Interaction Design  Guidelines and Rules
Design

- **Design** is the planning (process, decisions) that lays the basis for the making of every object or system.
Design

- How are the designs of these examples made?
- Process?
- Who are involved?
- Methods?
- Techniques?
- Tools?
- How many design decisions?
- How long does it take?
How are the designs of these examples made?
Process?
Who are involved?
Methods?
Techniques?
Tools?
How many design decisions?
How long does it take?
Design rules

- Heuristics, based on research, experience and common sense
  - Perception, cognition, HCI, engineering
- Advice for different kind of design problems
  - Low level: general advice
  - High level: mandatory and very specific
- Support for evaluation
How does one learn design?

- Can you read a book about it?
- Can this course teach you design?

In groups of 2:
  - Discuss for 2 minutes
Different types of rules

- General principles, guidelines
  - “Strive for consistency” (J. Nielsen, B. Shneiderman)

- International standards
  - “Direct manipulation of output: if appropriate for the task the result of a direct manipulation should be displayed in such a way that it can be further modified by direct manipulation.” ISO/DIS 9241-16:1996(E)

- Styleguide for a product or company
  - “A standard window should have a close box. When the user clicks the close box, the window goes away.” The Windows Interface Guidelines for Software Design

- Domain specific styleguide
  - Windows Vista, Mac OS X, Volvo cars, company web, ATM, etc.
General advice - simplicity

- Don’t waste space on headers, unless really needed. For experienced users the content and position is enough.
- Don’t emphasize the importance of details that are important for the first-time user. Most things are there to support experienced users.
<table>
<thead>
<tr>
<th>Name</th>
<th>Phone</th>
<th>Ext.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erik Borälv</td>
<td>32 345</td>
<td>B</td>
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<td>UU - IT - S</td>
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<td>750 00 Uppsala</td>
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<td></td>
</tr>
<tr>
<td>018 - 12 23 34 home</td>
<td>from 02-04-01</td>
<td>Removed</td>
</tr>
<tr>
<td>018 - 18 28 81 work</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
General advice - color

- Use dark colors on bright background

- Bright colors on dark background
  - Red and yellow visible
  - Green and blue not as good

(NASA/Goddard Code 520 human-computer interface guidelines)
Strategies for design problems

- Navigate in large sets of data
  - When the system has page-bound information, allow for navigation by pages

The *generative* enhancement of a design (Thimbleby, 1984)
Standards for design?

- Standards are guidelines that have formal status. They have been judged as important and are widely used.

Think about:

- Why standards for design?
- 1 minute
Reasons for standards in design

- Easier - education
- Safety - maintenance
- Cheaper – common technology
- Higher quality
- International
Standards

- ISO/IEC 11581 - Icon symbols and functions
- ISO/IEC 11741 - Dialogue interaction - cursor control
- ISO/IEC 14915 - Multimedia user interface design - ergonomics requirements for multimedia interfaces
- ISO 13407 - Human centered design process for interactive systems
- ISO 9241 - Ergonomic requirements for office work with visual display terminals, parts 1 - 17
  - Part 11: Guidance on usability
  - Part 12: Presentation of information
- Web Accessibility Initiative (WAI), http://www.w3.org/WAI/
Components in a GUI
Apple’s style
Guidelines don’t work

- Are only understood by those who don’t need to read guidelines
- Not suited for the context
- What guidelines to choose?
- What does the guideline mean? Sun’s guidelines about the order in menus:
  - Use a logical order (if one exists) to help guide users through the process
  - Put most important or most frequently used functions at the top of the menu
Guidelines support evaluation

- Evaluating a menu design in terms of a guideline
  - “Facilitate backwards navigation”

**Before**

**After**
General guidelines

- Make the system easy to use
- Do what the user expects
- Make the system consistent
- Design for efficiency
- Clear navigation, show where you are
- Always show what’s going on
- Use icons with care
Exercise

- Are the previous guidelines useful/usable?
- Why?/Why not?
  - Discuss in groups of three…
  - 2 minutes
Consistent

- "Moreover, consistency in itself doesn’t ensure usability. It is a mistake to think that consistency in the surface properties of the interface will lead to good design.” (Microsoft)

Interface design heuristics

- In earlier HCI courses you should have learned examples of interface design heuristics.
- See a separate document for a summary with examples!
An example of design

- One task, one work area
- The interface should be ready to use immediately
- Details and overview at the same time
- Simple navigation
- Pattern recognition
Patterns
Simplicity

- Do not waste space on things that are not needed. For experienced users content and position is enough. (Shneiderman)
Simplicity

- Do not waste space on things that are not needed. For experienced users content and position is enough. (Shneiderman)

- More on simplicity later! It can be quite complex!
Clear context

- Give users information about structure and context
  - Only a small part of a web site is visible at a time

(Yale C/AIM Web Style Guide)
### March 1997

<table>
<thead>
<tr>
<th>Date</th>
<th>Occurs</th>
<th>Others</th>
<th>Reminders</th>
</tr>
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<td>Weekly</td>
<td>Time &amp; Text</td>
<td>5 minutes before</td>
</tr>
<tr>
<td>Start: 1:00 pm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>End: 2:30 pm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Frank Ludolph

