

Graphical Screen Design

Grids are an essential tool for graphical design

Important graphical design concepts include

visual consistency
visual organization
navigational cues
familiar idioms

visual relationships
legibility and readability
appropriate imagery

Saul Greenberg

Graphical Design

Must account for:

- a comprehensible mental image
 - metaphor
- appropriate organization of data, functions, tasks and roles
 - cognitive model
- quality appearance characteristics
 - the “look”
- effective interaction sequencing
 - the “feel”

Sources:

- Principle of Effective Visual Communication for GUI design
Marcus in Baecker, Grudin, Buxton and Greenberg
- Designing Visual Interfaces
Mullet & Sano, Prentice Hall

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Components of Visible Language

Layout

- formats, proportions, and grids

scarves: 10.75

hats: 5.43

Typography

- typefaces and typesetting

bold serif fixed
italic sans-serif variable

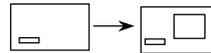
Imagery

- signs, icons, symbols; concrete to abstract



Sequencing

- how the interface unfolds



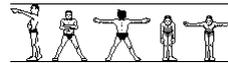
Visual identity

- unique appearance



Animation

- dynamics of display



Color and Texture

- convey complex information and pictorial reality



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Grids

Horizontal and vertical lines to locate window components

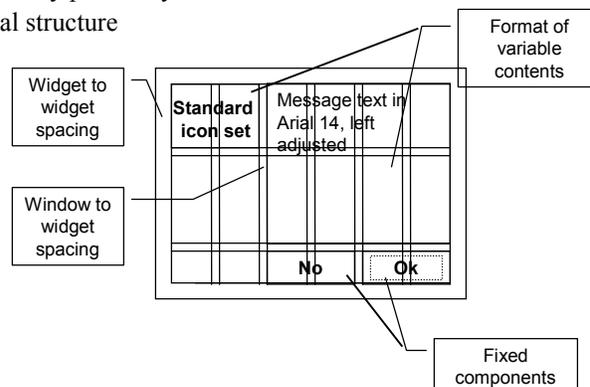
- aligns related components

Organization

- contrast to bring out dominant elements
- grouping of elements by proximity
- show organizational structure
- alignment

