Graphical Screen Design

CRAP – contrast, repetition, alignment, proximity

Grids are an essential tool for graphical design

Other visual design concepts

- consistency
- organization
- navigational cues
- familiar idioms
- relationships
- legibility and readability
- appropriate imagery

Major sources: Designing Visual Interfaces, Mullet & Sano, Prentice Hall / Robin Williams Non-Designers Design Book, Peachpit Press

CRAP

Contrast

- make different things different
- brings out dominant elements
- mutes lesser elements
- creates dynamism

Repetition

Alignment

Proximity

Robin Williams Non-Designers Design Book, Peachpit Press

CRAP

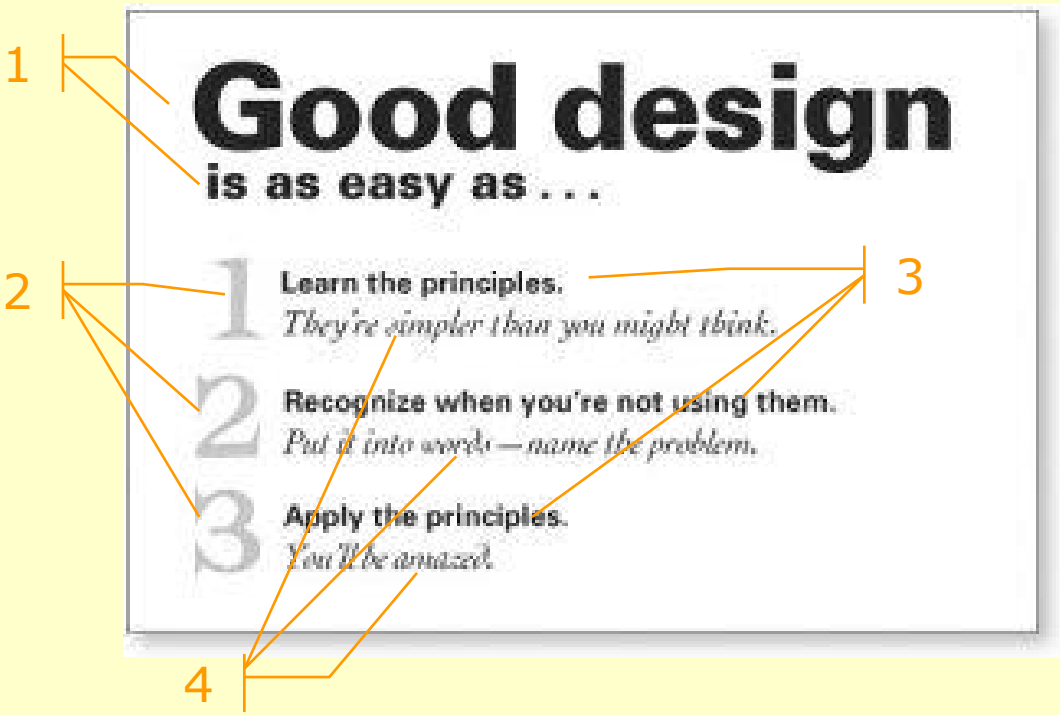
Contrast

Repetition

- repeat design throughout the interface
- consistency
- creates unity

Alignment

Proximity



CRAP

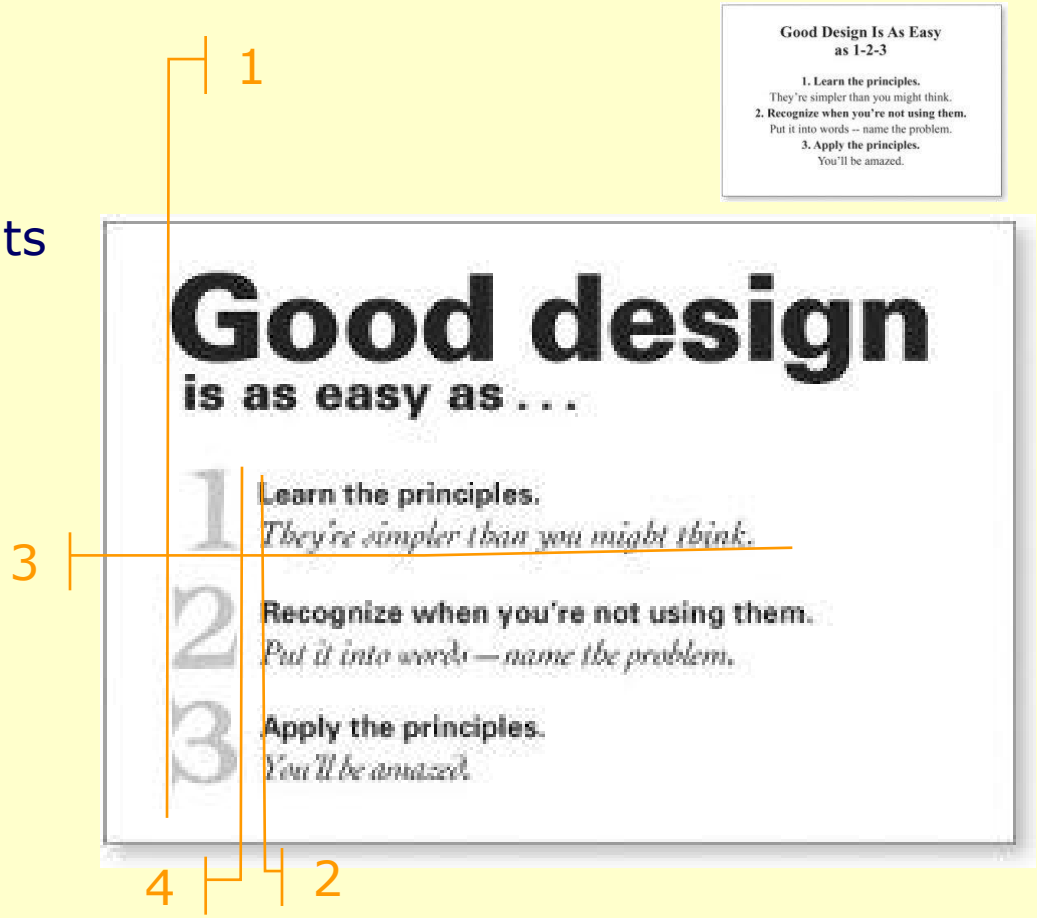
Contrast

Repetition

Alignment

- visually connects elements
- creates a visual flow

Proximity



CRAP

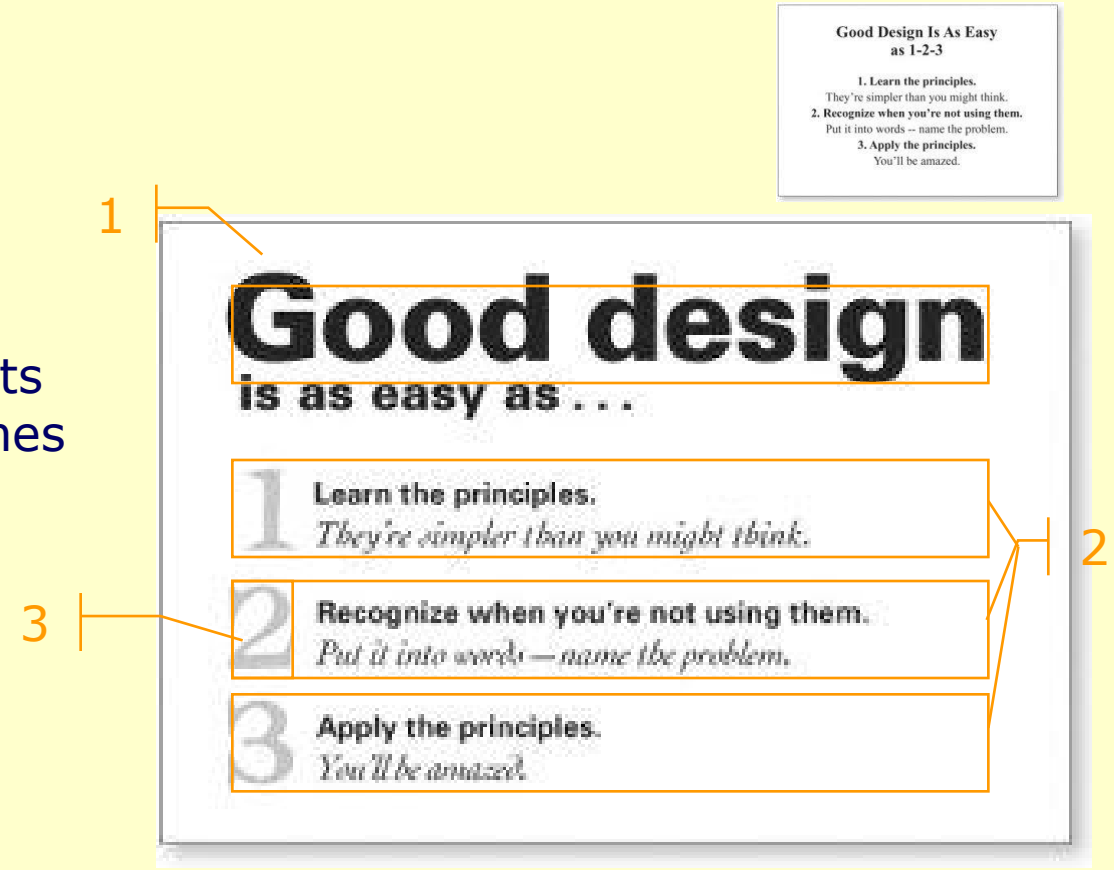
Contrast

Repetition

Alignment

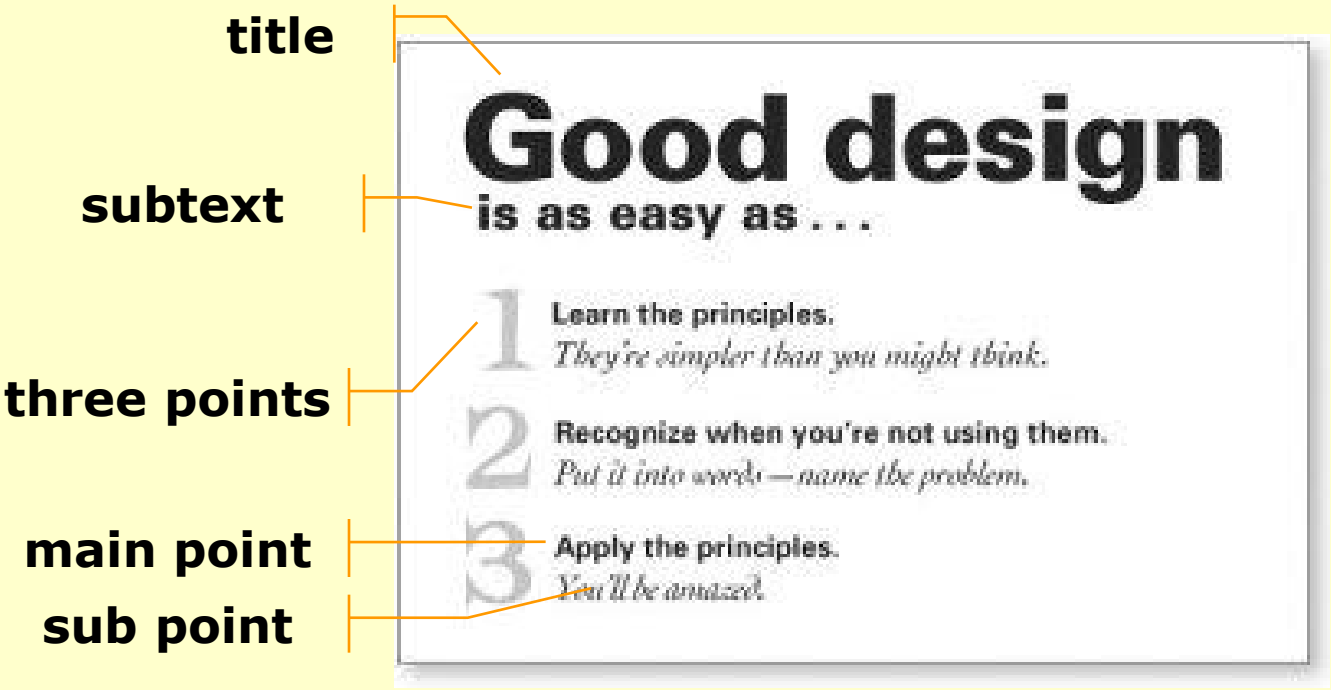
Proximity

- groups related elements
- separates unrelated ones



Where is a view focused ?

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



CRAP example

World Wide Web Info for Saul Greenberg - Microsoft Internet Explorer

File Edit View Favorites Tools Help

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GroupLab
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Email: saul@cpsc.ucalgary.ca

Research

GroupLab project describes research by my group

Publications by our group; most available in HTML, PDF, and postscript

Project snapshots describes select projects done in Grouplab

Grouplab software repository

Grouplab people

Graduate Students