**Mon 24**
- 9 am: HI meeting
- 10 am: Milind's staff
- 11 am: Blues Brothers
- 12 pm: JavaONE pre-show
- 1 pm: Blue Moon, Lunch
- 2 pm: JavaHi Staff
- 3 pm: Blue Jeans
- 4 pm: JavaCOUCHfest
- 5 pm: Blue Moon Cafe

**Tue 25**
- 9 am: HI meeting
- 10 am: Blue Moon Cafe
- 11 am: Speech Coach
- 12 pm: Annie Hall

**Wed 26**
- 9 am: HI meeting
- 10 am: Awakenings
- 11 am: JavaHi Staff
- 12 pm: Blue Jeans

**Thu 27**
- 9 am: HI meeting
- 10 am: Awakenings
- 11 am: JavaHi Staff
- 12 pm: Blue Jeans

**Fri 28**
- 9 am: HI meeting
- 10 am: Awakenings
- 11 am: JavaHi Staff
- 12 pm: Blue Jeans
Interaction styles

- Direct manipulation is (usually) simple
  - Simple icons and images are better than complex or blank (Byrne, 1993)
  - Use few colors
  - Test icons with users
    - Sorting cards in piles
<table>
<thead>
<tr>
<th>Date</th>
<th>Start</th>
<th>End</th>
<th>Occurs</th>
<th>Others see</th>
<th>Reminder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar 28, 1997</td>
<td>1:00 pm</td>
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<td>Weekly</td>
<td>Time &amp; Text</td>
<td>5 minutes before</td>
</tr>
</tbody>
</table>

**March 1997**

<table>
<thead>
<tr>
<th>Mon 24</th>
<th>Tue 25</th>
<th>Wed 26</th>
<th>Thu 27</th>
<th>Fri 28</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 am</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:1 w/ Harry</td>
<td>HI meeting Awakenings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 am</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:1 w/ Fowler</td>
<td>Drawer I-Team Bldg: CUP01 2nd Floor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 am</td>
<td></td>
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<tr>
<td></td>
<td>Switcher w/ Hinkm</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>12 pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>JavaONE pre-show Blue Moon, Lunch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plan Away Awakening Blue Jeans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 pm</td>
<td></td>
<td></td>
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<tr>
<td>IC Staff Bldg: CUP01 2nd Floor Room Blue Suede</td>
<td></td>
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<tr>
<td>3 pm</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Speech Coach Annie Hall</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 pm</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Java Couchfest Blue Moon Cafe</td>
<td>Binner - Sara</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 pm</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Music lesson</td>
<td></td>
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</tbody>
</table>
Grid design

This brings us back to type and newspapers. What might look quite obvious and normal to you when you read your daily paper is the result of careful planning and applied craft. Even newspapers with pages that look messy are laid out following complex grids and strict hierarchies.

The artistry comes in offering the information in such a way that the reader doesn’t get sidetracked into thinking about the fact that someone had to carefully prepare every line, paragraph, and column into structured pages. Design – in this case at least – has to be invisible. Typefaces used for these hardworking tasks are therefore by definition “invisible.” They have to look so normal that you don’t even notice you’re reading them. And this is exactly why designing type is such an unknown profession; who thinks about people who produce invisible things? Nevertheless, every walk of life is defined by, expressed with, and indeed, dependent on type and typography.

Just as the newspaper on the opposite page is laid out according to an underlying structure of some intricacy, this book is designed within its own constraints.

The page is divided into equal parts, each of which has the same proportion as the whole page, i.e., 2.3. The page is made up of 144 rectangles, each one measuring 12 by 18 millimeters, 12 rectangles across and 12 down. This makes the page 5.44 by 3.16 millimeters, or roughly 5 1/8 by 8 1/8 inches. The columns are multiples of the 12 millimeter unit. Because there has to be some distance between columns, 3 mm (or more for wider columns) have to be subtracted from these multiples of 12 to arrive at the proper column width.

The distance between lines of type (still technically referred to as leading) is measured in multiples of 1.5 mm. All typographic elements are positioned on this baseline grid of 1.5 mm, which is fine enough to be virtually invisible to the reader, but which helps layout and production. This discipline offers a rare grid like this one the same sort of coherence to a page as bricks do to a building. They are small enough to allow for all styles of architecture, while serving as the common denominator for all other proportions.
Alignment

- Careful alignment makes it possible to scan and read faster (Java Look and Feel Design Guidelines)
- Alignment can make the GUI look neat and well-balanced
Examples

- Align related items along column guide
- Place most important option near the top
- 7 dialog units between all buttons and controls
- 14 dialog units
- 7 dialog units
- 14 dialog units
- 24 x 16
- 15 x 8
- 10 x 12
- 20 x 24
- 64 x 64
March 1997

Date: Mar 28, 1997
Start: 1:00 pm
End: 2:30 pm

Javel-Hi Staff
Blue Jeans

Occurrences: Weekly

Finish: Forever

Reminder: 5 minutes before
## Grouping

<table>
<thead>
<tr>
<th>Art</th>
<th>Borrmaskin</th>
<th>Modell</th>
<th>Volt/W</th>
<th>Chuck</th>
<th>Pris kr</th>
</tr>
</thead>
<tbody>
<tr>
<td>5100</td>
<td>Sladdlös/skruvdr</td>
<td>Ferm 960K</td>
<td>12</td>
<td>10</td>
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</tr>
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<td>5110</td>
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<tr>
<td>5017</td>
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