



## Intermediate Design and UI Widgets

Department of Computer Science | Software Requirements and Design

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30. September 2019



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### Overview of this lecture

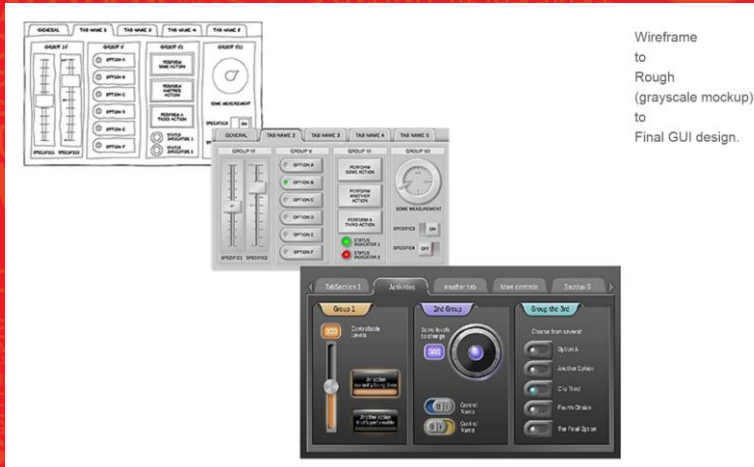
- Intermediate design
- UI widgets

- Reading material:
  - Chapter 7.2



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## Intermediate Design



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## Intermediate design - definition

Sjónræn (visual) og fagurfræðilegur (aesthetic) útlit á viðmótinu sýnt á tölvuskjá eða öðrum búnaði. Litir, lögun, stærðir og stíll (style) eru notuð til að styðja og bæta virkni og notkun á viðmótinu.

Hér er yfirleitt hægt að ýta á takka og færast á milli skjámynda/vefsíða í viðmótinu

Visual and aesthetic look of the interface shown on computer screen or other equipment. Color, size, shape and style are used to support and extend the function and use of the interface.

Here you can most often use buttons or links to move from one screen/web page to another in the interface



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## Grouping - Gestalt

- How to group related elements



- Proximity



- Closure



- Similarity



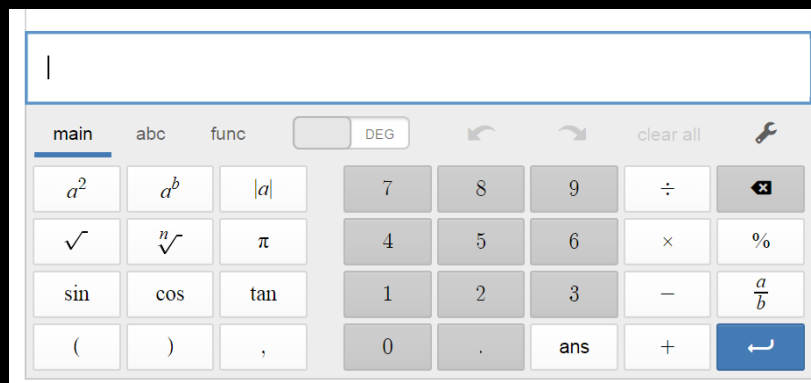
Destination	Flight	Carrier	Depart	Arrive	Business	Standard
Aberdeen	4171	BA	0845	0945	£195	£102
Dublin	804	FR	1025	1135	£149	£100
Toulouse	8064	AF	1110	1410	£207	£182
Frankfurt	4018	LH	1115	1355	£222	£182
Amsterdam	2045	UN	1130	1335	£222	£182
Copenhagen	8363	SA	1145	1445	£315	£187
Paris-CDG	1803	BA	1150	1400	£248	£185
Exeter	146	J	1200	1305	£195	£102
Glasgow	1903	BA	1210	1310	£195	£102
Munich	4306	LH	1225	1325	£301	£179
Genoa	8413	BA	1235	1430	£222	£182
Aberdeen	4172	BA	1445	1545	£195	£102

