



# Psychology of usability

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# Usability goals

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- International Standards Organization ISO 9241 definition:
- Usability is the effectiveness, efficiency, and satisfaction with which users can achieve tasks in a particular environment of a product. High usability means a system is easy to learn and remember; efficient, visually pleasing and fun to use; and quick to recover from errors.
  - Effectiveness: can users successfully achieve their objectives?
  - efficiency: how much effort and resource is expended in achieving those objectives?
  - satisfaction: was the experience satisfactory?



# Related fields

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- Engineering psychology
- Ergonomics
- Experience design
- Human-centered computing
- Human computer interaction (HCI)
- Industrial Design
- Systems engineering
- Ubiquitous computing
- User-centered design
- User experience design



# Universal usability: design for all

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- Variations in physical abilities, disabilities
- Variations in use environment
- Diverse cognitive abilities
- Diverse perceptual abilities (vision, hearing)
- Personality differences
- Cultural and international diversity
- Special user groups: children and the elderly



# Ease to learn in interface design

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- Familiarity in interface
- Layout: patterns and perception
  - regular shapes
  - proximity
  - continuity
  - recognition
  - grouping
- Logical structure



# Grouping and patterns

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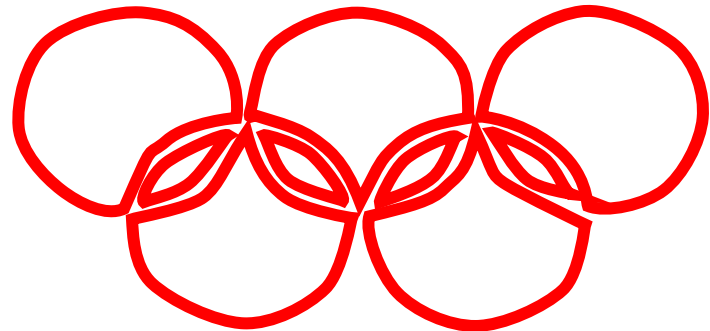
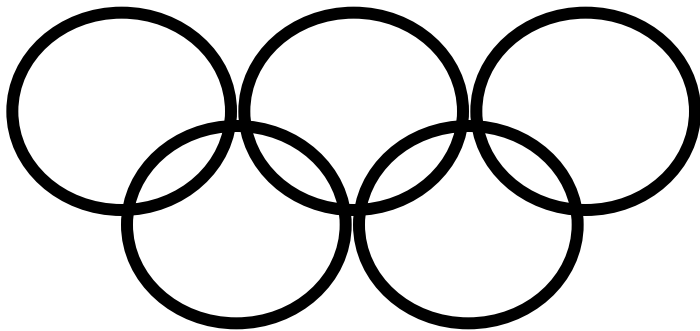
1. Features
  - colors, size, shape
2. Prototypes, schemas
3. Internal consistency & similarity in a group
4. Logical, conform with reality
5. Sparse (not too many categories)



# Regular shapes

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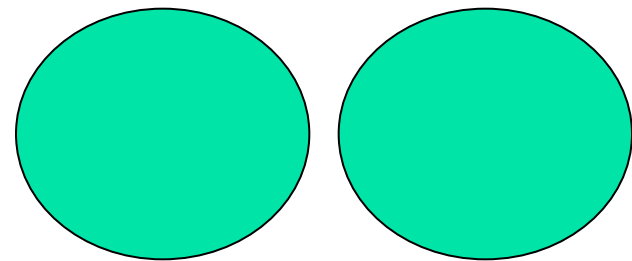
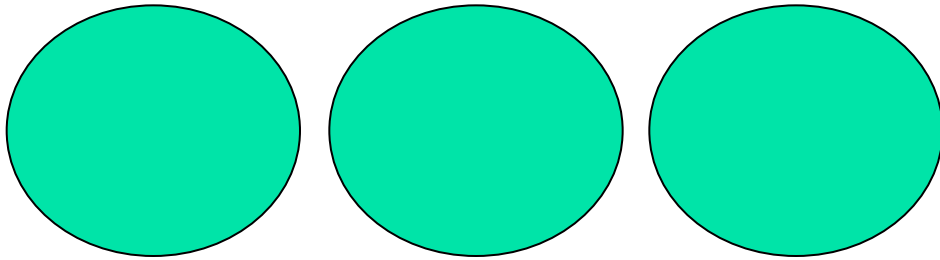
- vision / perceptions simplifies and groups things together
  - 5 circles (not 9 parts)





