

PV182  
Human Computer Interaction

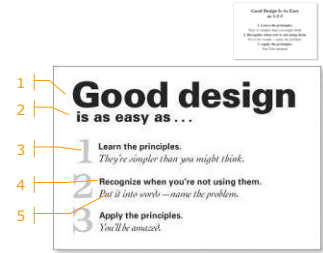
Lecture 9  
Graphical Design CRAP Grid

Fotis Liarokapis  
[liarokap@fi.muni.cz](mailto:liarokap@fi.muni.cz)

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CRAP

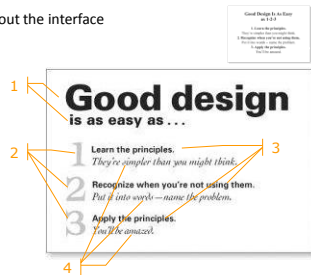
- **Contrast**
  - make different things different
  - brings out dominant elements
  - mutes lesser elements
  - creates dynamism
- **Repetition**
- **Alignment**
- **Proximity**



Robert Williams/Non-Designers Design Book, Prentice Hall Press

CRAP

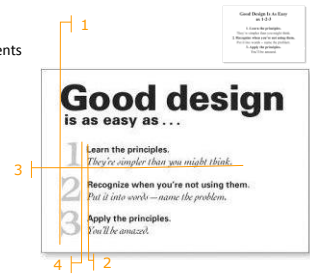
- **Contrast**
- **Repetition**
  - repeat design throughout the interface
  - consistency
  - creates unity
- **Alignment**
- **Proximity**



Robert Williams/Non-Designers Design Book, Prentice Hall Press

CRAP

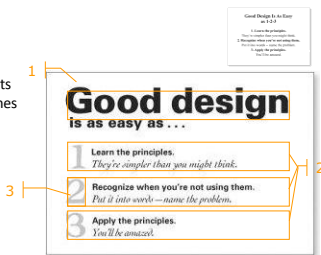
- **Contrast**
- **Repetition**
- **Alignment**
  - visually connects elements
  - creates a visual flow
- **Proximity**



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CRAP

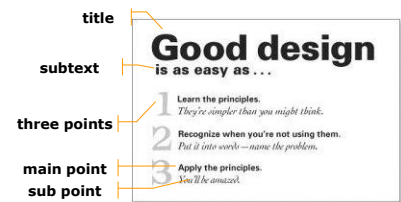
- **Contrast**
- **Repetition**
- **Alignment**
- **Proximity**
  - groups related elements
  - separates unrelated ones



Robert Williams/Non-Designers Design Book, Prentice Hall Press

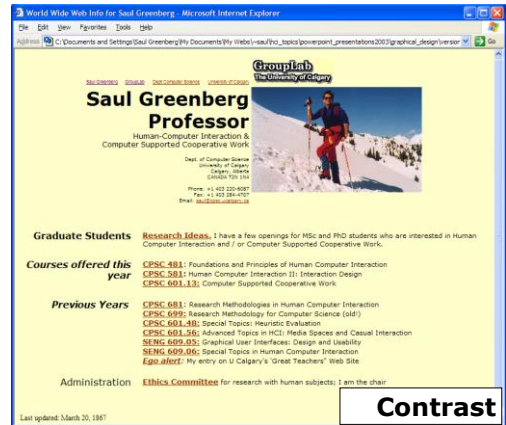
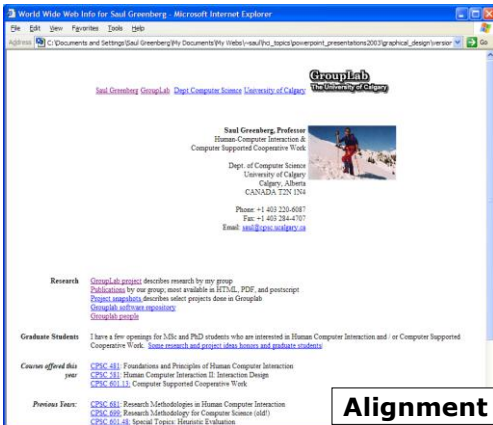
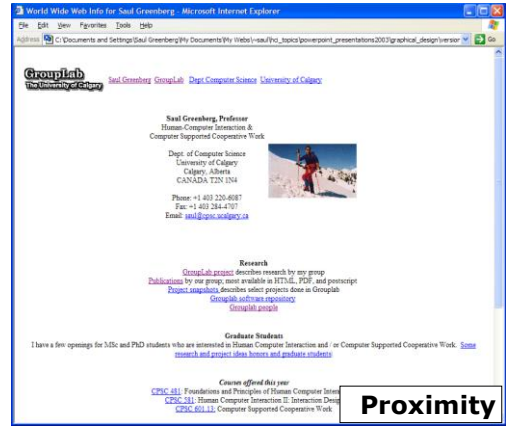
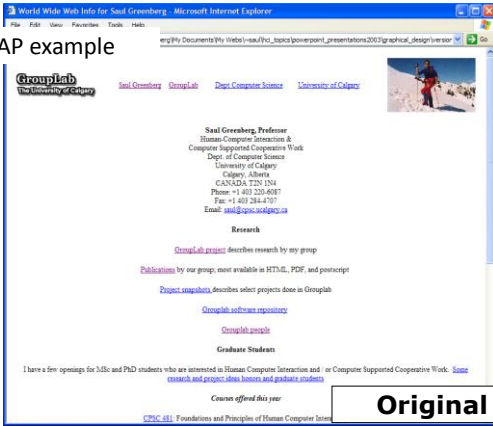
Where is a view focused ?