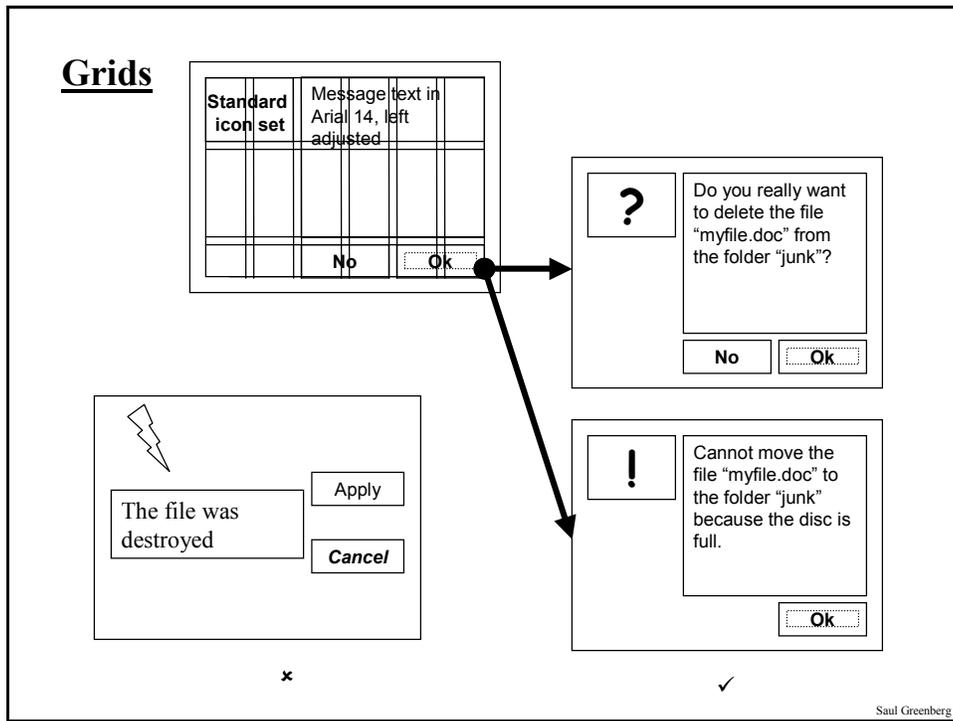
Consistency

- location
- format
- repetition
- organization

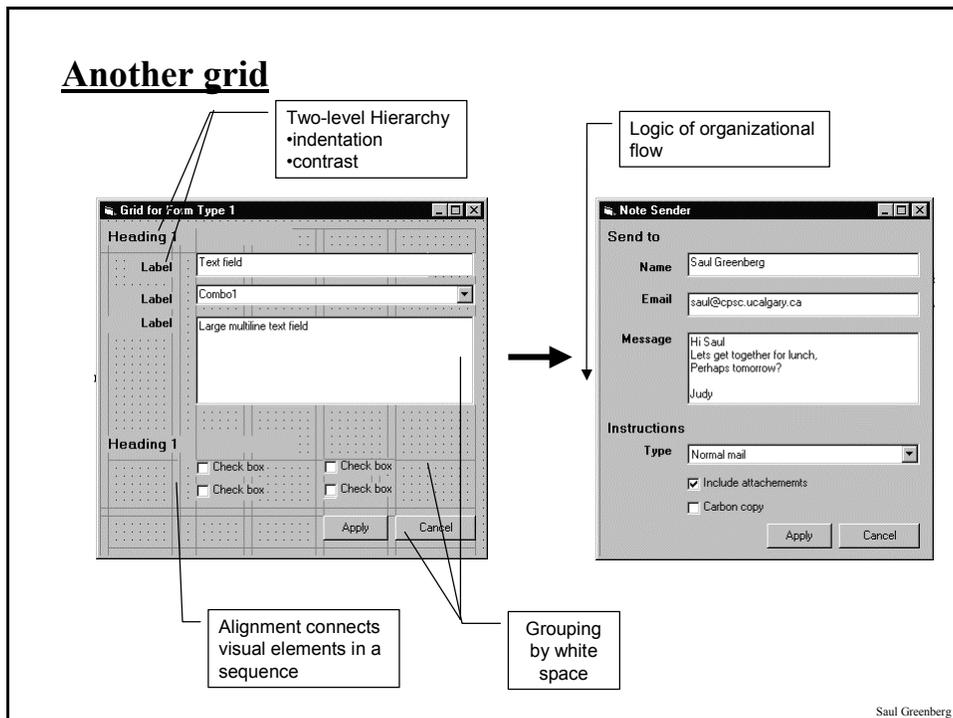


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Grids

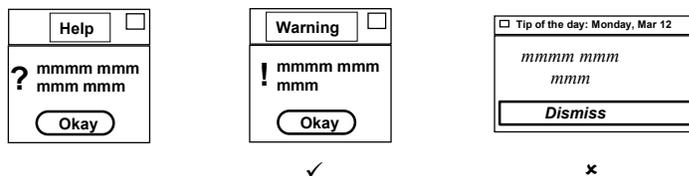


Another grid



Visual Consistency

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

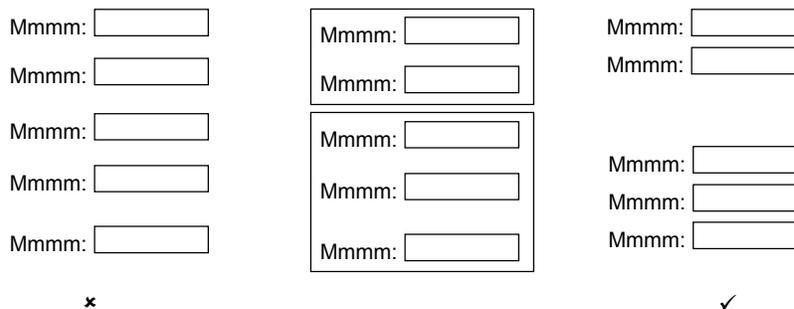


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Relationships between screen elements

Link related elements, disassociate unrelated elements

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



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Webforms

| | | |
|--|-----------------------------------|---|
| Form Title -- (appears above URL in most browsers and is used by WWW search) | | Background Color: |
| Q&D Software Development Order Desk | | FFFBF0 |
| Form Heading -- (appears at top of Web page in bold type) | | Text Color: |
| Q&D Software Development Order Desk | | 000080 |
| E-Mail responses to (will not appear on) | Alternate (for mailto forms only) | Background Graphic: |
| dversch@q-d.com | | |
| Text to appear in Submit button | Text to appear in Reset button | <input type="radio"/> Mailto |
| Send Order | Clear Form | <input checked="" type="radio"/> CGI |
| Scrolling Status Bar Message (max length = 200 characters) | | |
| ****WebMania 1.5b with Image Map Wizard is here!**** | | |
| <input type="button" value=" << Prev Tab"/> | | <input type="button" value=" Next Tab >>"/> |