Dest: Aberdeen (BA4171) Dep: 0845; Arr: 0945  
(R/S: £195; £102)  
Dest: Dublin (FR804) Dep: 1025; Arr: 1135  
(R/S: £149; £100)  
Dest: Toulouse (AF8064) Dep: 1110; Arr: 1410  
(R/S: £207; £182)  
Dest: Frankfurt (LH4018) Dep: 1115; Arr: 1355  
(R/S: £222; £182)  
Dest: Amsterdam (UN2045) Dep: 1130; Arr: 1335  
(R/S: £222; £182)  
Dest: Copenhagen (SA8363) Dep: 1145; Arr: 1445  
(R/S: £315; £187)  
Dest: Paris-CDG (BA1803) Dep: 1150; Arr: 1400  
(R/S: £248; £185)  
Dest: Exeter (J146) Dep: 1200; Arr: 1305  
(R/S: £195; £102)  
Dest: Glasgow (BA1903) Dep: 1210; Arr: 1310  
(R/S: £195; £102)  
Dest: Munich (LH4306) Dep: 1225; Arr: 1325  
(R/S: £301; £179)  
Dest: Genoa (BA8413) Dep: 1235; Arr: 1430  
(R/S: £222; £182)  
Dest: Aberdeen (BA4172) Dep: 1245; Arr: 1345  
(R/S: £195; £102)



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## One Example



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## F-pattern

- The focus is on the upper left corner,
  - Where is the upper left corner?
  - If not directed on another spot for example with an image
- Eye-tracking research



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## Intermediate Design is in the middle!



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## Graphic design

- Overall graphic design would also start coming into play at the intermediate design level
- **but is not a part of this course** (only how visual elements might affect the UI)



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## We look at the following

### 1. Colors

- How do the colors fit together? How can we use colors to give better information? How can we be sure that the colors we use have the right association?

### 2. Images

- What types of images are available? How can we pick the right one?

### 3. Movement

- When is it good to use movement, blinking, ....

### 4. Sound

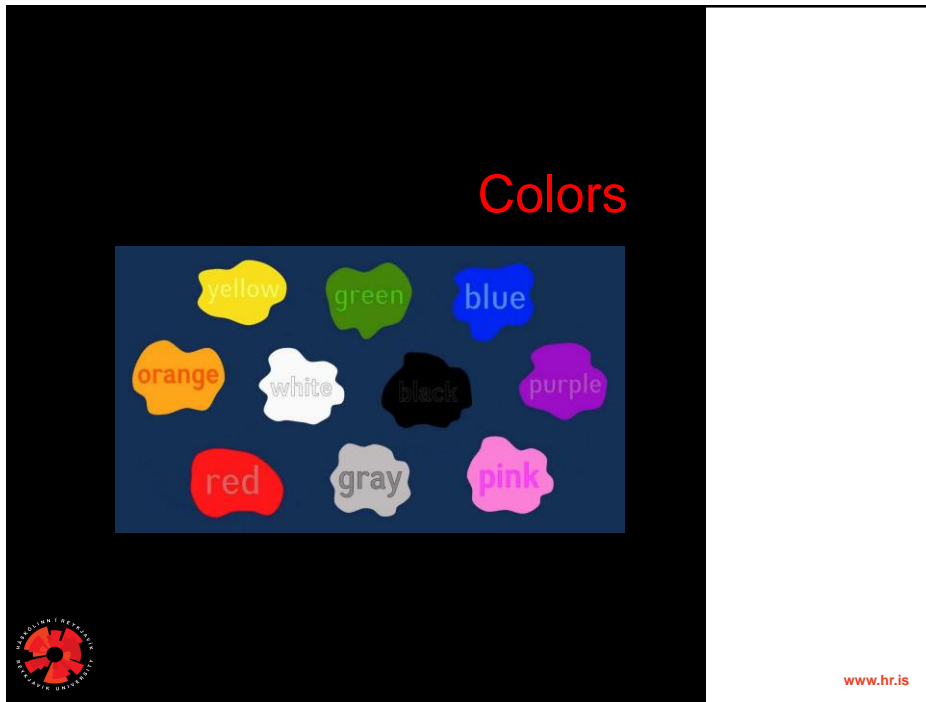
- When is it usable to use sound? What types of sound are there?

### 5. Text

- How can we make sure that the text is readable? What font should be choose? How long should the lines be?