I have a few openings for MSc and PhD students who are interested in Human Computer Interaction and / or Computer Supported Cooperative Work. Some research and project ideas honors and graduate students

Courses offered this year

CPSC 481: Foundations and Principles of Human Computer Intera

Original

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Proximity

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Previous Years:
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Alignment

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CPSC 601.56: Advanced Topics in HCI: Media Spaces and Casual Interaction
SENG 609.05: Graphical User Interfaces: Design and Usability
SENG 609.06: Special Topics in Human Computer Interaction
Ego alert: My entry on U Calgary's 'Great Teachers" Web Site

Administration — **Ethics Committee** for research with human subjects; I am the chair

Last updated: March 20, 1867

Contrast

World Wide Web Info for Saul Greenberg - Microsoft Internet Explorer

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Repetition

CRAP summary

Contrast
- make different things different
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- creates dynamism

Repetition
- repeat design throughout the interface
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- creates unity

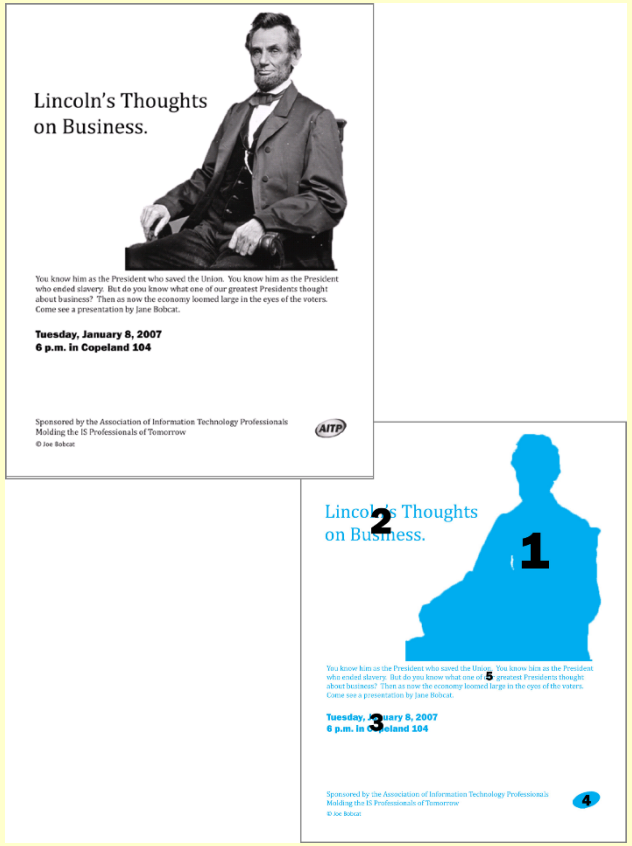
Alignment
- visually connects elements
- creates a visual flow

Proximity
- groups related elements
- separates unrelated ones

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

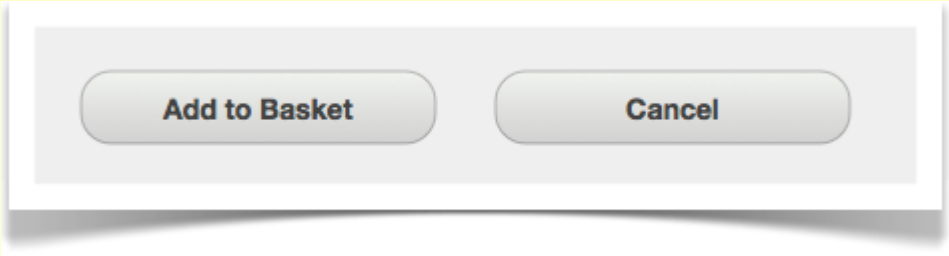
Contrast using font

Contrast – serif/sans serif font

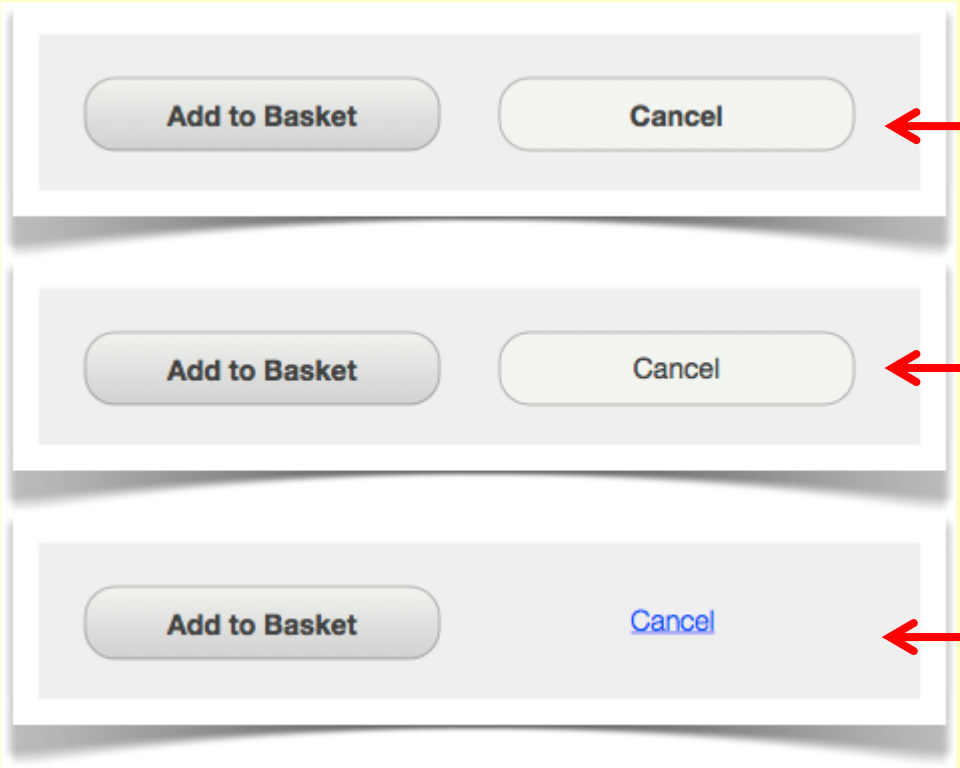
for longer texts, serifs guide reader letter by letter

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

Contrast – simple modifications



which button is more important ?



