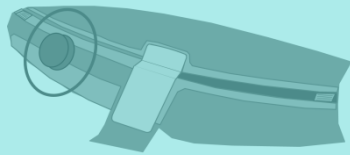


# Towards a Design Space for Non-Flat Interactive Displays



Sonja Rümelin, Gilbert Beyer,  
Fabian Hennecke, Aurélien Tabard, Andreas Butz  
University of Munich (LMU)

# Goal.

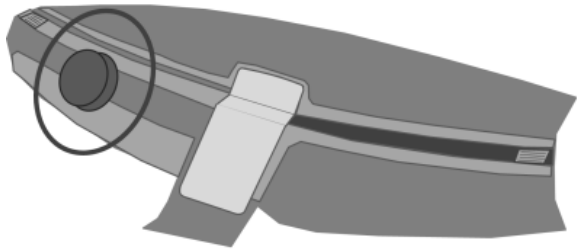
Classification of  
non-flat displays

common ground  
for discussions

refining  
in the workshop



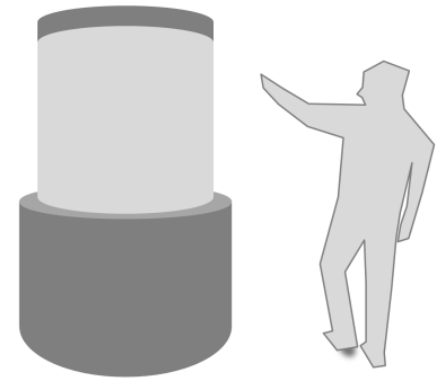
# Examples.



