

## basic UI design in 3 easy lessons!

- one-by-one
  - WIMPish Elements
- putting them together
  - screen layout and design
- the big picture
  - navigation and dialogue



## •one-by-one – WIMPish Elements



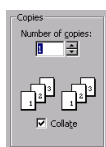
## one-by-one – WIMPish Elements

- widgets - bits that make the GUI
- what do they do
- what are they good for

## widgets?

- individual items on a GUI screen ...
  - checkboxes, menus, toolbars, buttons etc.
- three aspects:
  - appearance - what they look like
  - interaction - how they behave
  - semantics - what they mean

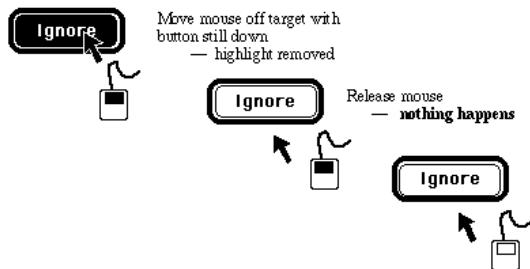
## appearance



## appearance includes words

- verbs - action words
  - quit, exit, embolden, italicise
- adjectives - description/state words
  - bold, italic
- nouns - usually as a form of description
  - Times New Roman, US Letter
- beware of mixes ...
  - embolden + italic !!?!

### behaviour



### behaviour ... ctd.

- some bits the toolkit does for you
  - but is it right?
- some you control
  - e.g. drawing, interactions between widgets
- beware timing issues
  - e.g. large selections under Windows apps.

### semantics

- menus, buttons, ..., etc.
- do things ...



... lets make it **bold italic**

### YOU say what it means

- semantics usually up to you
  - although widgets may link direct to database
  - even then, you say what links
- think separately:
  - meaning first - what you want it to do
  - then appearance - how you do it
- choose the widget for the job

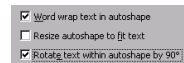
### what do you want?

- actions
  - usually menu, buttons, or toolbar
- setting state/options
  - usually checkbox, radio button, combi-box
- but ...
  - menus can be used to set state etc. ...



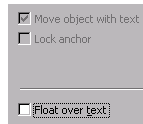
### how many?

- one of several options
  - favourite colour? ☐ red ☒ blue ☐ orange
  - radio buttons, selection menu
- zero, one or more options
  - checkbox, multi-choice menu
- free choice
  - offer recent/typical shortcuts
  - one line text boxes often terrible!



## and more ...

- number
  - fixed e.g. bold, italic, underline
  - variable e.g. font list
  - scrolling through telephone list ...
- liveness
  - grey out inactive options
- dynamic interactions
  - some choices dependent on others

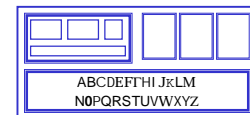


Dix, Alan  
Finlay, Janet  
Abowd, Gregory  
Beale, Russell



## putting them together screen layout and design

Willy Wonka and the Chocolate Factory  
Winston Churchill - A Biography  
Wizard of Oz  
Xena - Warrior Princess



## •Putting them together screen layout and design

- basic principles
- grouping, structure, order
- alignment
- use of white space

## basic principles

- ask
  - what is the user doing?
- think
  - what information, comparisons, order
- design
  - form follows function

## available tools

- grouping of items
- order of items
- decoration - fonts, boxes etc.
- alignment of items
- white space between items

## grouping and structure

logically together  $\Rightarrow$  physically together

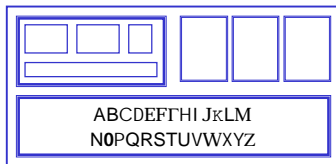
<b>Billing details:</b>		<b>Delivery details:</b>	
Name		Name	
Address: ...		Address: ...	
Credit card no		Delivery time	
<b>Order details:</b>			
item	quantity	cost/item	cost
size 10 screws (boxes)	7	3.71	25.97
.....	...	...	...

## order of groups and items

- think! - what is natural order
- should match screen order!
  - use boxes, space etc.
  - set up tabbing right!
- instructions
  - beware the cake recipe syndrome!

## decoration

- use boxes to group logical items
- use fonts for emphasis, headings
- but not too many!!



## alignment - text

- you read from left to right (English and European)

$\Rightarrow$  align left hand side

Willy Wonka and the Chocolate Factory  
Winston Churchill - A Biography  
Wizard of Oz  
Xena - Warrior Princess

boring but readable!

fine for special effects but hard to scan

Willy Wonka and the Chocolate Factory  
Winston Churchill - A Biography  
Wizard of Oz  
Xena - Warrior Princess

## alignment - names

- Usually scanning for surnames  $\Rightarrow$  make it easy!

Alan Dix  
Janet Finlay  
Gregory Abowd  
Russell Beale



Alan Dix  
Janet Finlay  
Gregory Abowd  
Russell Beale



Dix, Alan  
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## alignment - numbers

think purpose!

which is biggest?