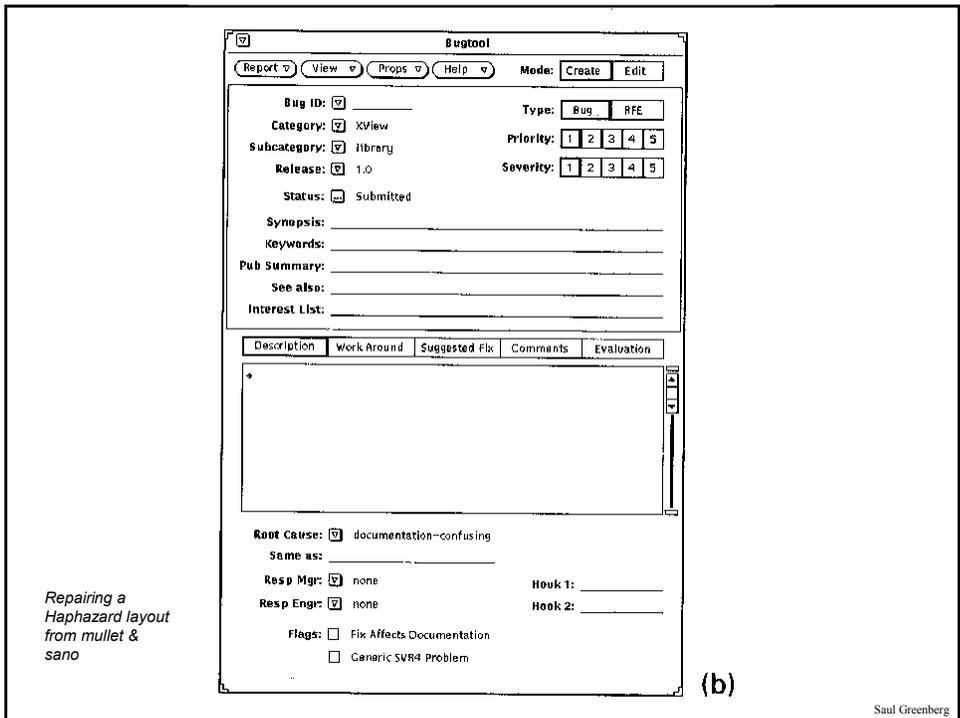
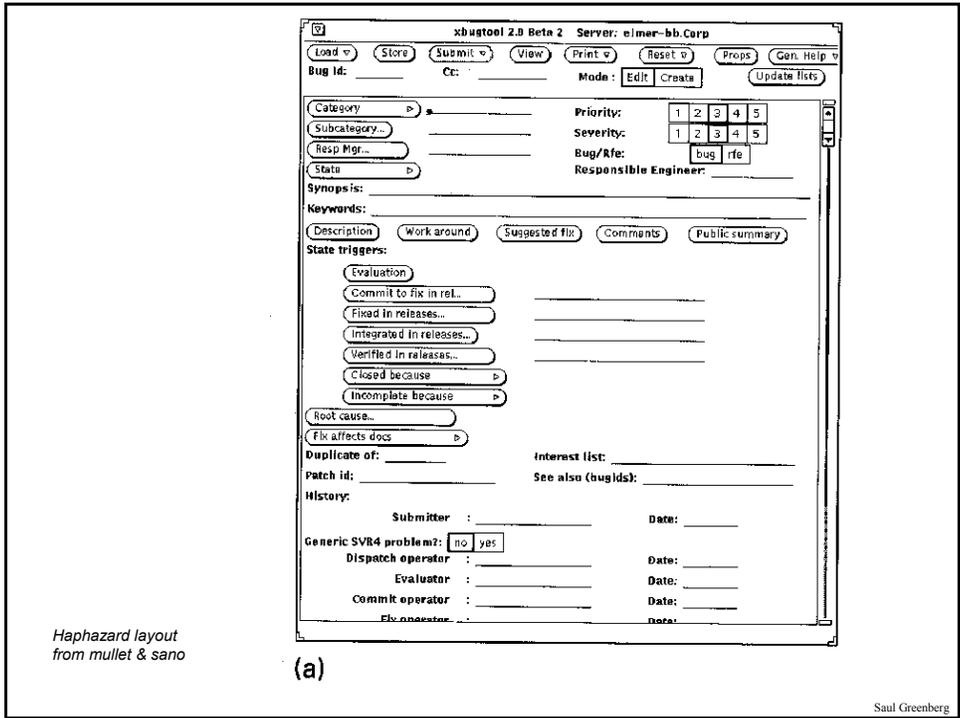
Bad alignment
Poor choice of colors to distinguish labels from editable fields