- CRAP combines all aspects with the goal to provide guidelines for reading a graphics



Robert Williams/Non-Designers Design Book, Prentice Hall Press

CRAP example



HCI LAB

CRAP summary

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## Contrast using visual weight

Create a point attracting attention and then you guide user's eye on the screen

- Example of visual flow:**
- image
  - heading
  - date
  - logo
  - text



User's view steps from one item to other following weights

## Contrast using font

Technique	Example in Context
Font serif/sans serif	We hold these truths to be self-evident, that all men are created equal, that they are endowed by their <b>Creator</b> with certain unalienable Rights...
Size	We hold these truths to be self-evident, that all men are created equal, that they are endowed by their <b>Creator</b> with certain unalienable Rights...
Weight	We hold these truths to be self-evident, that all men are created equal, that they are endowed by their <b>Creator</b> with certain unalienable Rights...
Color	We hold these truths to be self-evident, that all men are created equal, that they are endowed by their <b>Creator</b> with certain unalienable Rights...
Form (italics)	We hold these truths to be self-evident, that all men are created equal, that they are endowed by their <i>Creator</i> with certain unalienable Rights...
Direction	We hold these truths to be self-evident, that they are endowed by their <b>C R E A T O R</b> with certain unalienable Rights...

## Contrast – serif/sans serif font



Baskerville, Old Face, Century, Century Schoolbook, Constantia, Garamond, Georgia, Goudy Old Style, Palatino, Times New Roman

for longer texts, serifs guide reader letter by letter



Arial, Bell Gothic, Calibri, Candara, Century Gothic, Corbel, Franklin Gothic, Gill Sans, Lucida Sans, Microsoft Sans Serif, MS Reference Sans Serif, Myria Pro, Tahoma, Trebuchet MS, Tm, Cen MT,

good choice for on-line texts, serifs may lower readability (blurred pixels)

## Contrast – simple modifications



which button is more important ?



no „depth“



„Bold“ canceled

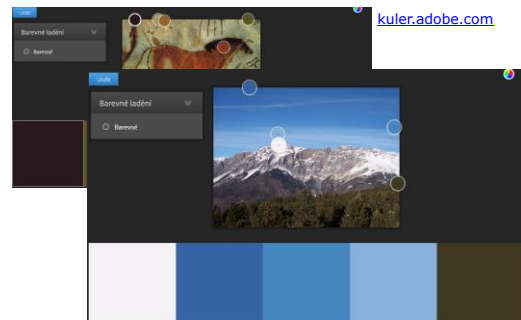


button replaced by link

## Repetition unifies design



## Color palette unifies design



## Text alignment helps to categorize

## Proximity and alignment

## Alignment – grid analysis

## Grids

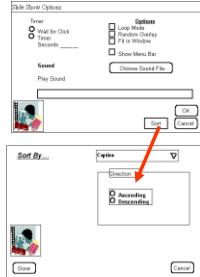
- Horizontal and vertical lines to locate window components
  - aligns related components
- Organization
  - contrast dominant elements
  - element groupings by proximity
  - organizational structure
  - alignment
- Consistency
  - location
  - format
  - element repetition
  - organization