Structured  
Center Stack



Curve



Advertising  
Column

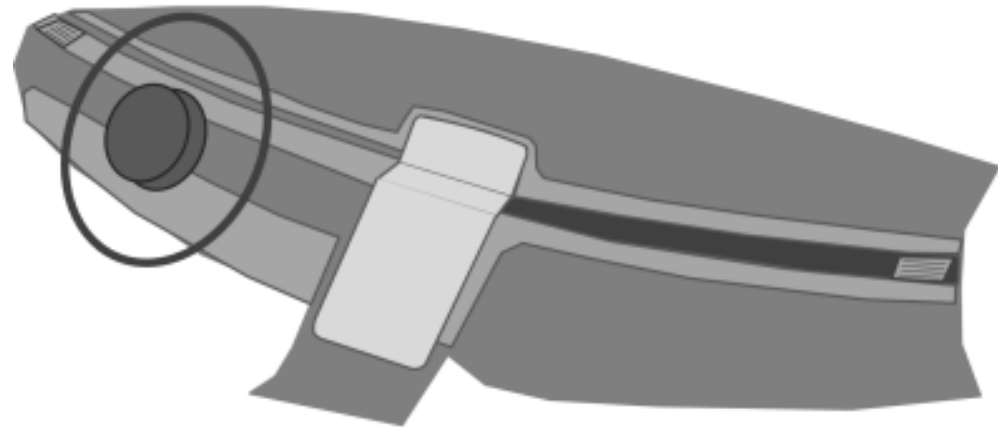


# Structured Center Stack.

Enlarge  
cockpit display  
space

Integrate  
into existing  
surface

Minimize  
visual  
distraction



# Curve.

Integrate vertical  
and horizontal  
workplace

Seamless  
transitions

Enlarge direct  
touch display  
space

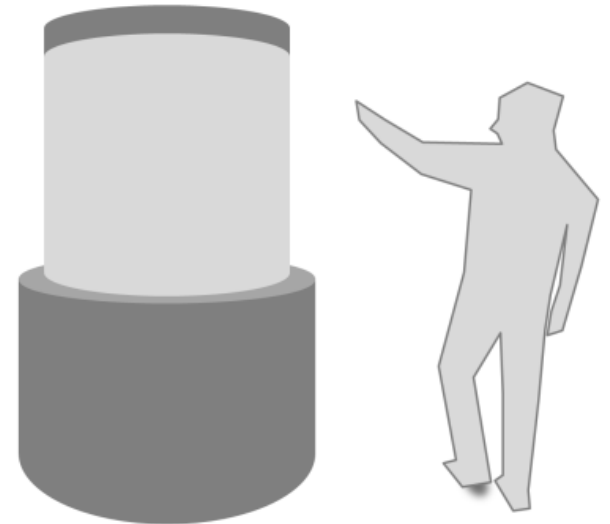


# Advertising Column.

Interactive  
column in  
public space

360°  
interaction  
space

Engaging  
singles or groups  
touchlessly



# Design Space.



# ARCHITECTURE

# INTERACTION

Shape

Size

Curvature

Structure

Style

Texture

sphere	micro	convex	discontinuous	speech	haptic guidance
hemisphere	small	combined		touch	implicit perception
cylinder		mid	seamless	hand gestures	
semi-cylinder	large	concave		body gestures	none
curve					
cube					





# ARCHITECTURE

# INTERACTION

Shape

Size

Curvature

Structure

Style

Texture

sphere	micro	convex		speech	haptic guidance
hemisphere			discontinuous		
cylinder	small	combined		touch	
semi-cylinder	mid			hand gestures	implicit perception
curve		concave	seamless		
cube	large			body gestures	none