# Proximity

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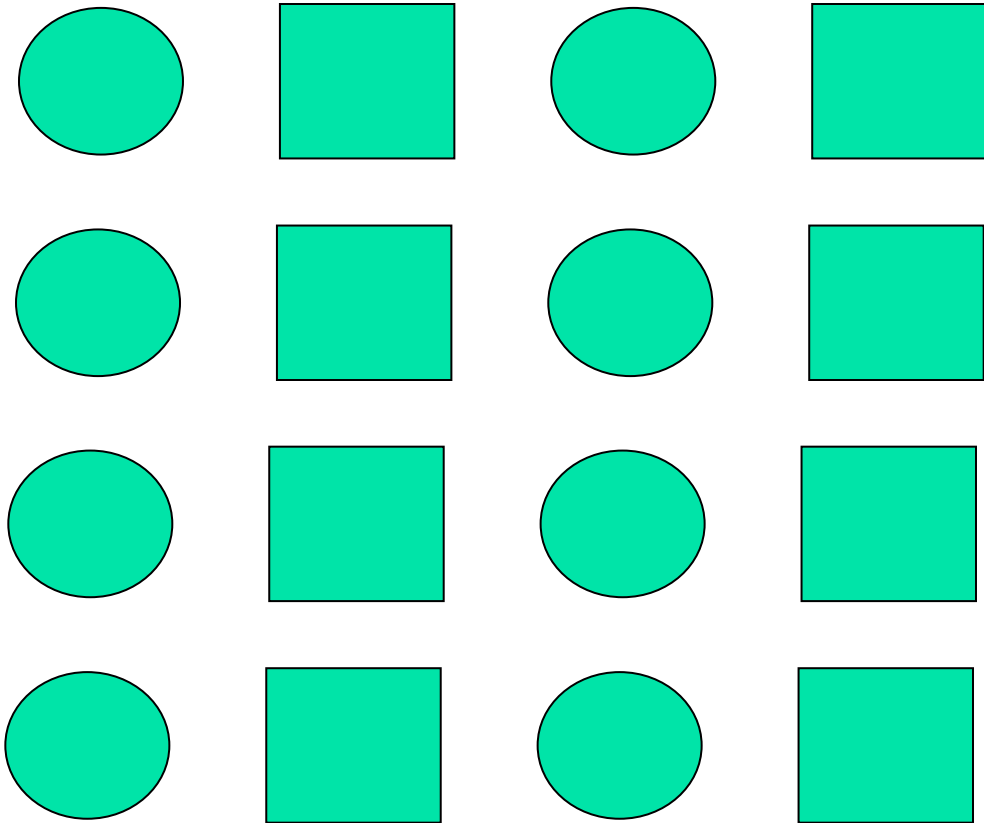






# Similarity

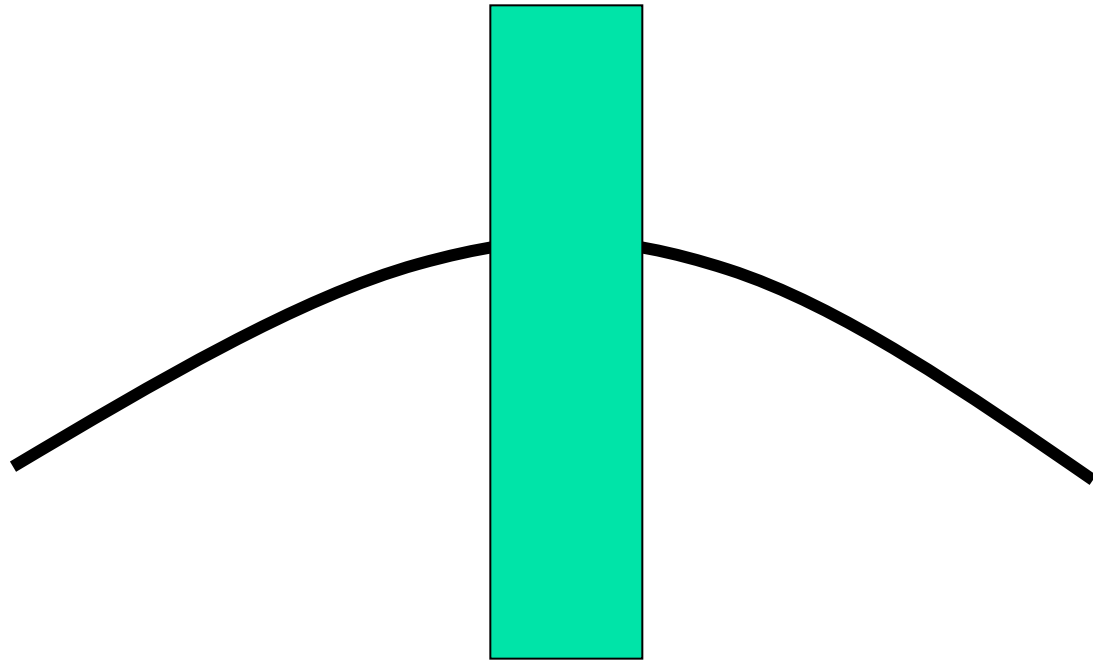
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# Continuity