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## We Can Use Color to

- Place the focus of attention to something
  - Red and yellow are particularly good
- To show the state of something
  - If the status is critical, we change the color
- To make the information clear
  - Colors are good to mark related items
  - We can color the text, a box around or the background
- To make the interface more attractive
  - Usability is more important though



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## Connotations of colors

- Culturally sensitive
- Color blindness
  - Affects 7-10%, predominantly male
- Beware of contrast
  - Saturation better than different colors
- Never rely solely on color for important information, use shape too

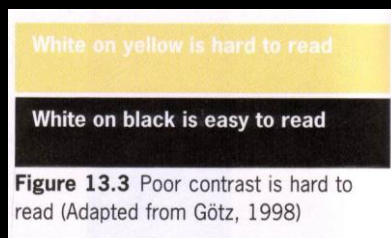
**Table 13.3** Connotations of different colors (partly from Götz, 1998)

Color	Positive connotations	Negative connotations
Red	Active, invigorating, exciting, powerful, strong, energetic, attractive, dominating	Aggressive, alarming
Blue	Controlled, abstinent, mysterious, intellectual, harmonious, deep, dreamy, faithful, rational, sensible	Aggressive, introverted, cold, melancholic
Blue-green or turquoise	Refreshing	Aloof, self-willed, unemotional, cold, sterile
Green	Refreshing, harmonious, optimistic, close to nature, calm, gentle, conciliatory, strong-willed	Jealous, envious, inexperienced
Yellow	Colorful, extroverted, cheerful, youthful, lively, full of fun, light	Superficial, exaggerated, vain
Orange	Exciting, direct, joyful, alive, communicative, warm	Intimate, vigorous, possessive, cheap
Purple	Serious, royal, luxurious	Sad



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## Color combinations



- Background and text color are tricky
- Has to be enough contrast
  - But not too much (dyslexia)
  - White background is not good on a screen
- Important to test!
  - <http://colorvisiontesting.com/online%20test.htm>
  - <http://www.xrite.com/online-color-test-challenge>
  - [www.accesskeys.org/tools/color-contrast.html](http://www.accesskeys.org/tools/color-contrast.html)



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## The brightness of colors

**Table 13.4** Intrinsic Brightness (adapted from Götz, 1998)

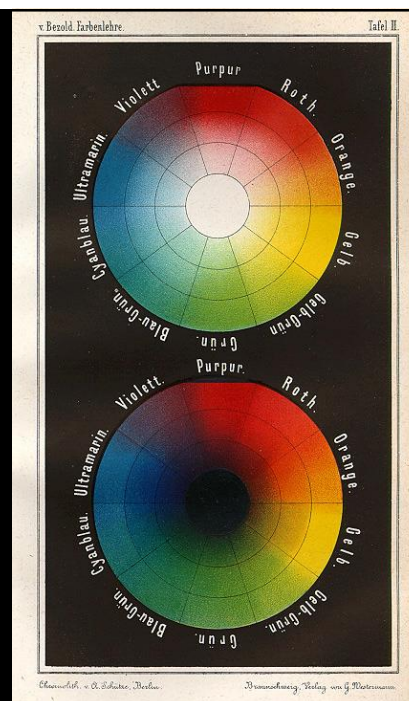
Achromatic colors	Colors	Intrinsic brightness
White		Very high
	Yellow, yellow-green	High
	Orange	High to medium
Medium gray	Red    Green	Medium
	Violet	Medium to low
	Blue	Low
Black		None



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## Colors continued

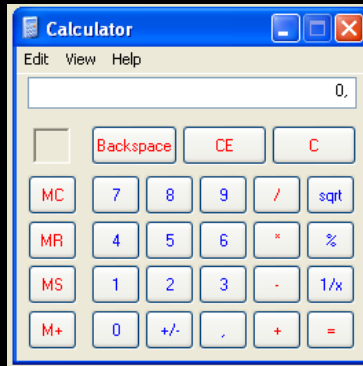
- Big space with basic colors are visually disturbing
- Color combinations
  - How do we pick many colors?
  - Palettes <https://colors.co/>
- The number of colors
  - Too many are disturbing
  - Not more than 6
    - plus black and white
- The opponent colors
  - Red – green
  - Yellow – purple
  - Orange – blue





## How well are the colors used?

- Look at
  - The number of colors?
  - How are they used?
  - Color combinations?
  - Colors for emphasis?
  - Grouping?