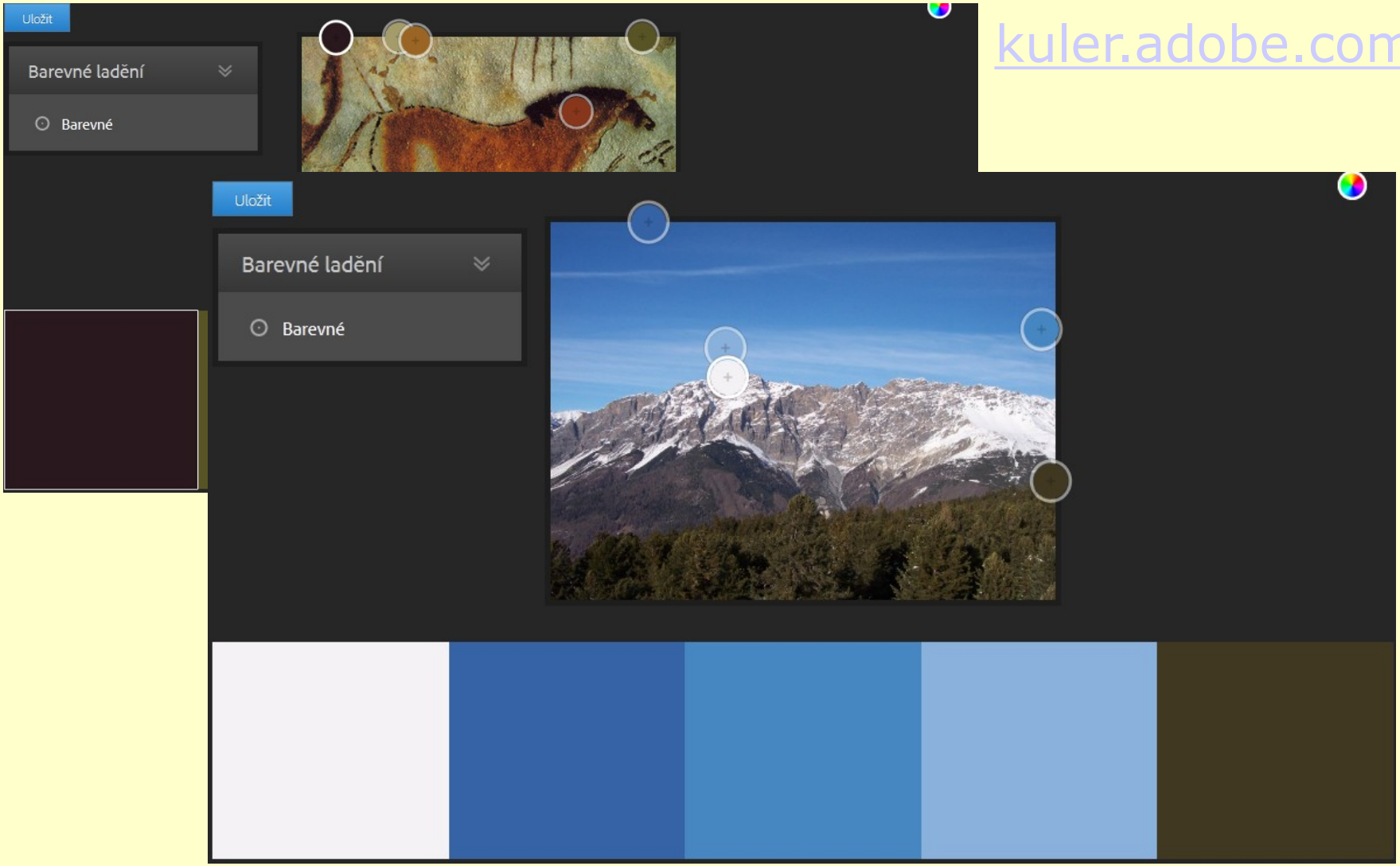
no „depth“

„Bold“ canceled

button replaced by link

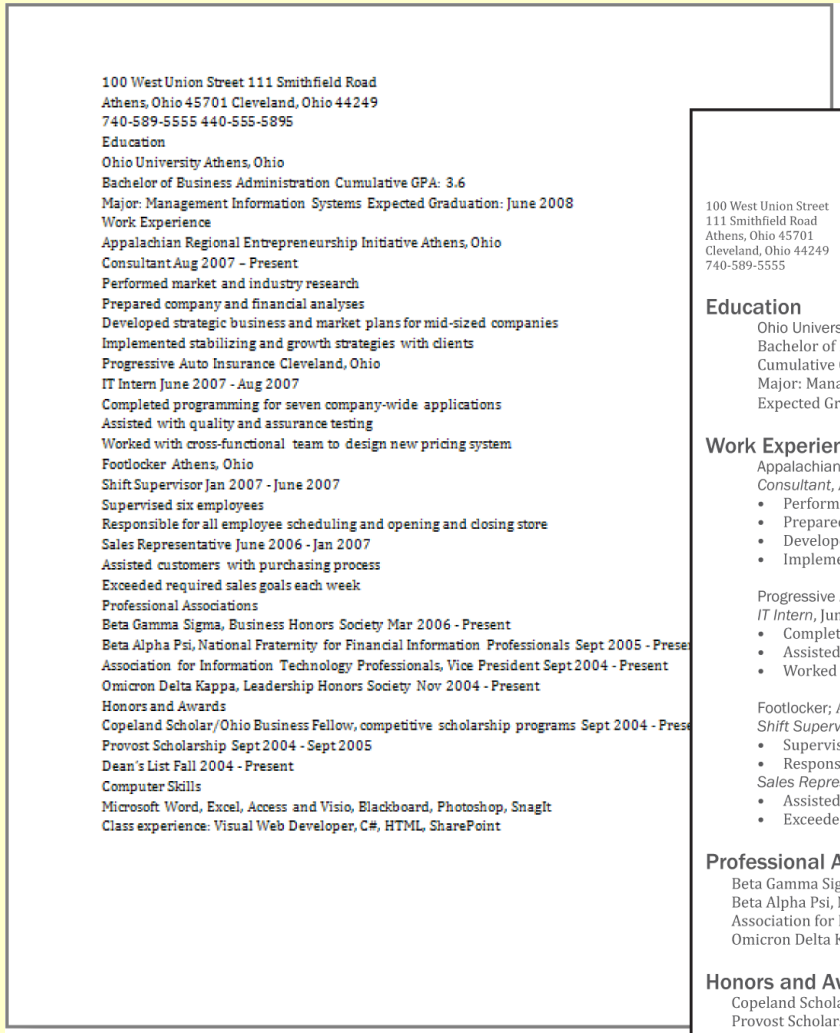
Repetition unifies design

Color pallete unifies design



kuler.adobe.com

Text alignment helps to categorize



100 West Union Street 111 Smithfield Road
Athens, Ohio 45701 Cleveland, Ohio 44249
740-589-5555 440-555-5895
Education
Ohio University Athens, Ohio
Bachelor of Business Administration Cumulative GPA: 3.6
Major: Management Information Systems Expected Graduation: June 2008
Work Experience
Appalachian Regional Entrepreneurship Initiative Athens, Ohio
Consultant Aug 2007 – Present
Performed market and industry research
Prepared company and financial analyses
Developed strategic business and market plans for mid-sized companies
Implemented stabilizing and growth strategies with clients
Progressive Auto Insurance Cleveland, Ohio
IT Intern June 2007 - Aug 2007
Completed programming for seven company-wide applications
Assisted with quality and assurance testing
Worked with cross-functional team to design new pricing system
Footlocker Athens, Ohio
Shift Supervisor Jan 2007 - June 2007
Supervised six employees
Responsible for all employee scheduling and opening and closing store
Sales Representative June 2006 - Jan 2007
Assisted customers with purchasing process
Exceeded required sales goals each week
Professional Associations
Beta Gamma Sigma, Business Honors Society Mar 2006 - Present
Beta Alpha Psi, National Fraternity for Financial Information Professionals Sept 2005 - Prese
Association for Information Technology Professionals, Vice President Sept 2004 - Present
Omicron Delta Kappa, Leadership Honors Society Nov 2004 - Present
Honors and Awards
Copeland Scholar/Ohio Business Fellow, competitive scholarship programs Sept 2004 - Prese
Provost Scholarship Sept 2004 - Sept 2005
Dean's List Fall 2004 - Present
Computer Skills
Microsoft Word, Excel, Access and Visio, Blackboard, Photoshop, SnagIt
Class experience: Visual Web Developer, C#, HTML, SharePoint

Joseph Bobcat

jbobcat@ohio.edu

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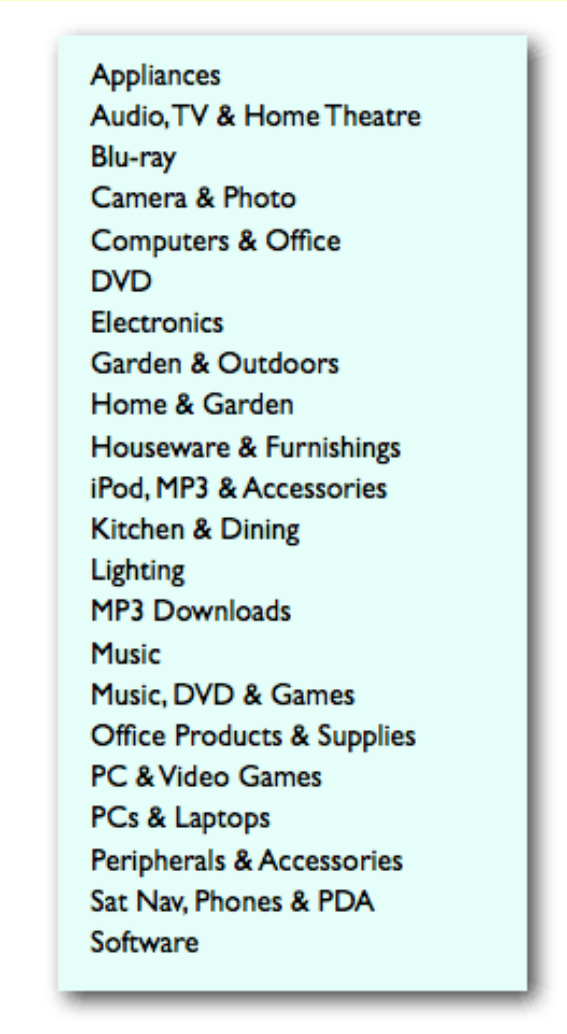
Proximity and alignment