532.56  
179.3  
256.317  
15  
73.948  
1035  
3.142  
497.6256

### alignment - numbers

visually:  
long number = big number

align decimal points  
or right align integers

627.865
1.005763
382.583
2502.56
432.935
2.0175
652.87
56.34

### multiple columns

- scanning across gaps hard:  
(often hard to avoid with large data base)

fields)	
sherbert	75
toffee	120
chocolate	35
fruit gums	27
coconut dreams	85

### multiple columns - 2

- use leaders

sherbert	.....	75
toffee	.....	120
chocolate	.....	35
fruit gums	.....	27
coconut dreams	.....	85

### multiple columns - 3

- or greying (vertical too)

sherbert		75
toffee		120
chocolate		35
fruit gums		27
coconut dreams		85

### multiple columns - 4

- or even (with care!) 'bad' alignment

sherbert	75
toffee	120
chocolate	35
fruit gums	27
coconut dreams	85

### white space - the counter

WHAT YOU SEE

white space - the counter

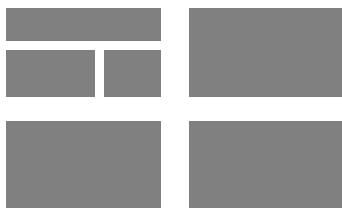
WHAT YOU SEE

THE GAPS BETWEEN

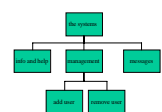
space to separate



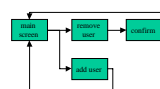
space to structure



space to highlight



•the BIG picture  
navigation and dialogue



### recap - levels

- widget choice
  - menus, buttons etc.
- screen design
- application
- environment
  - other apps, O/S

### recap - levels

- widget choice
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### the web too

- |                 |   |
|-----------------|---|
| • widget choice | • elements and tags <ul style="list-style-type: none"><li>– <code>&lt;a href="..."&gt;</code></li></ul> |
| • screen design | • page design   |
| • application   | • site navigation   |
| • environment   | • the web <ul style="list-style-type: none"><li>– external links</li></ul>                              |

### think about structure

- within a screen
  - previous lecture ...
- local
  - looking from this screen out
- global
  - structure of site, movement between screens
- wider still
  - relationship with other applications

### think about use

- who is going to use the application?
- how do they think about it?
- what will they do with it?
  - .... games?

## local

from one screen looking out

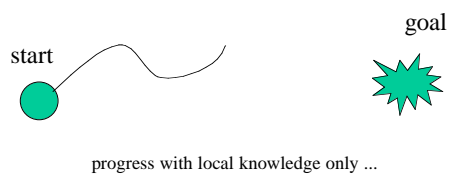
### four golden rules

- knowing where you've been
  - or what you've done
- knowing where you are
- knowing what you can do
- knowing where you are going
  - or what will happen

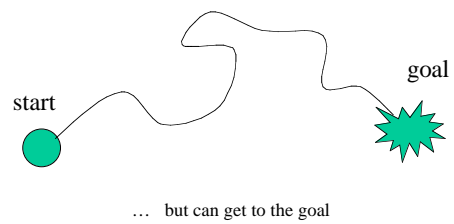
### goal seeking



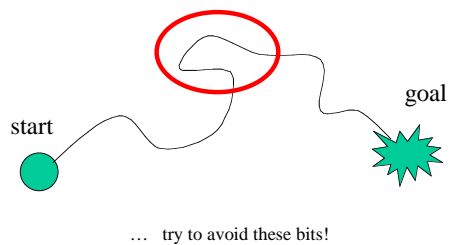
### goal seeking



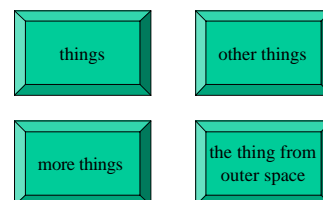
### goal seeking



### goal seeking



### beware the big button trap

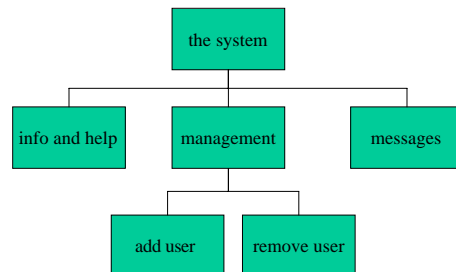




## global

between screens  
within the application

## hierarchical diagrams



## hierarchical diagrams ctd.

- parts of application
  - screens or groups of screens

- typically functional separation

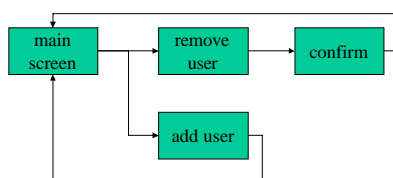


## think about dialogue

what does it mean in UI design?

Minister: do you *name* take this woman ...  
Man: I do  
Minister: do you *name* take this man ...  
Woman: I do  
Minister: I now pronounce you man and wife

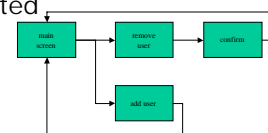
## network diagrams



## network diagrams ctd.

- what leads to what
- what happens when
- including branches

- more task oriented



### return to scenarios

- user presses 'on' button
- login prompt appears
- user enters user name and password
- top level menu page appears
- user selects 'maze'
- ... ..

### scenarios ctd.

- Pros:
- easy to understand
  - concrete (errors less likely)
- Cons:
- one route through the system
  - no branches, no special conditions
- So:
- use several scenarios
  - use several methods

### wider still

between applications  
and  
the world wide web ...

### between applications

- style issues:
  - platform standards, consistency
- functional issues
  - cut and paste
- navigation issues
  - embedded applications
  - links to other apps ... the web

### web structure

- knowing what is there
    - 3 million web sites!
    - countless pages
  - so much to see and so little time
- ... but when did you last search the  
entire Library of Congress?

### the geometry of the web

- links
  - extrinsic geometry (inxiht)
- content
  - intrinsic geometry (alexia)
  - searching and finding
- people
  - recommendation