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## Images



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## Images

We can use images for

1. Getting attention, make the interface interesting,...
2. To show information
3. To help if the language is hard
4. To assist the interaction
  - Metaphors, icons

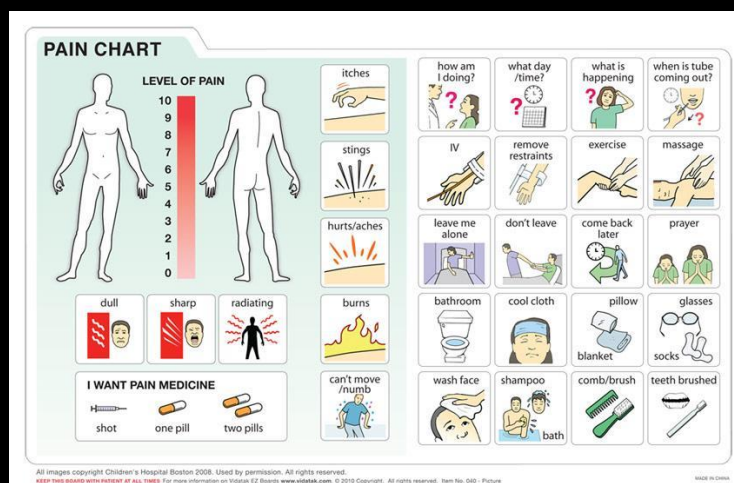
We have some types of images:

- Pictures: Photos, drawings, cartoons
- Graphs: Shows some numbers
- Icons: Communicate meaning



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## Pictures to make interaction easy

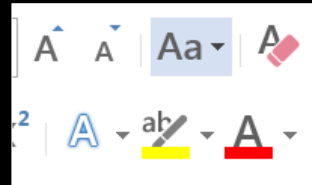


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## Iconography

- Focus on
  - Easy to understand the icons
  - Easy to differentiate the icons
- Icons for verbs are hard
- Good if 80% know it
  - Often 50-60%
  - Best, if icons and text together
- Consistent with common use
  - No jokes
  - No overly specific cultural references
  - Save icon....
- Design for lowest resolution
  - For the device you think the users will use

Examples from Word 2013



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## Movement and sound



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## Movement

- Is most useful to get the attention
  - Does not need much – blinking cursor
- Can be very tiring if too much
  - Distracts
- Can also be used
  - To give feedback
    - Files fly from one folder to another
    - Mac login failed:
      - [https://www.youtube.com/watch?v=W\\_WRCMGs1f0](https://www.youtube.com/watch?v=W_WRCMGs1f0)



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## Sound

- Good if you need people's attention
  - People have to concentrate on something else than the system
  - Some functions that the user does not want to watch
  - If people do not have 100% eye sight
- Group sound in the following classes:
  - Sound effects
  - Music
  - Spoken language
- Sound used to
  - Show that you have picked an interface widget
  - Confirm that something has happened or is about to happen – email send/receive | calendar | messenger



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## Communicating with sound

- Use sound with caution
  - A first time user has to understand it
- Various purpose:
  - Confirming typing- smooth sound
  - Finish a task- more dominant sound
  - Minor error- a bit disturbing sound
  - Major error – the database collapsed – Fire alarm!
- We have to take the context into account
  - A store vs. an office
  - The user select if he wants the sound or not



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## Text

### Advantages:

- Text files are small
  - Much smaller than when other media is included
- Can be manipulated very easily
  - It is possible to search for text
- Text is less ambiguous
  - Than images and sound

### We emphasize that the text is

- Legible
- Readable
- Comprehensible
- See: <https://www.nngroup.com/articles/legibility-readability-comprehension/>



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## Legibility

- The lowest-level consideration in content usability
- It's whether people are able to
  - See
  - Distinguish
  - Recognize
  - the characters and words in your text
- Legibility is thus mainly determined by
  - visual design, specifically typography

Speak the  
Users  
Language



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## Legibility - Guidelines

- Use a reasonably **large default font size**
  - Allow users to change the font size – tiny text dooms
  - Old users need bigger text, but even young users like it
- High contrast between characters and background
  - Preferably, employ a plain background instead of a busy or textured one, since the latter interferes with the recognition of the fine details in the letterforms.
- Use a **clean typeface**
  - With today's high-resolution monitors, serif type is fine, but strangely shaped fonts (e.g., emulating handwriting or gothic style) have reduced legibility
    - This is Helvetica, a **sans-serif font**
    - Times New Roman is a commonly used **serif font**



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## Readability - Guidelines

- Use plainspoken words
  - The shorter the better
  - Avoid fancy words & made-up terms
- Use short sentences
  - Avoid convoluted and compound sentences
- Mainly write in the active voice
- Aim at an 8<sup>th</sup>-grade reading level
  - Especially if targeting a broad consumer audience
- Readability can be tested in Word