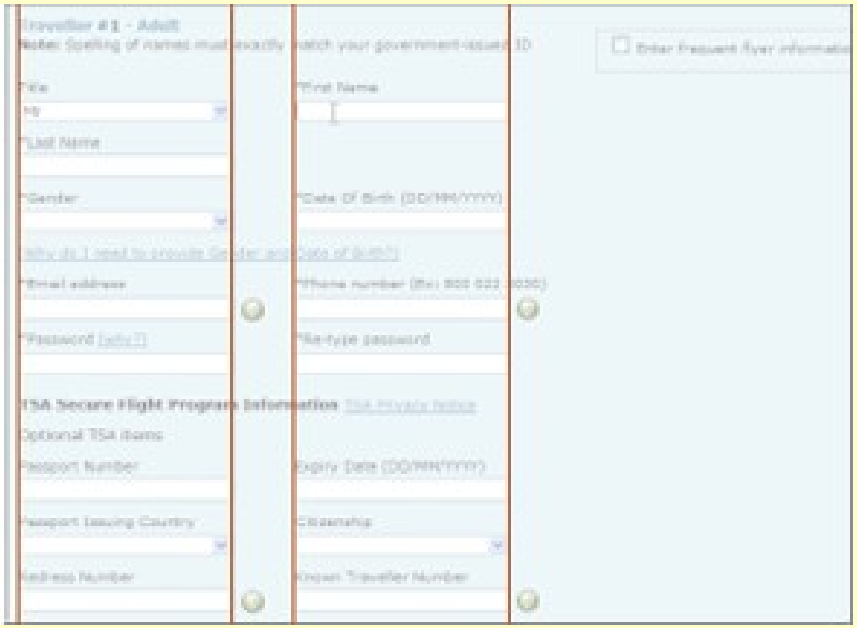


alphabetic list

groups with heading

Alignment – grid analysis

original design



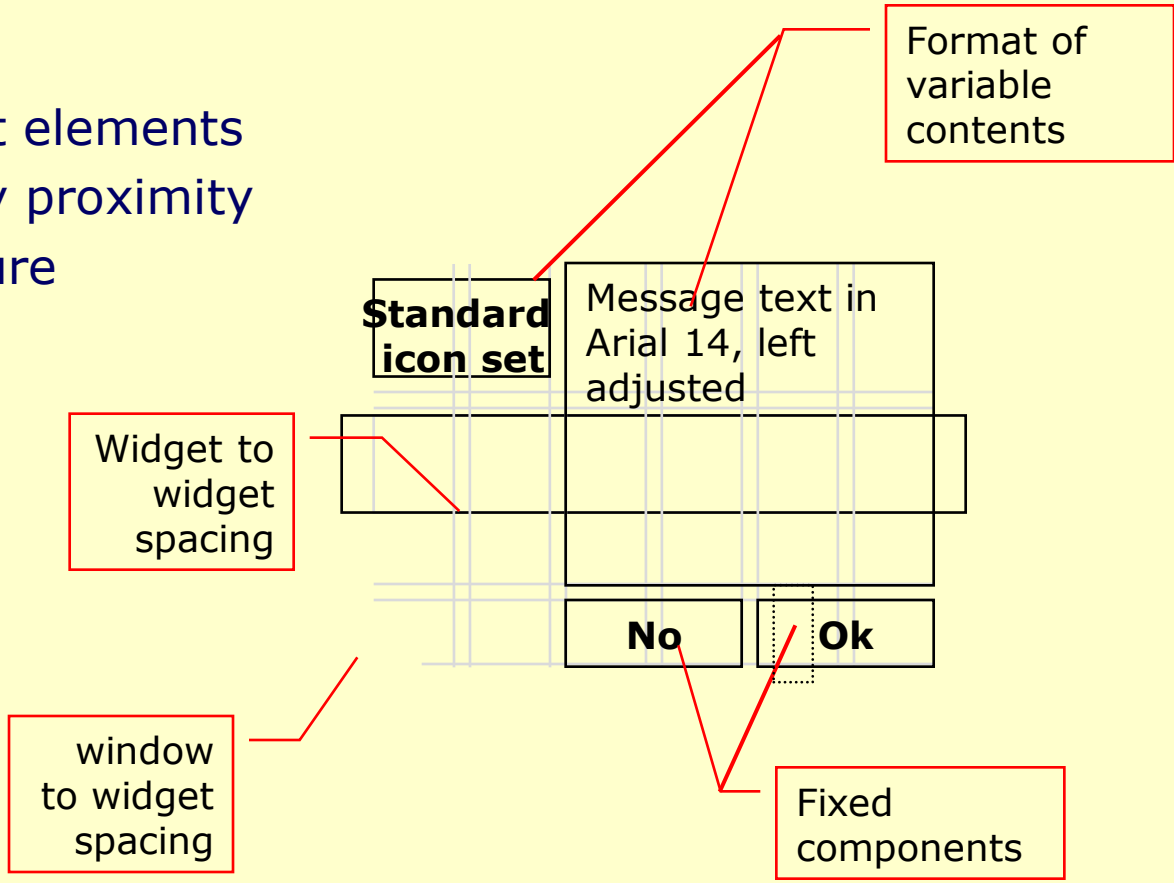
revised design

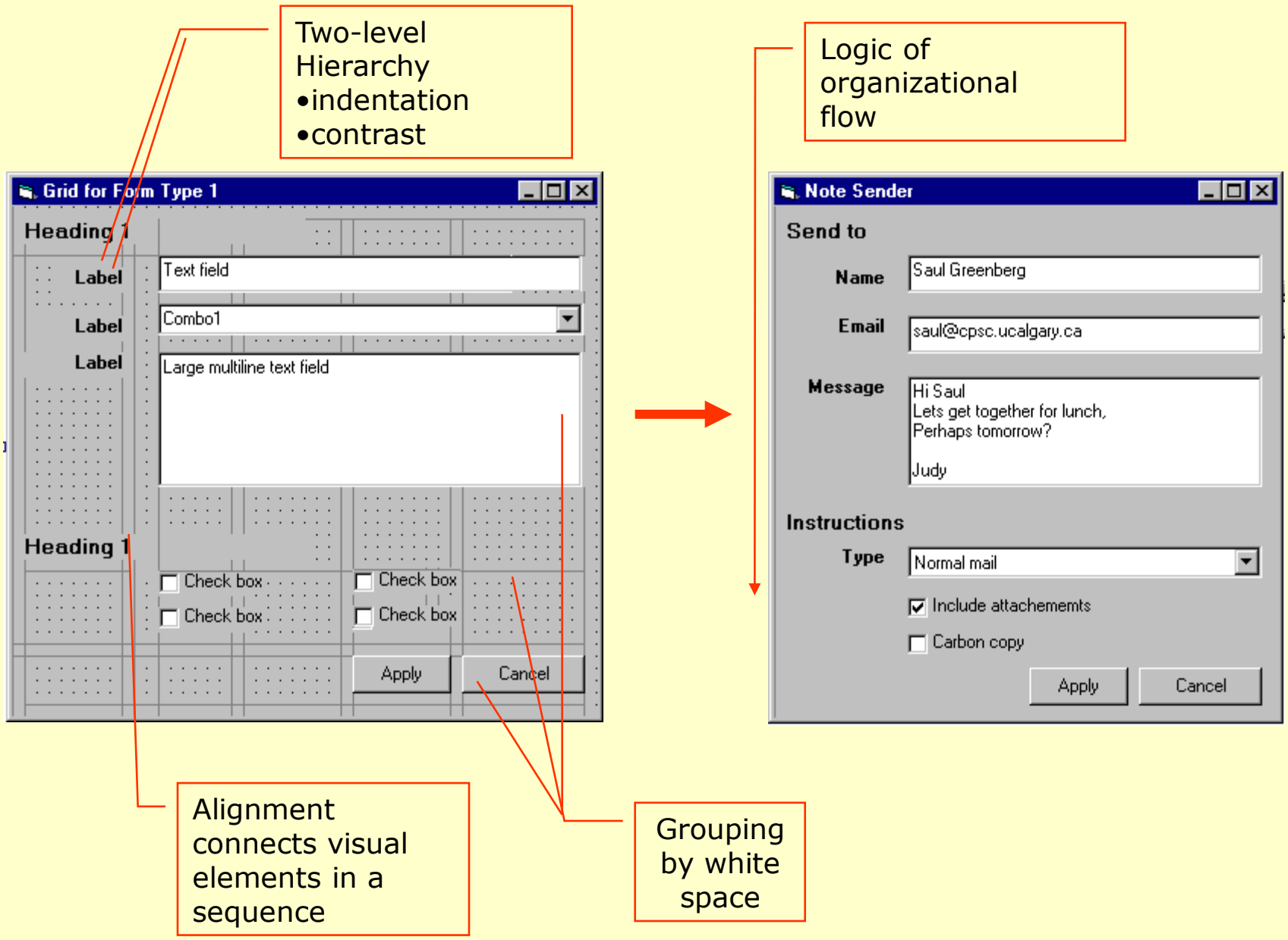
Grids

Horizontal and vertical lines to locate window components
- aligns related components