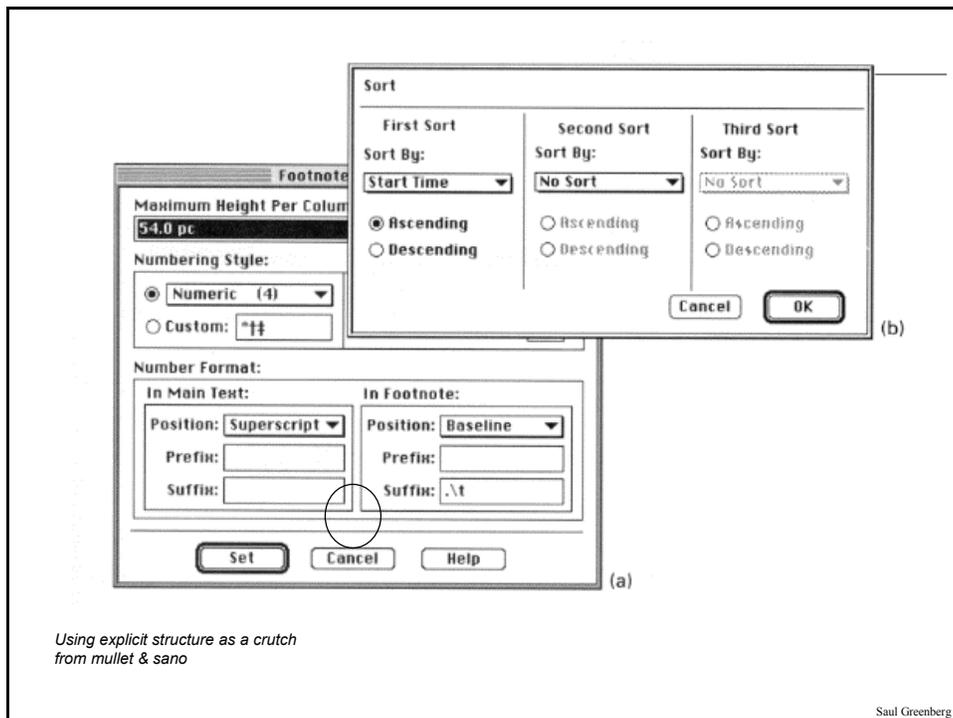
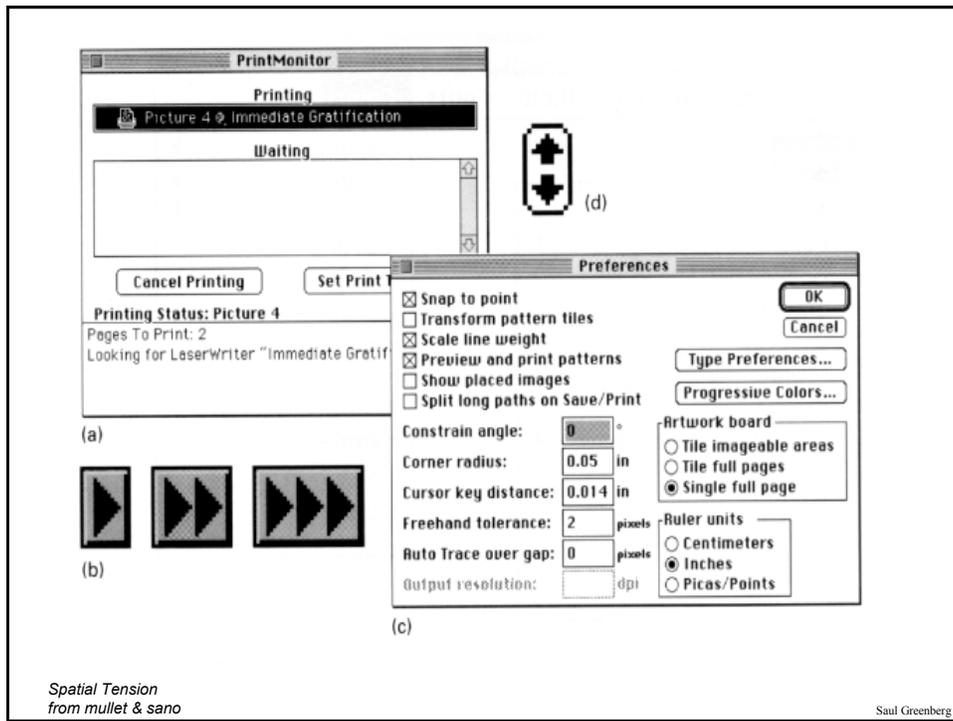
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No regard for order and organization

IBM's Aptiva Communication Center

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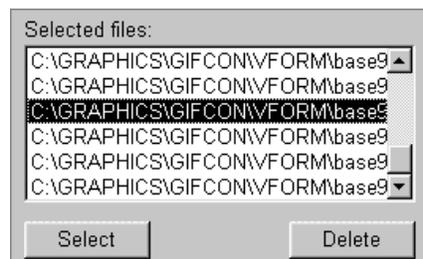
WebForms

Overuse of 3-d effects makes the window unnecessarily cluttered

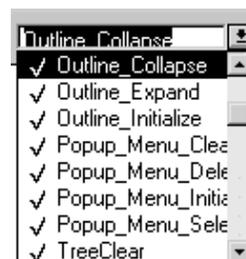
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Relationships between screen elements

How do you chose when you cannot discriminate screen elements from each other?



GIF Construction Set

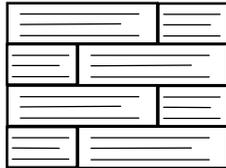


Microsoft Access 2.0

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Navigational cues

- provide initial focus
- direct attention to important, secondary, or peripheral items as appropriate
- assist in navigation through material
- order should follow a user's conceptual model of sequences

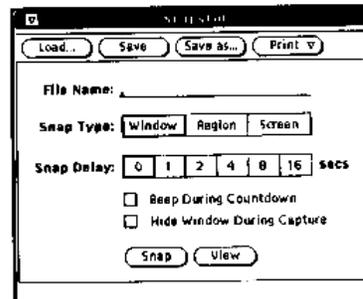
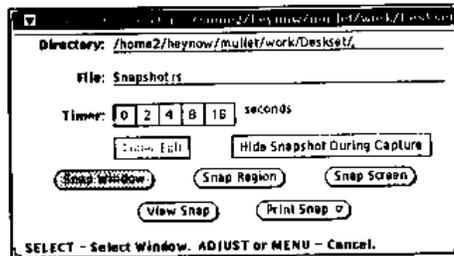