Readability Statistics	
<b>Counts</b>	
Words	441
Characters	2082
Paragraphs	23
Sentences	19
<b>Averages</b>	
Sentences per Paragraph	2.3
Words per Sentence	17.7
Characters per Word	4.4
<b>Readability</b>	
Passive Sentences	15%
Flesch Reading Ease	64.3
Flesch-Kincaid Grade Level	8.6
OK	



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## Comprehension - Guidelines

- Use user-centric language
  - terms familiar to your audience facilitate comprehension.
- Use an **inverted-pyramid writing style**
  - start with the conclusion or an overview of the main point. People relate better to subsidiary points when they already know the basics.
- Minimize cognitive load
  - build on existing mental models and reducing the need for users to remember things from one part of text to another.
- **Use Pictures** or conceptual diagrams
  - can sometimes explain things better than reams of words
- Be brief



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## Tone of voice

- How do you want to talk to your users?
  - Casual, friendly
    - Hey there, <username>
  - Formal
    - Logged in <username>
  - Goofy
    - Yabbadabbadoo, <username>
  - Sincere
    - Thank you for being here, <username>
  - Impersonal
    - Logged in
  - ...



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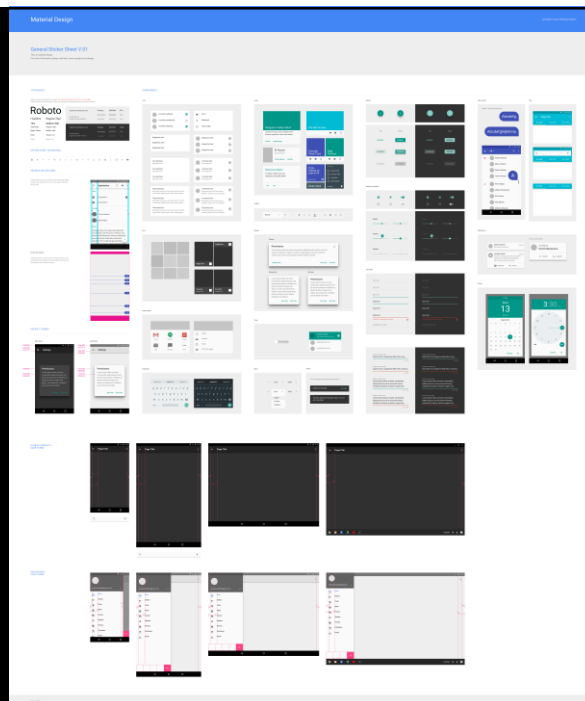


## Interface Widgets



## Interface Widgets

Building blocks of interfaces



## Text Input Fields

- We have to think about:
  - Labels
  - Hints
  - Mandatory
  - Editability
  - Autofill

**ONLINE APPLICATION FORM**

Position applying for:  
**Shift Leader**

\*First Name:  MI:  Address:

\*Last Name:

\*Email:  City:  State:

Phone:  Zip:

Mobile:  Country:



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## Support User Input

- Format the insert fields
  - E.g. not able to insert letter in an input field for numbers
- Show examples of what to type
  - E.g. dates (mm-dd-yyyy, mm-dd-yy)
- Allow many types like for the personal number
  - E.g. 111066-2999, 1110662999, 111066 2999
- Suggest the end of the inserted text
  - E.g. Combo-box
- Pick from a drop down list
- Text to explain codes
  - 101 - Reykjavík

UTLÄMNINGSTÄLLE

Datum (åååå-mm-dd)

**Skipass 1**

Förnamn

Efternamn

Födelsedatum

Första giltighetsdatum 2008-03-16

**BESTÄLL NYTT SKIPASSKORT**

Om du behöver ett nytt Skipass bokar du det här.

Första giltighetsdatum

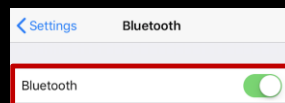
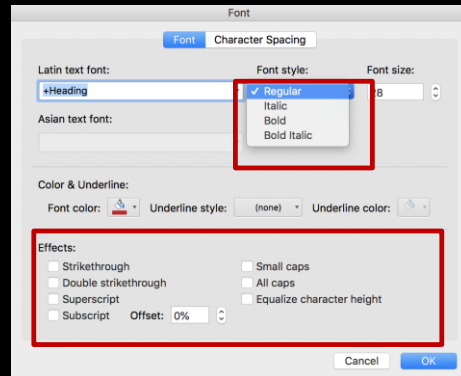
**NÄSTA**