Organization
- contrast for dominant elements
- element groupings by proximity
- organizational structure
- alignment

Consistency
- location
- format
- element repetition
- organization



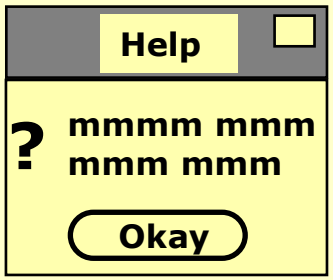

Two-level Hierarchy
•indentation
•contrast
Logic of organizational flow
Grid for Form Type 1
Heading 1
Label
Text field
Label
Combo1
Label
Large multiline text field
Heading 1
Check box
Check box
Check box
Check box
Apply
Cancel
Note Sender
Send to
Name
Saul Greenberg
Email
saul@cpsc.ucalgary.ca
Message
Hi Saul
Lets get together for lunch,
Perhaps tomorrow?
Judy
Instructions
Type
Normal mail
Include attachememts
Carbon copy
Apply
Cancel
Alignment connects visual elements in a sequence
Grouping by white space

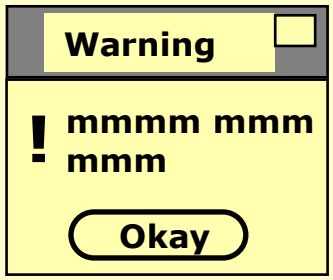
Repetition brings visual consistency

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





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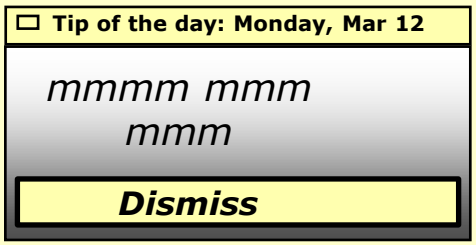

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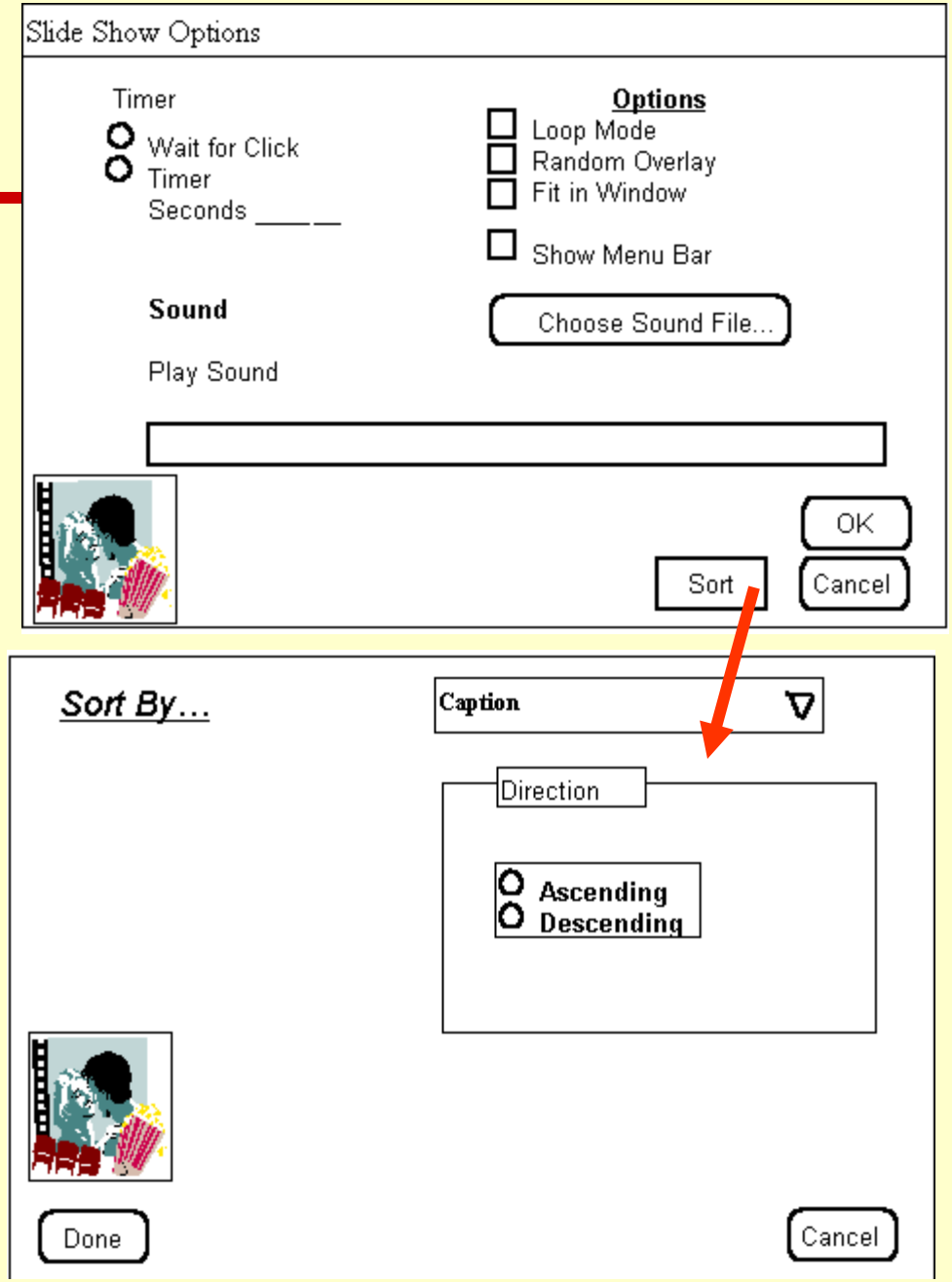
Grid design

Graphical redesign

Create a grid emphasizing:

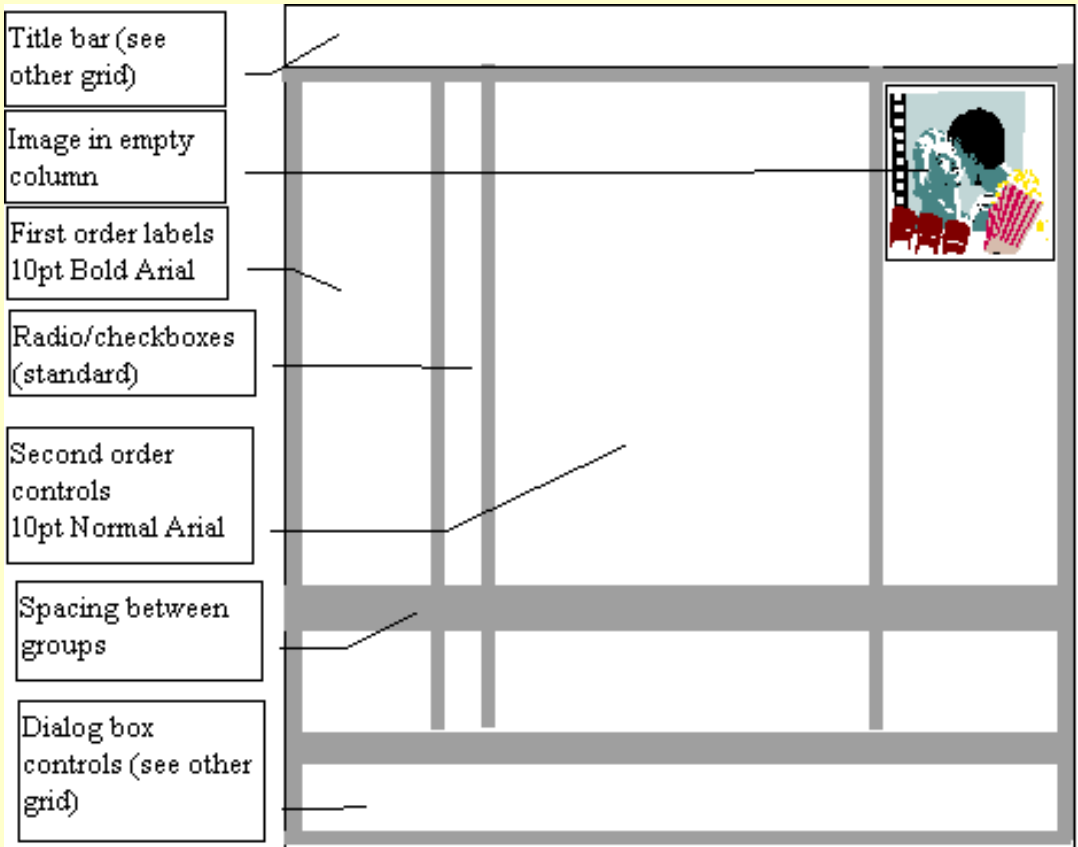
- visual consistency
- relationships between screen elements
- navigational cues
- economy
- legibility and readability
- imagery