x



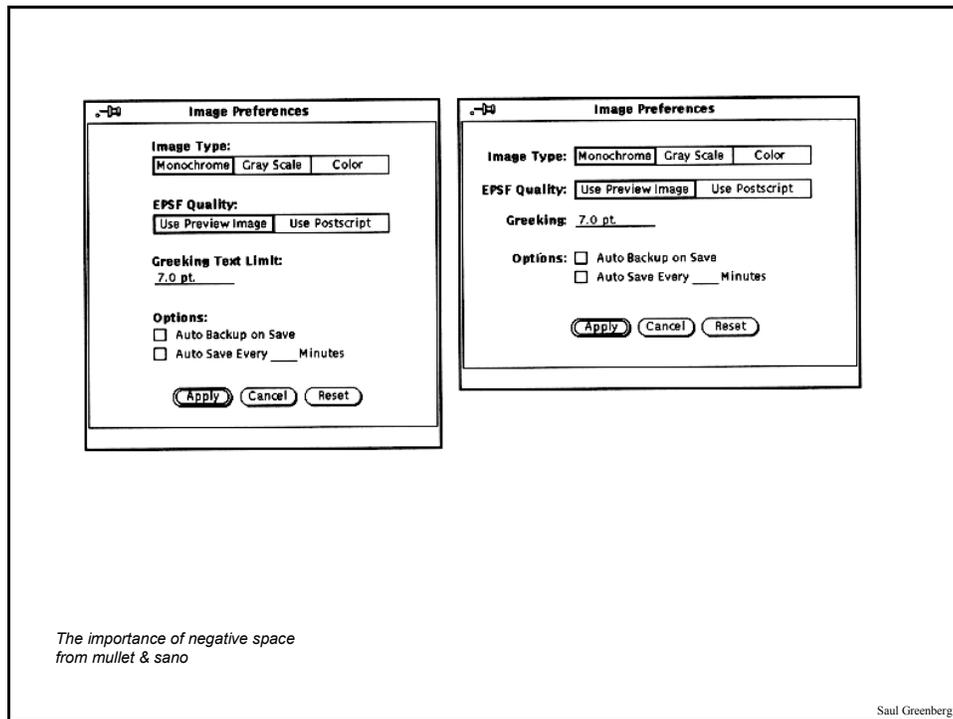
✓

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*Redesigning a layout using alignment and factoring
from mullet & sano*

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Economy of visual elements

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

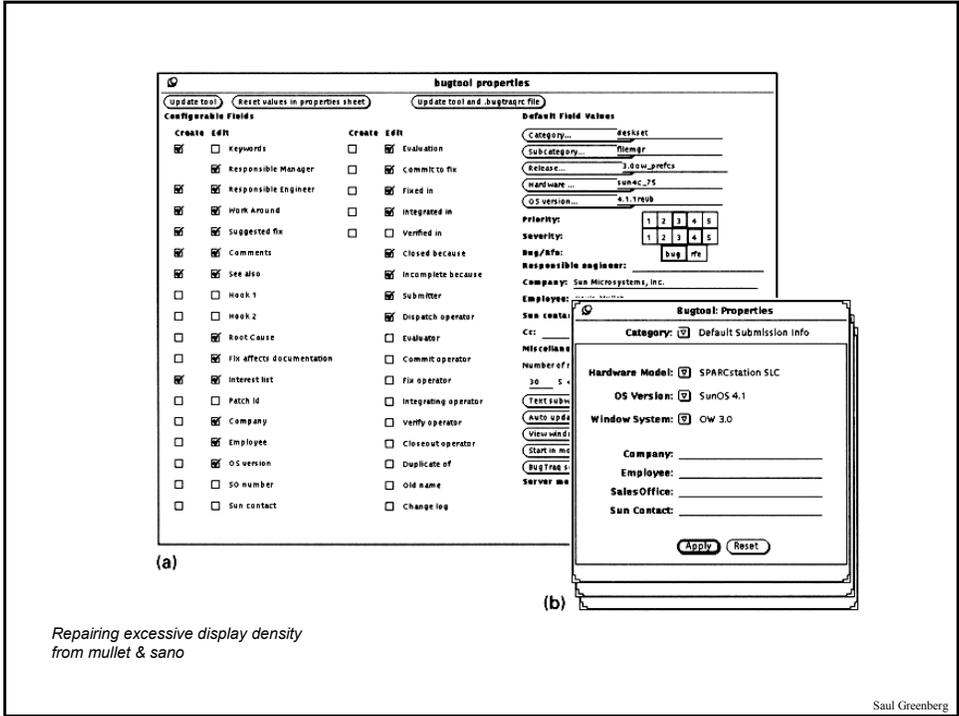
A cluttered dialog box with multiple overlapping windows. The top window has a title bar 'MMMM' and contains four 'xxx: ___' labels and four buttons. Below it is another window with a title bar 'NNNN' and two 'xxx: ___' labels and two buttons. The windows are overlapping, and the controls are crowded together.

x

A clean dialog box with a single window. The title bar is 'NNNN' and the window has a title bar 'MMMM'. It contains three 'xxx: ___' labels and two buttons. The controls are clearly visible and there is no clutter.

✓

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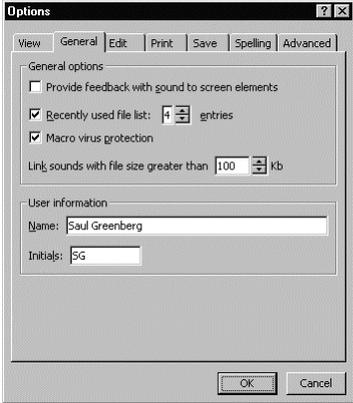


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Economy of visual elements

Tabs

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



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Legibility and readability

Whenever your local SMS Administrator sends you an actual software Package, the SMS Package Command Manager will appear (usually at network login time) displaying the available Package(s). The following screenshots display scenes similar to what you will see when you receive an actual SMS Package.

To start the demonstration, click the "CLICK HERE TO GET STARTED" button of the screen.

Popkin Software's *System Architect*

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Legibility and readability

If you wish to add/change network information, please select one of the following options.

- I WANT TO CONNECT TO AN EXISTING TIME & CHAOS WORKGROUP OR MODIFY THE CONNECTION SETTINGS.
- I WANT TO BUILD A BRAND NEW WORKGROUP.