## Repetition brings visual consistency

- internal consistency
  - elements follow same conventions and rules
  - set of application-specific grids enforce this
- external consistency
  - follow platform and interface style conventions
  - use platform and widget-specific grids
- deviate only when it provides a clear benefit to user

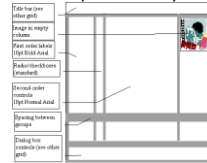
## Grid design

- Graphical redesign
- Create a grid emphasizing:
  - visual consistency
  - relationships between screen elements
  - navigational cues
  - economy
  - legibility and readability
  - imagery



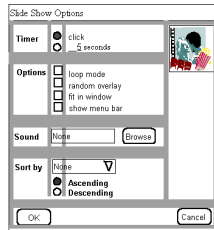
## Constructing a grid – an easy (amateurish) approach

- Maintain consistency with GUI style
  - locate standard components - title bar, window controls, ...
- Decide navigational layout + white space + legibility + typography
  - annotated grid shows location of generic components
  - these generic components may have their own grids.



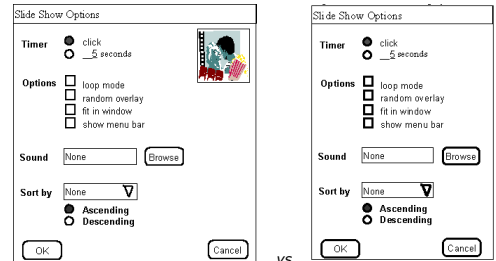
## Using the grid

- Determine relationships, navigational structure
  - map navigational structure onto the grid
- Economize
  - collapse two windows into one
  - trim sound dialog



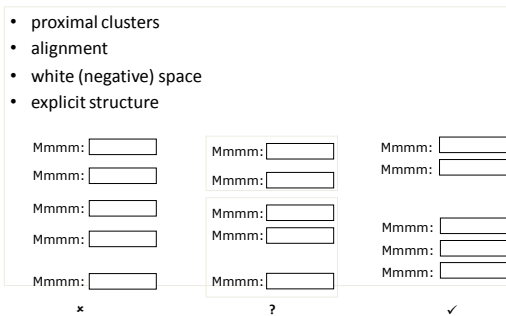
## Using the grid

- Evaluate by displaying actual examples
- Economize further
  - decide which we prefer



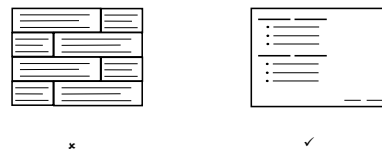
## Relate related screen elements

- proximal clusters
- alignment
- white (negative) space
- explicit structure

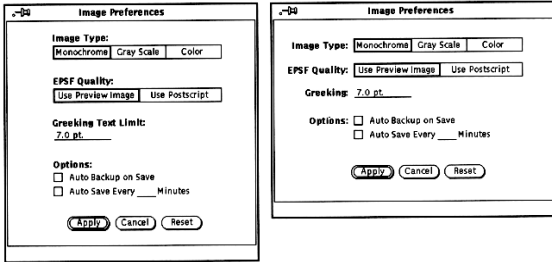


## Guide focus using navigational cues

- provide initial focus
- direct attention as appropriate to important 2ndary, or peripheral items as appropriate
- order should follow a user's conceptual model of sequences



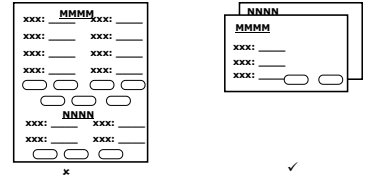
## Economy of visual elements



The importance of negative space and alignment

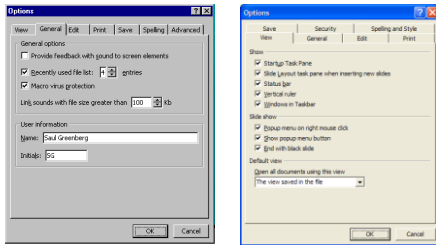
Mullet & Sanso

- minimize number of controls  
include only those that are necessary
  - eliminate, or relegate others to secondary windows
- minimize clutter
  - so the information is not hidden



## Imagery

- **Tabs**
  - excellent means for factoring related items
  - but can be overdone



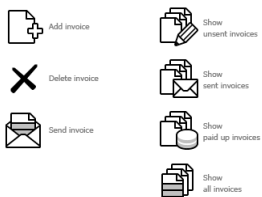
- Signs, icons, symbols
  - right choice within spectrum from concrete to abstract
- Icon design is **very hard**
  - except for most familiar, always label them
- Image position and type should be related
  - image “family”
- Consistent and relevant image use
  - identifies situations, offerings...