Constructing a grid – an easy (amateurish) approach

1. Maintain consistency with GUI style
   - locate standard components - title bar, window controls, …

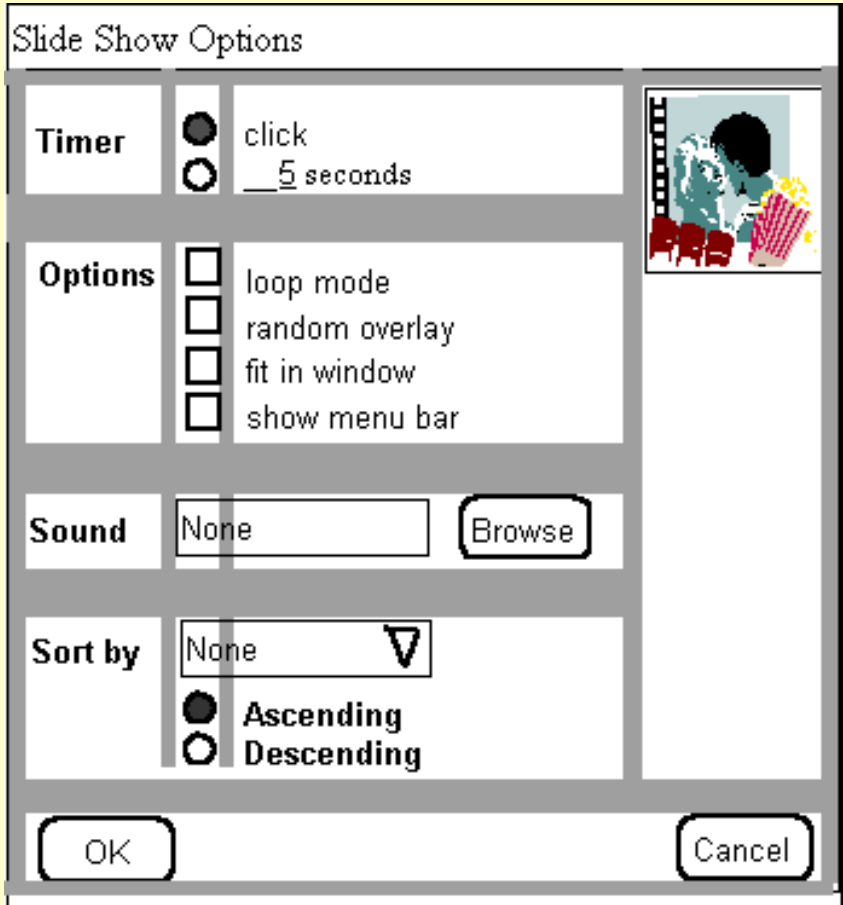
2. Decide navigational layout + white space + legibility + typography
   - annotated grid shows location of generic components
   - these generic components may have their own grids.



Using the grid

3. Determine relationships, navigational structure
    - map navigational structure onto the grid

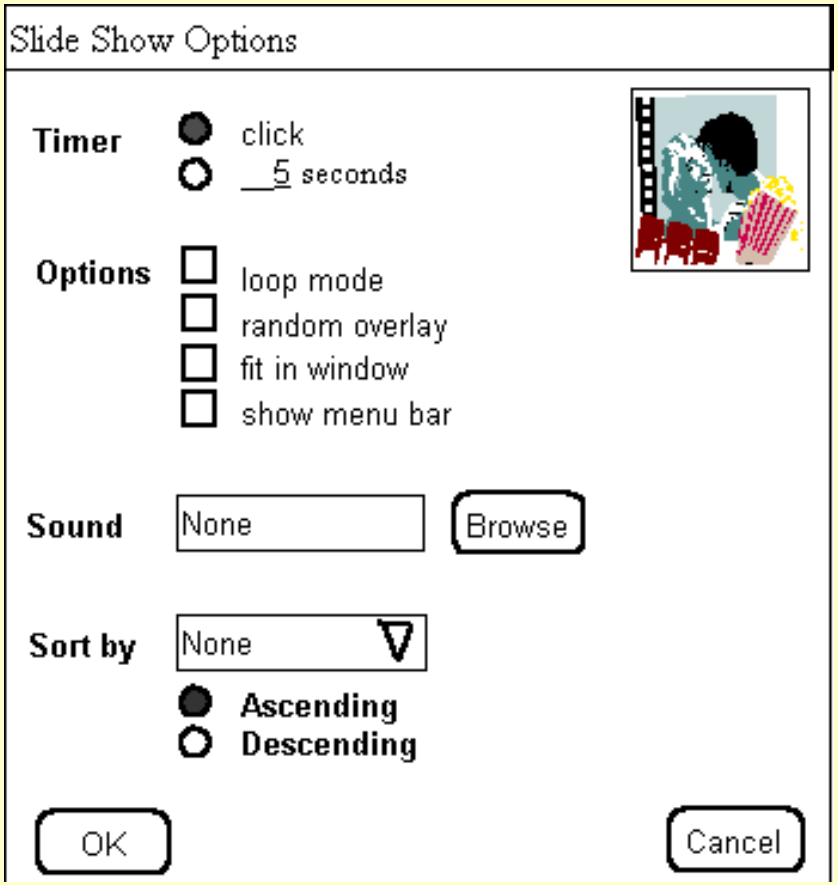
4. Economize
    - collapse two windows into one
    - trim sound dialog



Using the grid

5. Evaluate by displaying actual examples

6. Economize further
   - decide which we prefer



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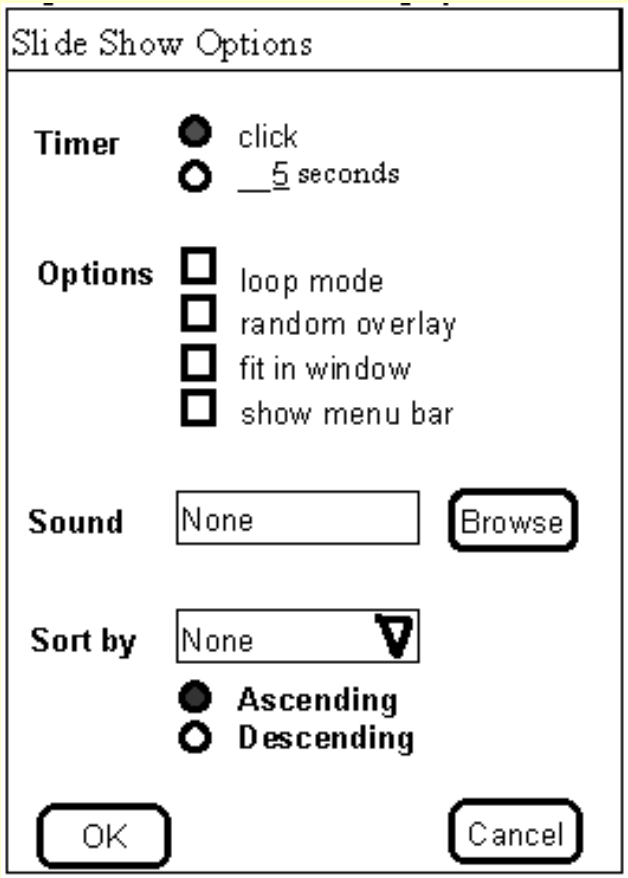
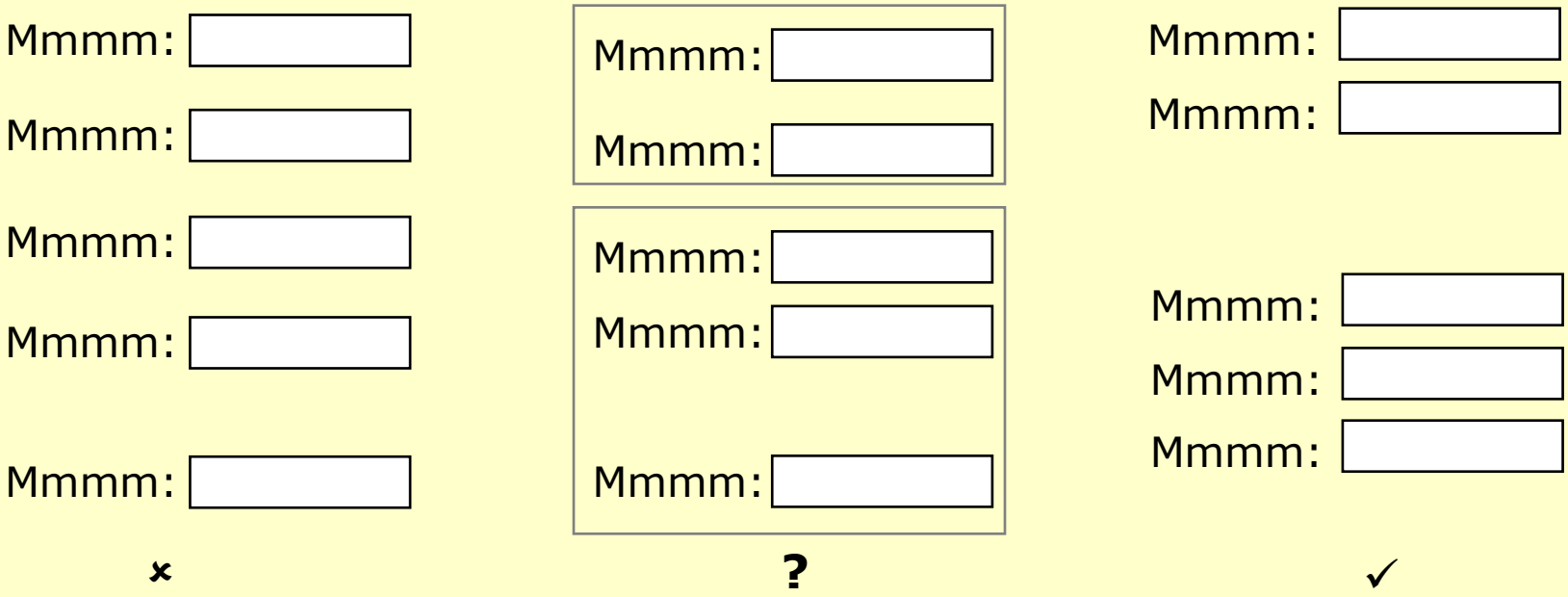