# ARCHITECTURE

# INTERACTION

Shape

Size

Curvature

Structure

Style

Texture

sphere

micro

convex

discontinuous

speech

haptic  
guidance

hemisphere

small

combined

touch

cylinder

mid

concave

seamless

hand  
gestures

implicit  
perception

semi-cylinder

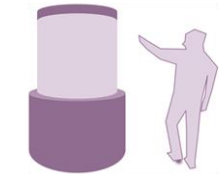
curve

large

body  
gestures

none

cube



# ARCHITECTURE

# INTERACTION

Shape

Size

Curvature

Structure

Style

Texture

sphere

micro

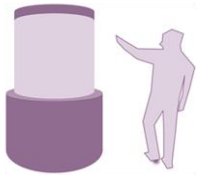
convex

speech

haptic  
guidance

hemisphere

discontinuous



cylinder

small

touch

combined

implicit  
perception

semi-cylinder

mid

hand  
gestures



curve

concave

seamless



cube

large

body  
gestures

none



# ARCHITECTURE

# INTERACTION

Shape

Size

Curvature

Structure

Style

Texture

sphere

micro

convex

discontinuous

speech

haptic  
guidance

hemisphere

small

combined

touch

cylinder

mid

concave

seamless

hand  
gestures

implicit  
perception

semi-cylinder

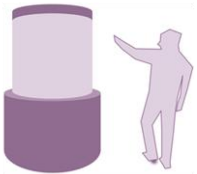
large

curve

body  
gestures

none

cube



# ARCHITECTURE

# INTERACTION

Shape

Size

Curvature

Structure

Style

Texture

sphere

micro

convex

speech

haptic  
guidance

hemisphere

discontinuous

small

touch

cylinder

combined

implicit  
perception

semi-cylinder

mid

hand  
gestures

curve

concave

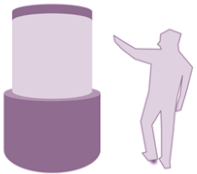
seamless

body  
gestures

cube

large

none



# ARCHITECTURE

# INTERACTION

Shape

Size

Curvature

Structure

Style

Texture

sphere

micro

convex

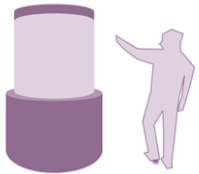
speech

haptic  
guidance

hemisphere

discontinuous

touch



cylinder

small

combined

implicit  
perception

semi-cylinder

mid

hand  
gestures



curve

concave

seamless

body  
gestures

none



cube

large



# ARCHITECTURE

# INTERACTION

Shape

Size

Curvature

Structure

Style

Texture

sphere

micro

speech

haptic  
guidance

hemisphere

discontinuous

touch

cylinder

small

combined

semi-cylinder

mid

hand  
gestures

implicit  
perception

curve

concave

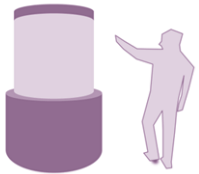
seamless

cube

large

body  
gestures

none



# ARCHITECTURE

# INTERACTION

Shape

Size

Curvature

Structure

Style

Texture

sphere

micro

speech

haptic  
guidance

hemisphere

discontinuous

touch

cylinder

small

combined

semi-cylinder

mid

hand  
gestures

implicit  
perception

curve

concave

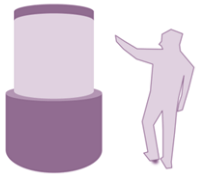
seamless

cube

large

body  
gestures

none





# ARCHITECTURE

# INTERACTION

Shape

Size

Curvature

Structure

Style

Texture

sphere

micro

speech

haptic  
guidance

hemisphere

convex

discontinuous

cylinder

small

touch

combined

semi-cylinder

mid

implicit  
perception

hand  
gestures

curve

concave

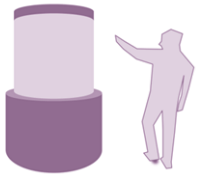
seamless

cube

large

body  
gestures

none



# ARCHITECTURE

# INTERACTION

Shape

Size

Curvature

Structure

Style

Texture

sphere

micro

speech

haptic  
guidance

hemisphere

convex

discontinuous

cylinder

small

combined

touch

semi-cylinder

mid

implicit  
perception

hand  
gestures

curve

concave

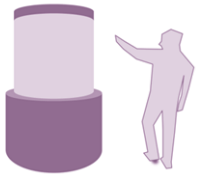
seamless

cube

large

body  
gestures

none



# ARCHITECTURE

# INTERACTION

Shape

Size

Curvature

Structure

Style

Texture

sphere

micro

speech

haptic  
guidance

hemisphere

convex

discontinuous

touch

cylinder

small

combined

semi-cylinder

mid

hand  
gestures

implicit  
perception

curve

concave

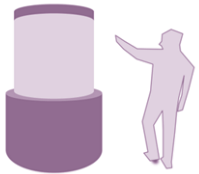
seamless

body  
gestures

cube

large

none



# ARCHITECTURE

# INTERACTION

Shape

Size

Curvature

Structure

Style

Texture

sphere

micro

speech

haptic  
guidance

hemisphere

convex

discontinuous

touch

cylinder

small

combined

semi-cylinder

mid

hand  
gestures

implicit  
perception

curve

concave

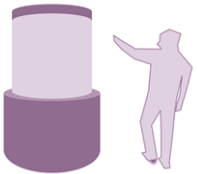
seamless

body  
gestures

cube

large

none



# ARCHITECTURE

# INTERACTION

Shape

Size

Curvature

Structure

Style

Texture

sphere

micro

speech

haptic  
guidance

hemisphere

convex

discontinuous

small

touch

cylinder

combined

semi-cylinder

mid

implicit  
perception

hand  
gestures

curve

concave

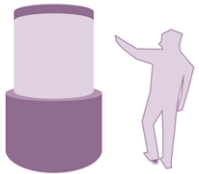
seamless

body  
gestures

cube

large

none



# Deformation?



# ARCHITECTURE

# INTERACTION

???

Deformation

Shape

Size

Curvature

Structure

Style

Texture

sphere	micro	convex			speech		
hemisphere			discontinuous			haptic guidance	
cylinder	small				touch		
semi-cylinder		combined				implicit perception	
curve	mid				hand gestures		
		concave		seamless			
cube	large				body gestures		none



# Beyond non-flat Displays.

Spherical vases  
Lifelikeness in shapes  
Touch-capable 3D displays  
Morphing surface sensors  
Deformable multi-touch  
Human bodily movements  
Changeable softness  
Rollable displays  
Fluid surfaces