Time & Chaos

These choices must be really important, or are they?

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Legibility and readability

- Characters, symbols, graphical elements should be easily noticeable and distinguishable

Text set in
Helvetica

TEXT SET IN
CAPITOLS

Text set in
Times Roman

Text set in
Braggadocio

Text set in
Courier

✓

✗

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Legibility and readability

Proper use of typography

- 1-2 typefaces (3 max)
- normal, italics, bold
- 1-3 sizes max

Large
Medium
Small

Large
Medium
Small

Readable

Design components to be
inviting and attractive

Design components to be
inviting and attractive

Unreadable

Design components to be
inviting and *attractive*

Design components to be
inviting and **attractive**

✓

✗

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Legibility and readability

- typesetting
 - point size
 - word and line spacing
 - line length
 - Indentation
 - color

Readable

Design components to be inviting and attractive

Design components to be inviting and attractive



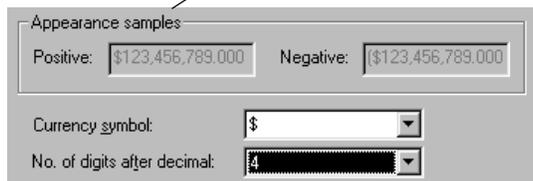
Unreadable: Design components to be easy to interpret and understand. Design components to be inviting and attractive



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Legibility and readability

Greyed-out example text hard to read. Why not make it black?



Regional Preferences applet in *Windows95*

Text orientation makes it difficult to read



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Imagery

Signs, icons, symbols

- right choice within spectrum from concrete to abstract

Icon design *very* hard

- except for most familiar, always label them

Image position and type should be related

- image “family”
- don’t mix metaphors

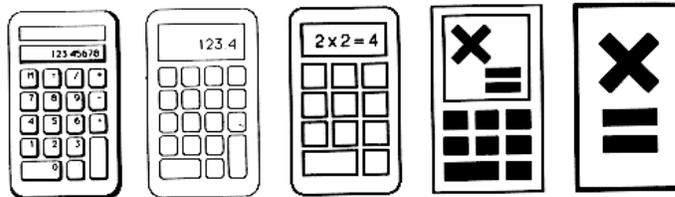
Consistent and relevant image use

- not gratuitous
- identifies situations, offerings...



Partial icon family

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x

x

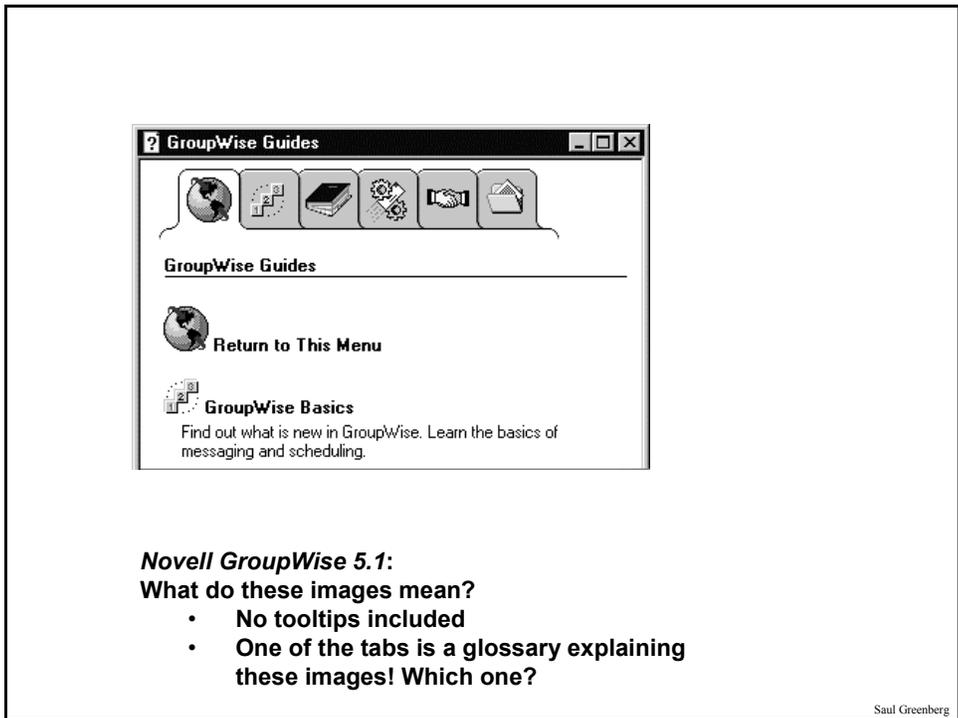
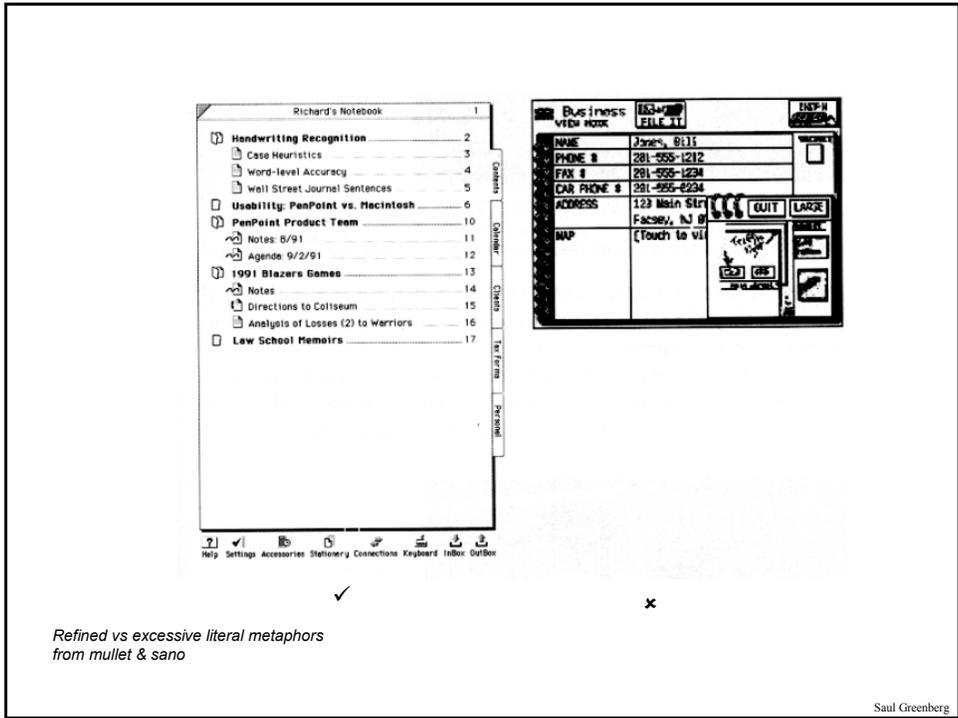
✓

