1 VISUAL DESIGN PART1

Visual Design:

- Meaning – focus on aesthetics of site and its related materials by strategically implementing images, color, fonts … 一个界面整体美感设计
- Consideration:
  - 需要考虑 System Requirement
  - 需要考虑到用户的需求 users' requirement and needs
  - 考虑到不同的平台例如手机电脑平板, 也需要考虑到 context of use
- Visual Design 需要有一个 consistent reliable process, 在这个过程中需要 define 以下几点
  - Form Factor – 要在什么平台或设备上 access 此网页
  - Posture – how much user attention is assumed and what response is required
  - Input method – user access limits

What Screen Users Want: 用户所期待的界面

- An orderly, clean clutter free appearance 一个有序的, 不繁杂混乱的界面
- Expected information located where it should be – consistency & expectation
- Obvious indication of what is being shown & what should be done with it 清楚的展示如何与系统互动
- Clear indication of relationships, e.g. options, headings, data … 清楚地表示不同 element 之间的关系
- Plain simple English 使用简单清晰的语言
- Simple way to finding out what is in the system and how to get it out 用户可以轻易的找到所需信息
- Clear indication of when action can make permanent change in the data or system 当一个动作可以造成很大改变时需要告诉用户, 例如当用户没有保存文档就退出时

Layout:

- Good Layout + Logical workflow + Good color combination = 一个好的网页设计
- Layout 一定要和 workflow 有紧密的联系
- 当我们在界面上加东西时, 就会增加用户思考的时间, 会导致 cognitive load 的增加
- 当我们设计 layout 排版时, 一定要先了解系统有哪些 task, 并且搞清楚 tasks 的逻辑顺序
  - Order user interface elements -> to match the workflow
  - Consider visual groupings
- Aesthetics of layout 一些基础的排版选择
  - Symmetry 对称的
  - Balance 不一定要完全对称, 但是要平衡例如所有的行都显示两样商品最后一行不会只显示一件商品
  - Instability 半对称的 不唐突看起来也算是清晰的排版
  - Asymmetry 完全不对称的
  - Regularity 所有方块都是一样大小的
  - Irregularity 所有方块都是不一样大小的
  - Sequential 例如都是靠左对齐或都是靠右对齐的单行

Visual Interface Design Principles:

- Avoid visual noise and clutter 避免繁杂混乱的界面 -> too much clutter increases search (yahoo vs google)
- Redundant info uses up limited processing capacity 尽量不放重复的信息, 因为重复的信息也需要用户使用 attention 去看和理解, 会浪费掉用户本身就有限的 processing capacity
- Keep thing simple 尽量将事情简单化

Alignment: 对齐

- 可以降低 Visual Noise -> easier to scan information on screen
- 可以帮助视觉定向 visual orientation
- Make the window visually pleasing

COMP3511 Week4

White Space: 留白/空格

- Space provides separation between elements -> helps to reduce visual clutter 可以做到自动分区, 使界面更简洁
- Help to organize and structure related items
- Can assist with balance, clarity 例如苹果的购买页面, 空行之类的

Group Boxes: 大方块包住很多的小方块

- A line drawn around a series of elements (small boxes)
- May have label associated 大方块可能有自己的 label 相当于是用来 categorize 分类不同的小方块
- Use sparingly s the line my add to visual noise 不要使用太多
    - 例子: Microsoft word tool sections

Organize interface elements:

- 使用对比度 contrast -> color, spatial, shape contrast
    - 例如文字和背景颜色的对比不同搭配会有很大的区别
- 相似度 similarity -> 形状相似, 颜色相似
- 者不同的层次 layering 来区分整理 distinguish and organize elements
- Proximity Principle 最临近原则 – 这个原则是基于 cognitive tendency 的, 因为人一般会认为相临近的物件是有关系的 related, 例如将商品代表 icon 和分类解释放在同一个格子里, 人们就会自然地认为那个 icon 代表了那一整个分类
- Squint Test 眯眼测试 – 闭上一只眼睛, 用另一只眼睛观看界面设计, 看排版是否还是 properly grouped, 还是变得模糊 fuzzy 了起来
- Mirror Test 镜子测试 – 将界面设计对着镜子, 通过镜子来观看设计

