Pohl et al. (2012): Backstage

Group Mirrors in Lectures

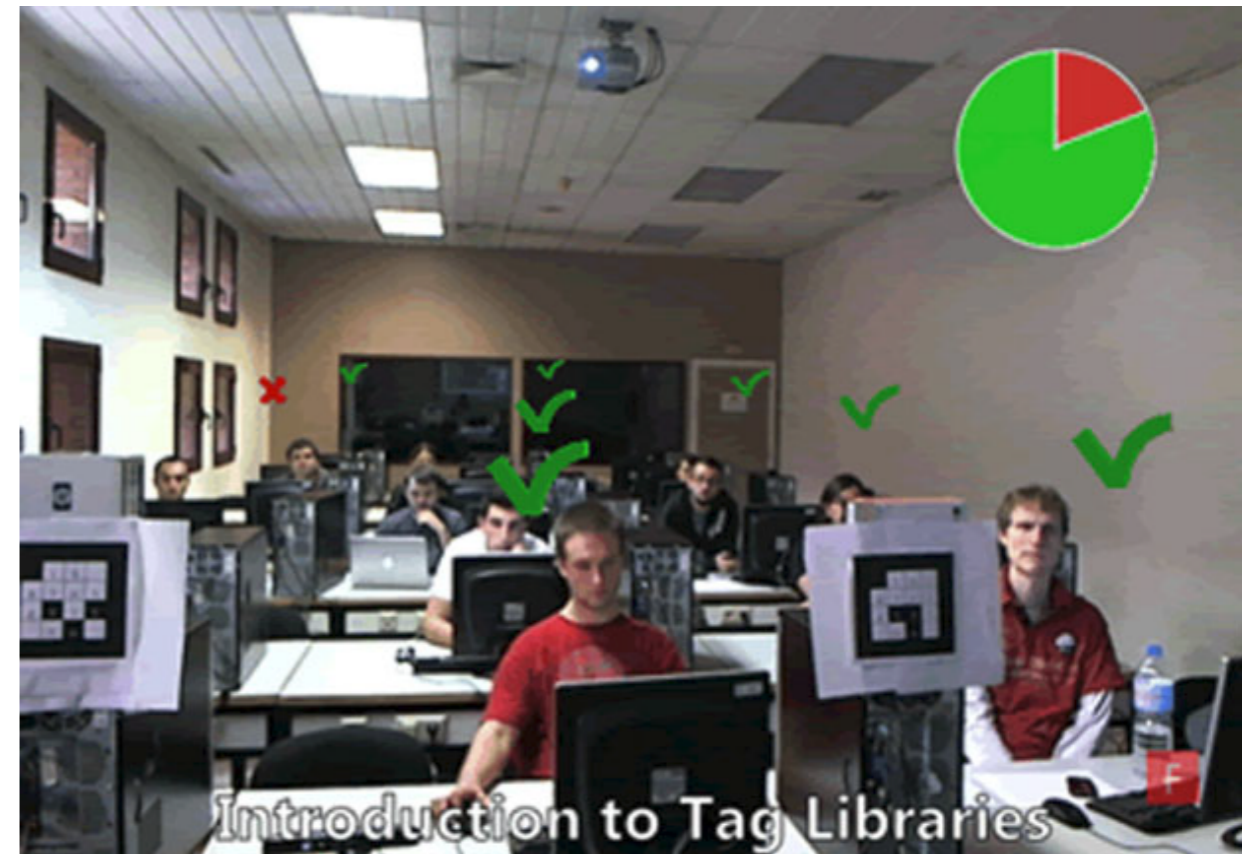
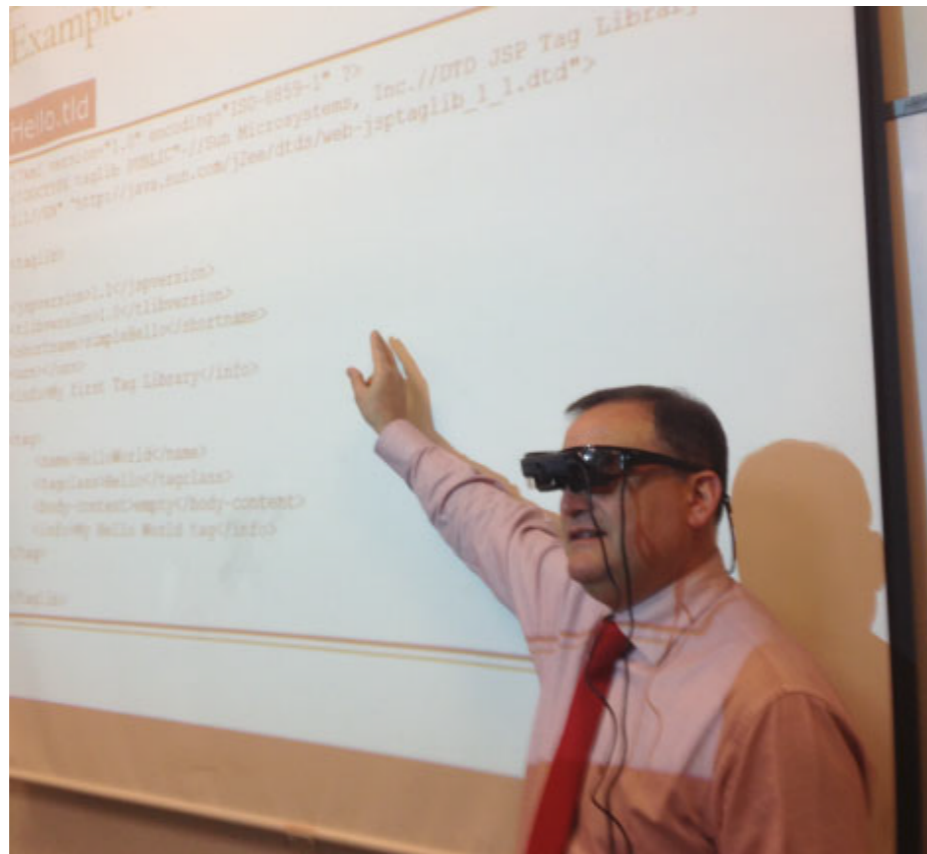
context and task

challenges

input technologies

challenges in interaction design

output technologies



Zarraonandia et al. (2013): Augmented lecture feedback

context and
task

challenges

input
technologies

challenges in
interaction
design

output
technologies

Take-away Message

- there are different ways to improve our environment (e.g. social, physical) we live and work in using technology.
- Interactive environments are composed by interactive devices that are fixed installed in our environment.
- In this chapter, we want to have a look at social, technological and interaction challenges for designing interactive environments.

context and
task

challenges

input
technologies

challenges in
interaction
design

output
technologies

Michel Beaudouin-Lafon: Instrumental Interaction in Multisurface Environments

February 5th, 2014
10:15 - 11:45
here in this room