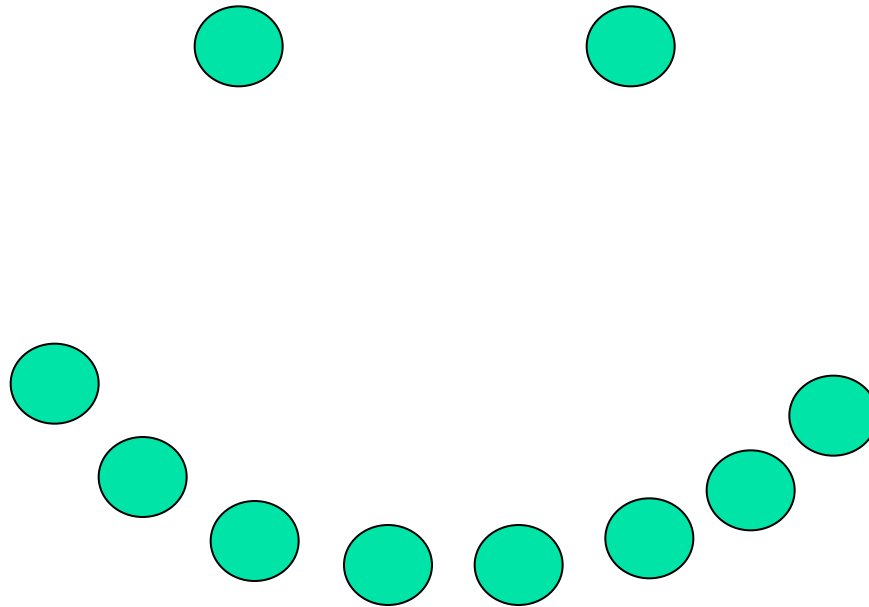
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# Familiarity

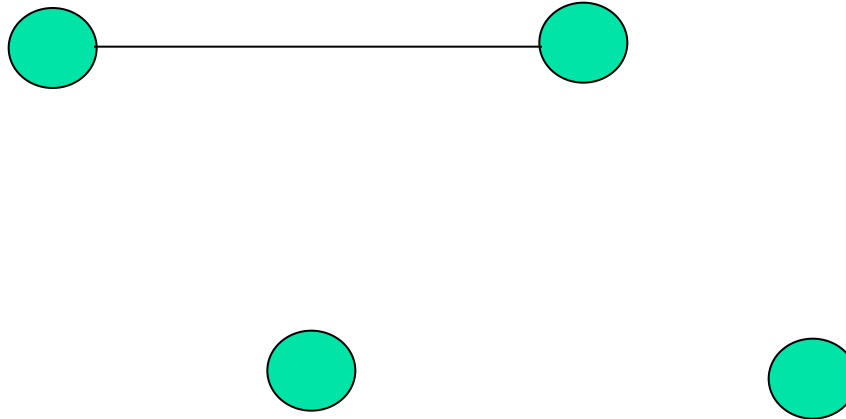
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# Connectedness

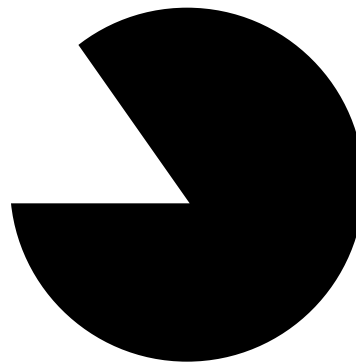
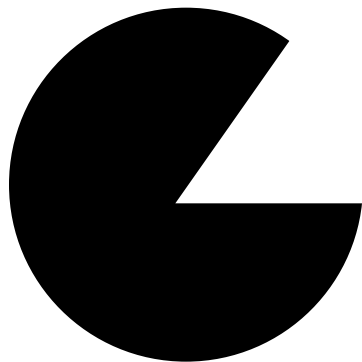
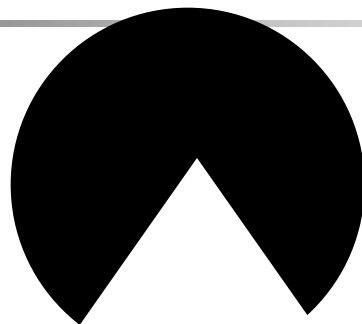
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# Object - background

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# Template and grid

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- *Design on a grid: easy to align*
- Same template: uniform outlook
- Planning in black & white
  - Colors later

# Grid for forms

Code:

12345

OK

Name:

A Company

Address:

Old countryroad

02650

Esbo



# Creating forms

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- Left-aligned
- Vertical alignment of texts
- Items that repeat in the same position
- Chunking & grouping
- Regular size input fields





# Grouping of items in interface design

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Kotval, X. P., and Goldberg, J. H. (1998), Eye Movements and Interface Components Grouping: An Evaluation Method

The same icons were grouped in four different ways:

1. functional grouping (editing, drawing, text properties)
2. majority grouping
3. random grouping
4. no grouping condition

(1) was most efficient, (4) second;

“wrong” grouping turned out to be confusing



## Human perception: sees patterns

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- People can discriminate color and lighting
- Object and background
- Borders and continuity
- Shapes and interpretations
- People remember even large chunks
- Football teams: colored shirts; chess pieces



# Design principles for web sites

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- Clear structure
  - Not organizational hierarchy or administrative units
  - Location, where to go?
- Consistent outlook and layout
  - Location of buttons
  - Colors, background images
  - Theme?
- Functionalities give feedback



# Assisting users

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- Right amount of information at right time
- Summary on top level
  - Details on lower levels
- Groups and outlines
- Familiarity