✓

x

Choosing levels of abstraction
from mullet & sano

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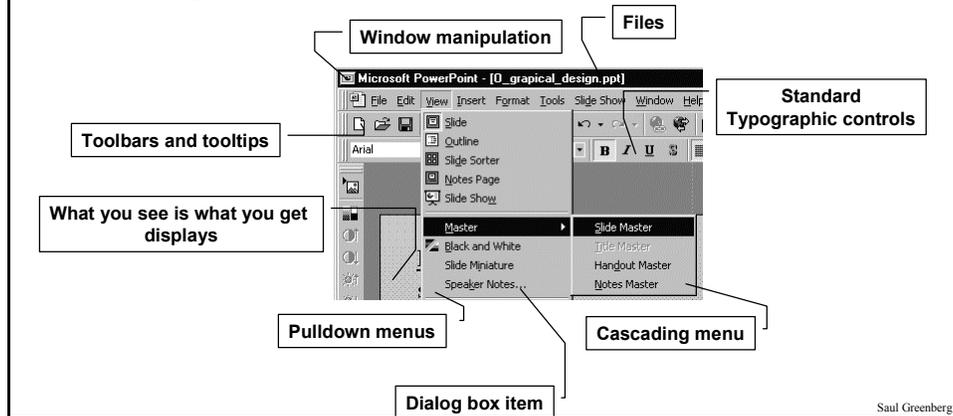


Idioms

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

Some examples



How to choose between widgets

1 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

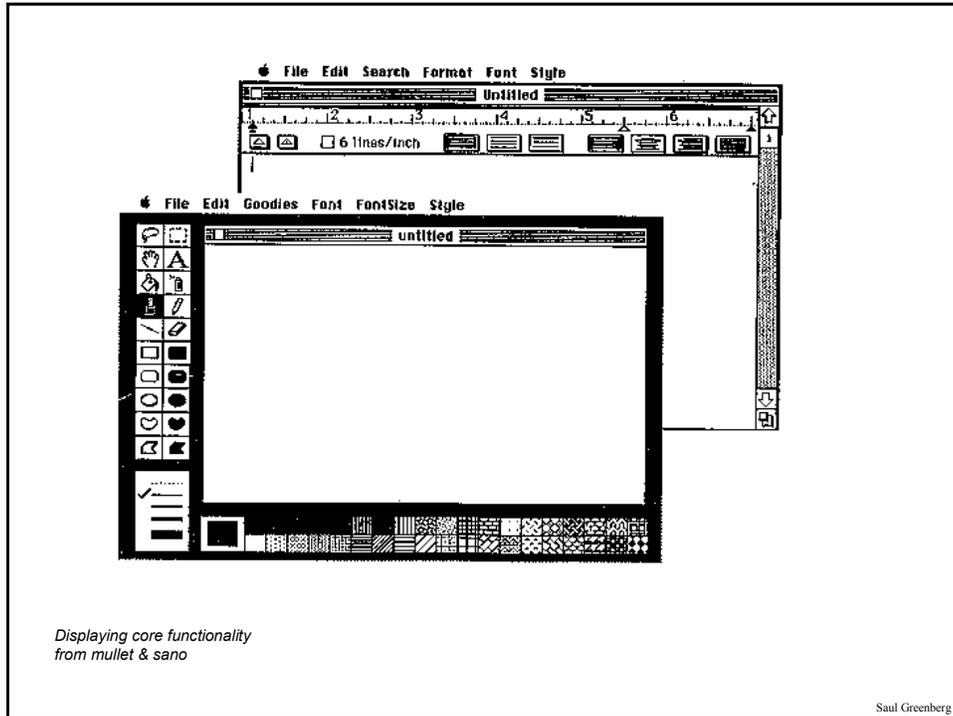
2 How are components related?