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## Selection

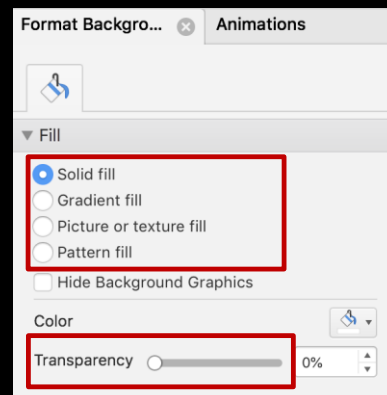
- **Dropdown**
  - One of many
  - Options hidden
  - Usually a large selection (list of countries)
- **Check box**
  - One or more of many
  - Options visible
  - Usually a small selection (<10 items)
- **Toggle**
  - On/off
  - Sometimes a single check box



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## Selection

- **Radio button**
  - Not a button!
  - One of many
  - Options visible
  - Usually a small selection (<10)
- **Sliders**
  - Because sometimes selections are granular



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## The trick is knowing what widget to use where

1. Í hvaða tilgangi heimsóttir þú vefinn núna?

- ☐ Almennar upplýsingar um EHÍ
- ☐ Skoða framboð námskeiða
- ☐ Skoða námskeið á næstunni
- ☒ Skoða ákveðið/n námskeið
- ☐ Skoða námsbraut/ír
- ☐ Skoða náms- og starfsráðgjöf

Annað, hvað?

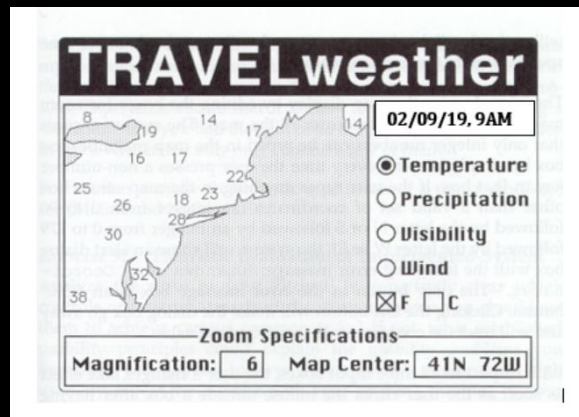
0 af 12 svaraði



Gat bara valið eitt – er þetta rétt hönnun?

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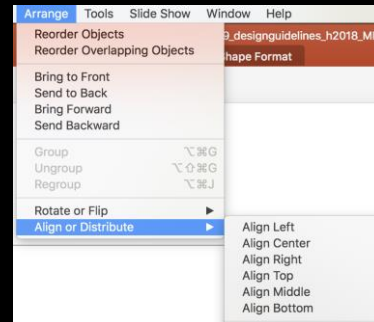
## Travel Weather



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## Menus

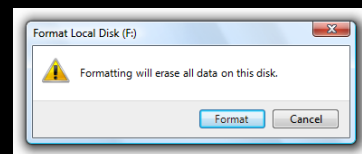
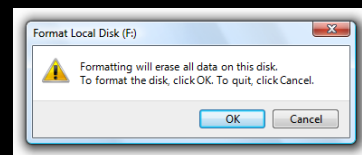
- If the item in the menu is not available now
  - Better to have it grayed than not visible
- Important to show the shortcuts too
  - Ctrl-C, Ctrl-V – Often first letter in the command
    - Check consistency
- Some rules
  - means there is another menu
  - ... Means that a window will open



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## Buttons

- Call to action
- OK/Cancel was the paradigm for a long time
- Descriptive calls to action



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## Solving it with documentation

- If people don't know which button to push
  - documenting it in the help will not solve the issue
  - Don't write: "To search click on the search button"
  - It should be obvious
- The problem is in the interface and needs to be solved there

The fastest, easiest way to plan travel

**Search Flights**

One-way Roundtrip Multi-city Pricegraph

From: BOS - Boston Logan Inter To: DEN - Denver International

Depart: Dec 13 Return: Dec 15

Compare: ☐ United Airlines ☐ American Airlines ☐ AirFastTickets

Priceline: 1 person Coach

**Search**

A red arrow points to the 'Search' button.



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## Overview of this lecture

- Intermediate design
- UI widgets
- Design principles revisited

- Reading material:
  - Chapter 7.2



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