Relate related screen elements

proximal clusters
alignment
white (negative) space
explicit structure

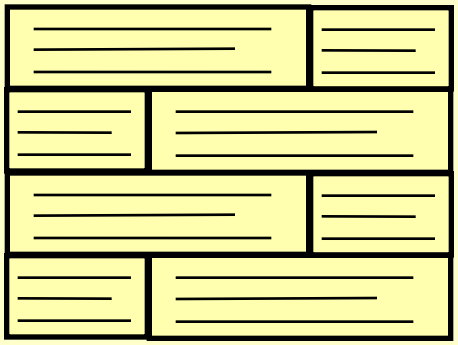


Guide focus using navigational cues

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



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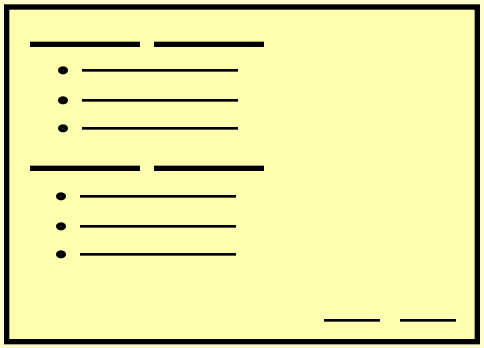

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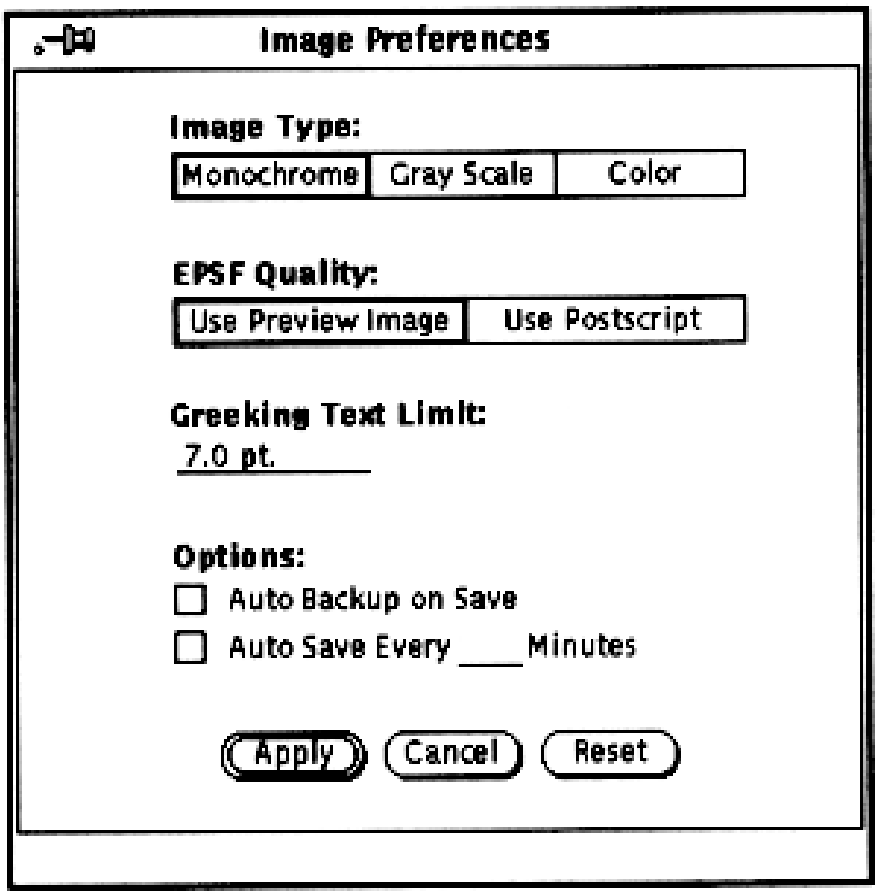
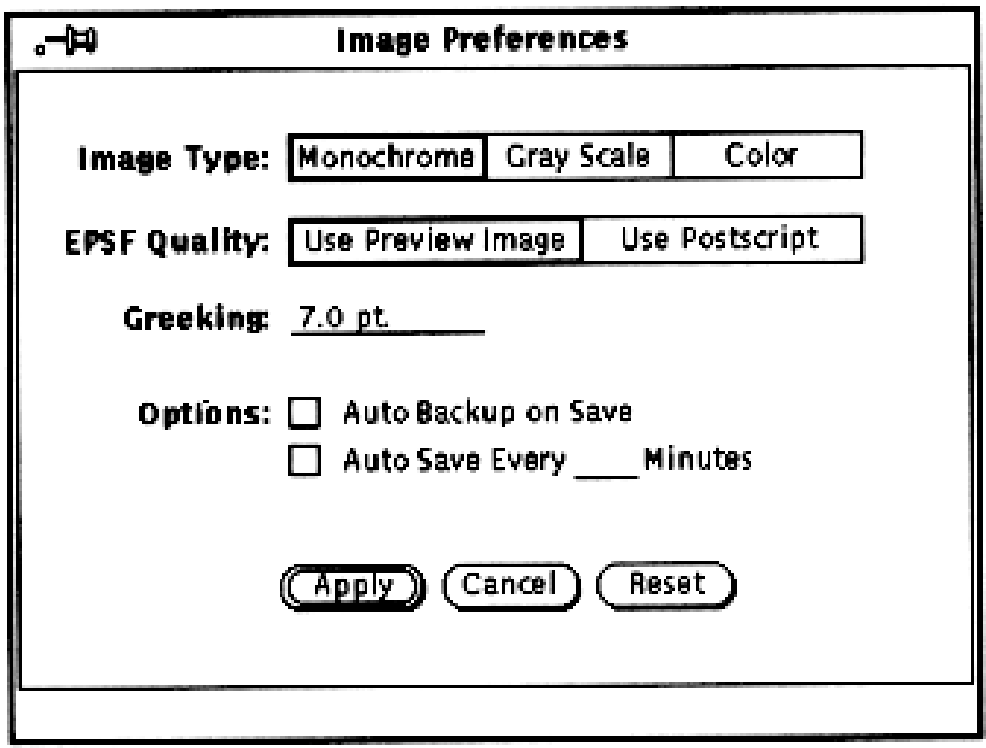