Colour: 颜色搭配是 visual interface 很重要的一个 aspect, 但是不要使用地太多, 使用时需确认其颜色可以 integrate well into other element. 可以用来 draw attention to important items, indicate relationships, communicate status

- RGB – 红绿蓝 – 可以用来调试出比较 light 亮丽的颜色
- CMYK – Cyan 蓝绿色 Magenta 洋红色 Yellow Black – 可以用来调试出比较暗色调的颜色
- Colour schemes:
    - Saturation – the purity of the color
    - HSB – Hue Saturation Brightness 色度饱和(亮度 black to white)
    - HSL – Hue Saturation Lightness 色度饱和(颜色深浅)
- 不同颜色组合
    - Primary colors – 三原色 红黄蓝
    - Secondary colors – 6 个颜色 加上了橙色紫色和绿色
    - Tertiary colors – 12 个颜色
- Colour harmony 颜色搭配的和谐度可以使观看者有一个 balanced visual experience, 可以 deliver visual interest & sense of order
    - Analogous colors 临近的颜色 – 在色盘上使用左右临近的两个颜色 – 渐变
    - Complementary colors 相反的颜色 – 在色盘上选取颜色后画一条直线选取相反方向的颜色
        - 苹果手机的电话标识是绿色, 但提示是红色
    - Triadic colors 三角色- 选取一个颜色后以色盘中心为中点画三角形, 三个角所对应的三个颜色
- Simulating vision impairments: checking for color contrast 色盲或色弱的人可能会和普通人看到的颜色并不相同, 需考虑到颜色搭配要对所有人群都 make sense
- Transparency – 颜色饱和度的渐变 从白色到其颜色
- Figure-ground principle and color – 不同的颜色可以改变人对其图片的 focus 和 perceive 到的东西
- **Considerations for using colour:**
    - 第一版设计时尽量使用一个颜色设计 monochrome 然后再加上颜色
    - 一般来说一个界面尽量不超过四种颜色
    - 最好使用自然颜色 colors found in nature -> especially for lighter colors

- 相同或类似的颜色可以用来表示 relationship
- 截然不同的颜色可以用来分开 structure 或 layout
- 暖色调可以用来表示 action, response required, spatial closeness
- 冷色调可以用来表示 status, background information, spatial remoteness

2 VISUAL AND INTERFACE DESIGN PART 2

Menus: 菜单

- Menu Grouping:
  - 可以通过使用频率 Frequency 来分类, 或是 related commands, 或是 related function
  - Use separators between logical groupings, 并且给 menu 一个 descriptive title
- Menu Patterns:
  - 在菜单中尽量使用动词 verb
  - 当程序需要打开多个窗口时, 确认菜单的名字和里面的 command 在每一个窗口都是 consistency 的
  - Disable non-functional items by greying them – error prevention
  - Include Ellipses (…) 是很多按钮旁边的三个点 – 可以告诉用户他们需要输入更多的信息 save as …
- Menu Style:
  - Drop-down
  - Flat Lists – iPod
    - Good at display small number of options at the same time
    - 但是可能需要花很长时间来到达目标选项 -> 过程可能是沉闷的漫长的
  - Expand ones
    - Cascading menu
      - Enables more options to be shown on the same screen than is possible with a single flat menu
      - More flexible navigation -> allowing for selection of option to be done in the same menu
  - Contextual / Pop-up - 右键打开菜单 windows / 双击点开菜单 word
    - Provide access to often-used command that makes sense in the context of current task
    - Helps overcome some of the navigation problems associated with cascading menus
  - Hamburger Menus
    - Mobile navigation
    - Hiding navigation behind an icon – violate visibility – might confuse new users
- Card Sorting: 一个用来设计菜单的技巧
  - Used to establish hierarchical groupings with users – a user involves process
  - Identify the topics (menu name) – 50 < x < 100 – write them on index card (provide blank card for new categories)
  - Number cards on the back -> arrange on a large table -> explain the process and objective to participants
  - Ask participants to sort the cards and Speak Aloud -> create groupings
  - 和 usability test 相似测试员需要在 participants think aloud 的时候做下笔记
  - 如果 use 给出了太多 grouping, 告诉他们需要 arrange the groups hierarchically
  - 在结束前询问每一个 group 的名字并且让用户形容下 group 里 elements 的特征 -> reshuffle for the next session