- organize related items as “chunks”

3 What are familiar and expected idioms?

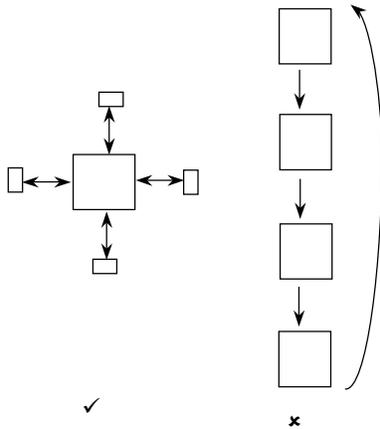
- cross application look and feel

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Widgets and complexity

- how can window navigation be reduced?
 - avoid long paths
 - avoid deep hierarchies



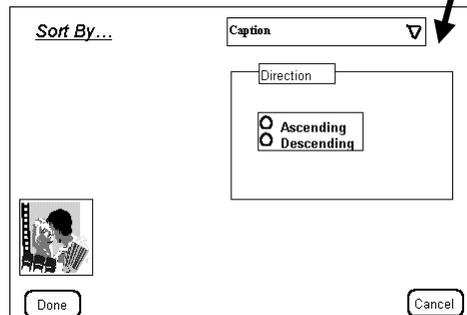
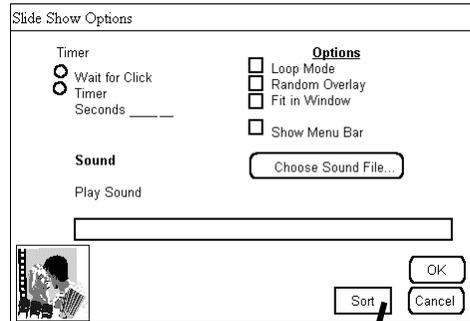
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Exercise

Graphical redesign

Create a grid emphasising:

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



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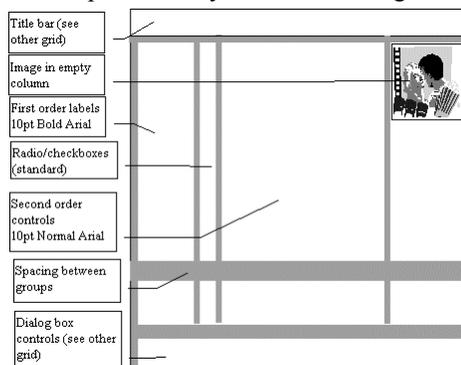
A Possible solution: Constructing a grid

Step 1. Maintain visual consistency with GUI style

- locate standard components including title bar, window controls, dialog boxes...

Step 2. Decide navigational layout + white space + legibility + typography

- annotated grid also shows where generic components will.
- these generic components may have their own grids.



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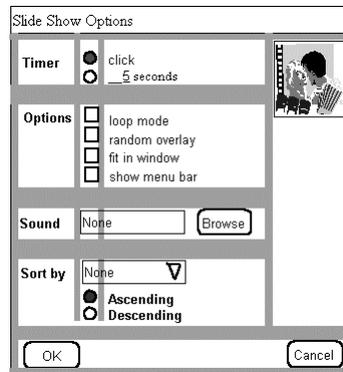
Using the grid

Step 3. Determine relationships, navigational structure

- map navigational structure onto the grid

Step 4. Economize

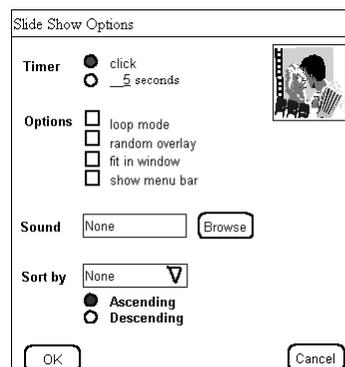
- collapse two windows into one
- trim sound dialog



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Using the grid

Step 5. Evaluate by displaying actual examples

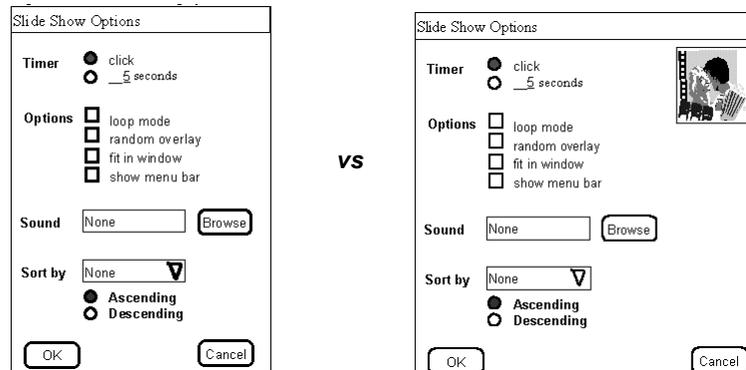


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Using the grid

Step 6. Economize further

- remove the image icon, which shrinks the window
- decide which we prefer.



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What you now know

Grids are an essential tool for graphical design

Important visual concepts include

- visual consistency
 - repetition
- visual organization
 - contrast, alignment and navigational cues
- visual relationships
 - proximity and white space
- familiar idioms
- legibility and readability
 - typography
- appropriate imagery

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