The importance of negative space and alignment

Economy of visual elements

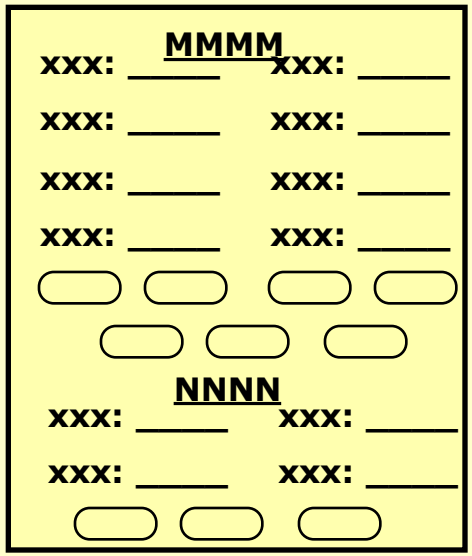
minimize number of controls

include only those that are necessary

- eliminate, or relegate others to secondary windows

minimize clutter

- so the information is not hidden



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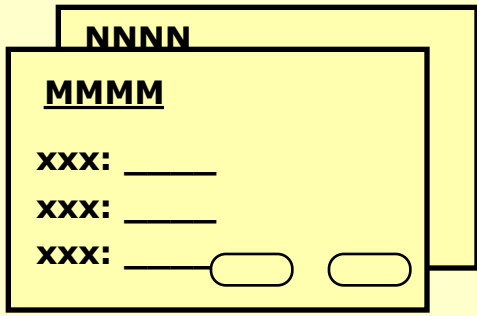
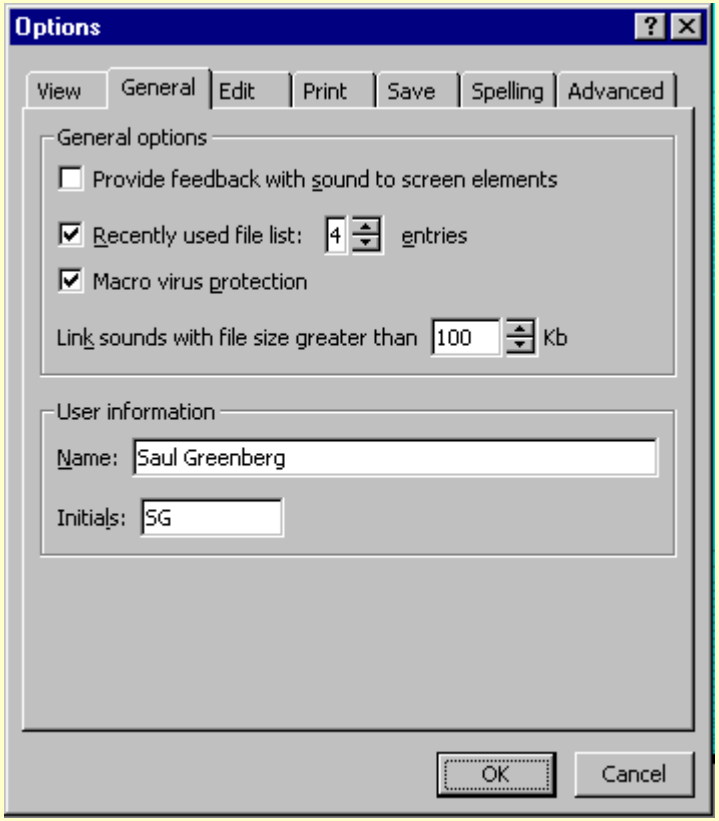
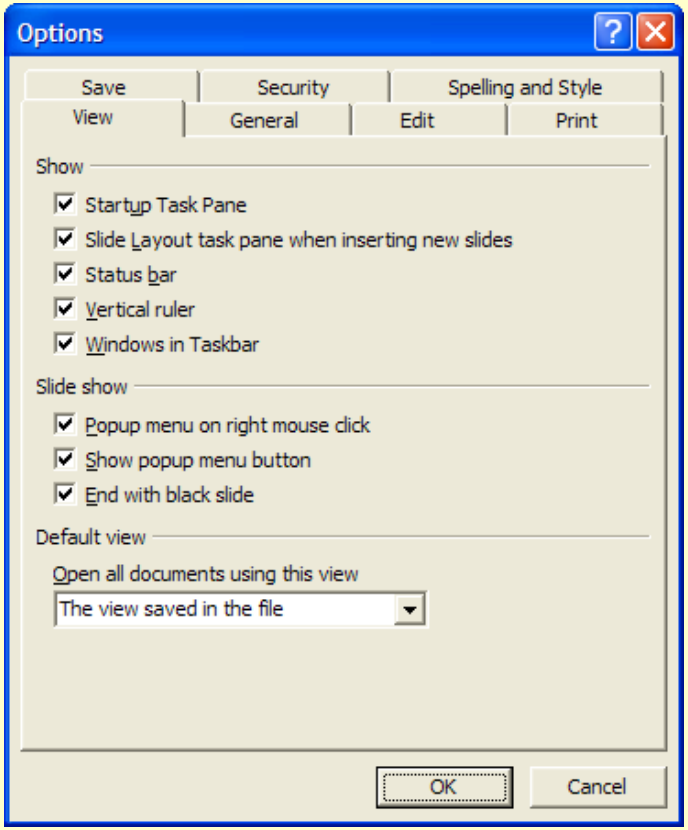


✓

Tabs

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





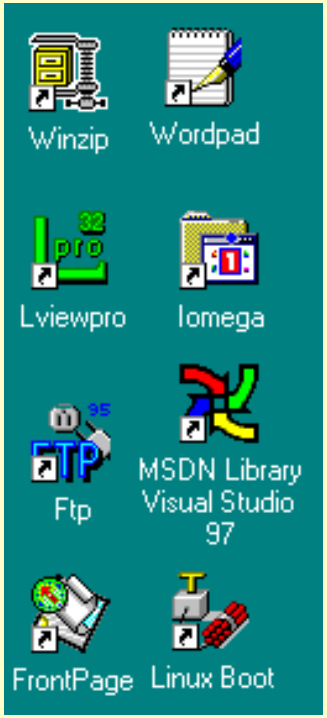
Imagery

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"

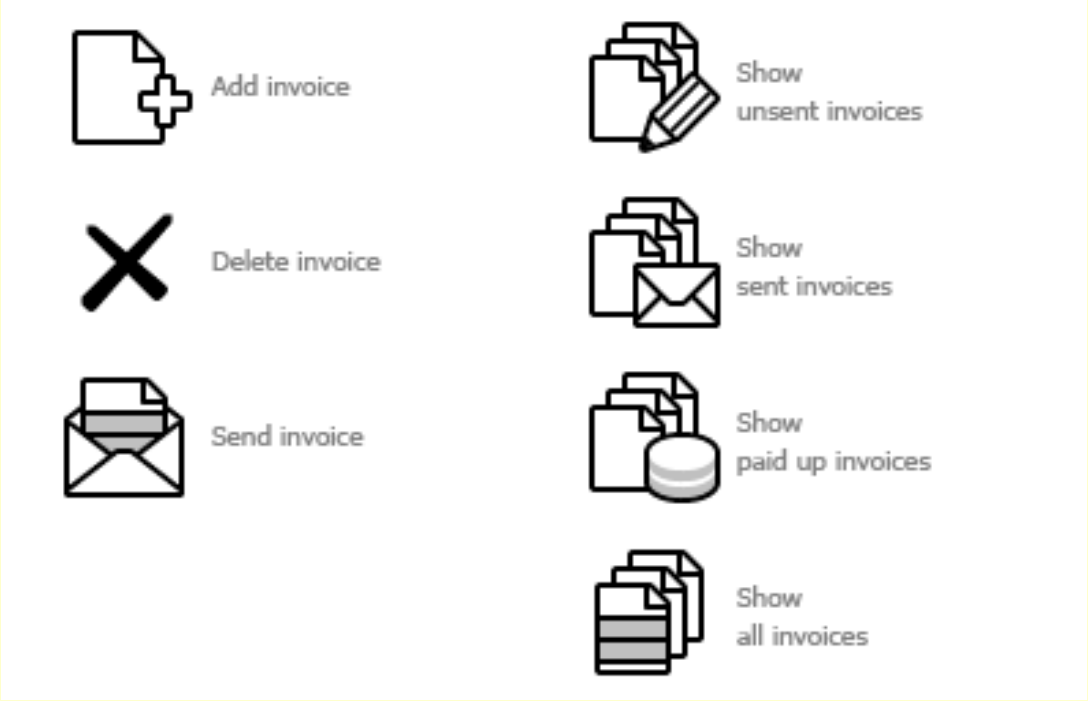
Consistent and relevant image use
- identifies situations, offerings...



Icons easy ? Not at all !

Holistic approach

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

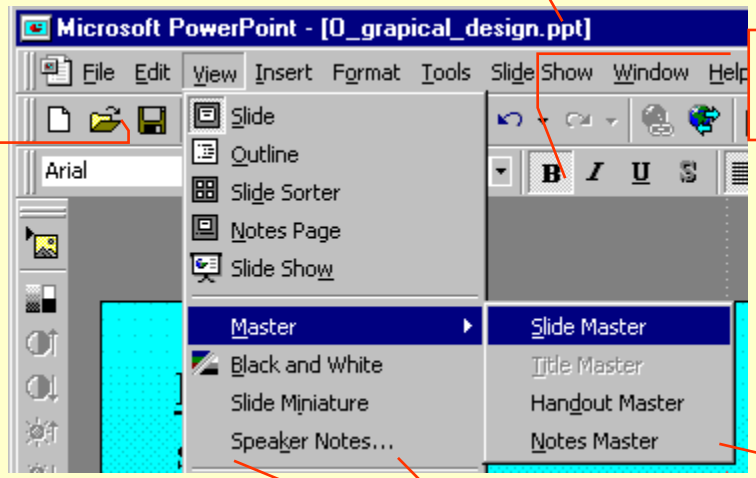


7 Principles of Effective Icon Design

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



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

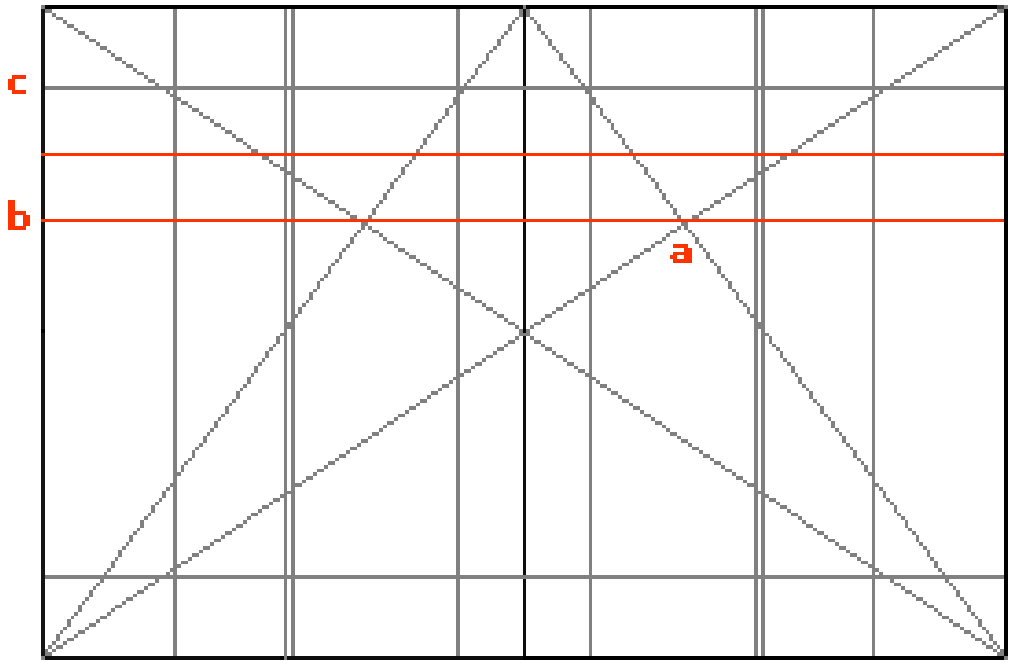
How are components related?

- 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.

4

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/

- User needs
  - Navigation around
  - Basic interactions
  - Searching
  - Dealing with data
  - Personalizing
  - Shopping
  - Making choices
  - Giving input
  - Miscelleaneous
- Application needs
  - Drawing attention
  - Feedback
  - Simplifying interaction
- Context of design
  - Site types
  - Experiences
  - Page types

Example of a Welie's pattern

Directory Navigation

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

Solution: Sum up level 1 and 2

Structure of patterns: Use when, How, More Examples

Interface Design and Usability Engineering