Tabs:

Windows:

- windows need to be organized to support tasks, put related information in the same window
- try to minimize the number of windows needed to accomplish a task -> 太多 window 可能导致用户无法找到想要的窗口, 所以除了使用开新的窗口, 还可以使用以下的 technique 来替代窗口:
  - Listing
  - Iconizing
  - Shrinking 缩小
- 但是窗口可以当作 external memory 来帮助用户更加简单地 switch between tasks

- 确定窗口都大放下所有需要放下的内容
- Dialogue boxes 点开才会有的窗口一般用来储存 infrequently used/needed info

Icons:

- Icons are easier to learn and remember than commands -> recognition rather than recall
- 使用图标可以使界面更加简洁 – less clattery
- 使用用户可以理解的 icon 例如刷子代表工具之类的-> match between system and the real world
- Mapping between the icon picture and its function:
  - **Similar** (most effective) 和显示生活相似 – 例如使用文件夹的图片或图标来当作电脑中文件夹的表示
  - Analogical 类比 – 例如使用剪刀的 icon 来代表 cut
  - Arbitrary 任意的 – 例如使用 x 来代表关闭或者删除
- 当一些 action 很难用 icon 来表示的时候 -> 使用 combination of objects/symbols that capture the important part of an action
- Text label can be used alongside icons to help identification for small icon set
  - 有的时候只显示 icon 可能会 confuse 用户, 在下方加上简单的解释可以帮助用户更快地理解
- Use rollover to show the icon label for large icon set

Human Interface Guidelines 界面设计的参考方法

- 使用大家都在用的 elements -> available for most of the main graphical user interface environment
- Describe generally how to use controls and widgets properly 解释一些比较基础的操作和小部件, in order to maintain some form of consistency on the platform 这样当别的页面都使 consistency 的时候会更方便用户理解
  - 例如设计在 windows 系统上使用的界面, windows 就会提供一些设计的 guideline
- Focus on the look and feel
- Can be detailed down to the pixel dimension

Branding: 品牌化

- 可以让人很快地有一个对此网页的 first impression -> 例如新南各专业的网站都看起来差不多 / windows 的 word/ppt 都有比较相似的操作

3 BASIC STATISTICS

When we need to use the stats:

- 当我们需要计算 score of responses 反应计分的时候
  - 将反应/回馈分类化可能会更实用
- 当我们需要 summarize the finding 得时候
  - Rating Scales (likert scale/ semantic scale) can use to measure the central tendency (mean)
  - Avoid percentages if sample very small 当数据太小是就尽量不要使用百分比来表示数据
  - 如何确保数据和分析结果是 reliable 的呢? 当分析 survey 或者 questionnaire 的时候可以考虑加入一些受访者 observation 的分析

Basic Statistical Concept:

- Quantitative and Qualitative data
  - Quantitative data – expressed as numbers
    - Numerical method to compare size, magnitude or amount
    - E.g. how many steps did it take for user to accomplish task? How many second did the user use to accomplish this task
  - Qualitative data – non-numerical data
    - How to analyze
      - Try to find themes or patterns by study the nature of non-numerical data
      - Categorize data or scheme that may be pre-specified
      - Looking for Critical incident – focus on key event

        - E.g. measure dissatisfaction, how do you like this system? Use one word to describe your feeling of the system…
- <u>Mean, Mode and Median</u>
    - Mean: Average
        - Can be misleading if there are outliers
    - Median: middle most score
        - Allows to ignore extremes
    - Mode: most common score
- Variance
    - Standard Deviation: the average participant deviates form the mean of the sample
        - High standard deviation ⇔ big spread of scores
        - Low standard deviation ⇔ little spread of scores
- Graphical Representation of data
    - Graphical representation give overview of data
        - Histogram 柱状图
            - Show frequency of distribution, its useful to summarize information
        - Chart (pie chart, column chart…)
        - Table
            - Useful for summarize percentage/mean of data when there is multiple categories
- Misleading statistics
    - Unclear results that can cause different interpretations
    - Similar to overfitting and underfitting