## Icons easy ? Not at all !

Holistic approach

Make sure that each icon differs from surrounding icons, while still working together as a whole

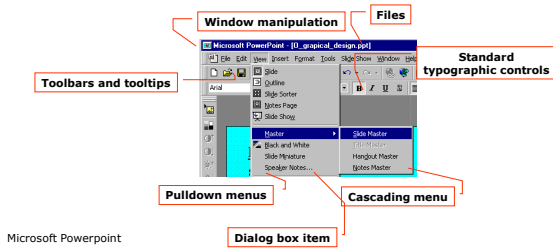


[7 Principles of Effective Icon Design](#)

## Idioms

- E.g.: Familiar ways of using GUI components
  - appropriate for casual to expert users
  - builds upon computer literacy
  - must be applied carefully in walk up and use systems

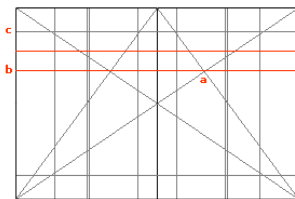
## Idioms .



## How to choose between widgets

- What components must be in the display?
  - necessary visual affordances
  - frequent actions
    - direct manipulation for core activities
    - buttons/forms/toolbar/special tools for frequent/immediate actions
    - menus/property window for less frequent actions
    - secondary windows for rare actions
- How are components related?
  - organize related items as “chunks”
- What are familiar and expected idioms?
  - cross application look and feel

## There is also a professional grid design



A ‘hanging line’ is then created by drawing a line across from the bisecting lines (a).

Dividing the space between line (b) and the top of our content area (c) gives us our hanging line.

## Grid design and morning headache

We are not professional typography designers, at least most of us, ...

So let the professionals to do the job ...

## What you now know

- CRAP principles
- Grids help ... (an essential tool for graphical design)
- Other visual concepts include
  - visual consistency
    - repetition
  - visual organization
    - contrast, alignment and navigational cues
  - visual relationships
    - proximity and white space
  - familiar idioms (may help or result in negative transfer effect)
  - legibility and readability
    - typography
  - appropriate imagery

## Some reliable guidelines available ?

- Jenifer Tidwell
- **Designing Interfaces: Patterns for Effective Interaction Design**
- O'Reilly, 2006
- Organizing content
- Getting Around
- Organizing Page
- Doing Things
- Showing Complex Data
- Getting Input From Users
- Builders and Editors
- Making It Look Good

## Some guidelines on WWW ?

Martijn van Welie, Philips Design

<http://www.welie.com/patterns/>

<p>User needs</p> <ul style="list-style-type: none"> <li>Navigation around</li> <li>Basic interactions</li> <li>Searching</li> <li>Dealing with data</li> <li>Personalizing</li> <li>Shopping</li> <li>Making choices</li> <li>Giving input</li> <li>Miscellaneous</li> </ul>	<p>Application needs</p> <ul style="list-style-type: none"> <li>Drawing attention</li> <li>Feedback</li> <li>Simplifying interaction</li> </ul>
	<p>Context of design</p> <ul style="list-style-type: none"> <li>Site types</li> <li>Experiences</li> <li>Page types</li> </ul>

## Example of a Welie's pattern

### • Directory Navigation

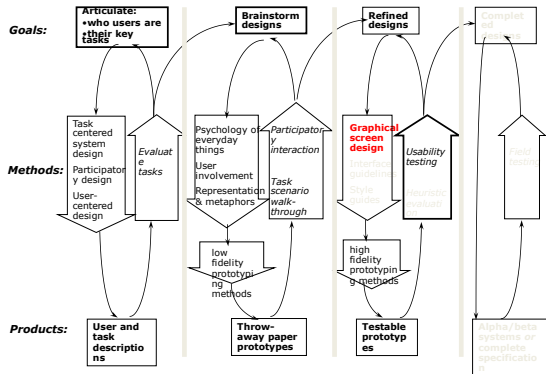
- Problem: Users need to select an item out of a



| 1 and 2

Structure of patterns: Use when, How, More Examples

## Interface Design and Usability Engineering



## Questions



## Acknowledgements

- Prof. Ing. Jiří Sochor