Pere-Pau Vázquez

IDI –Usability & Design: Universal Design

Outline

- Usability issues & concepts
- Gestalt Laws

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- **Usability issues & concepts**
- Gestalt Laws

Usability issues & concepts

- The 80/20 Rule (Pareto principle)
  - Approximately 80 percentage of the effects generated by any large system are caused by only the 20 percentage of the variables in that system
  - It is observed in all large systems
    - Economics: 80% of a company revenue comes from 20% of its products
    - Computer systems: 80% of errors are caused by 20% of the components
    - Usability: 80% of application usage on only 20% of its features
  - Useful rule for focusing resources
    - Focusing on aspects of the system that are beyond the critical 20% rapidly yields diminishing returns

Usability issues & concepts

- Aesthetic-Usability Effect
  - Aesthetics play an important role in the way designs are used
  - Aesthetic designs look easier to use, and encourage its use more than non aesthetic designs
  - This effect produces the perception that an aesthetic design is easier to use than a non-aesthetic design

Usability issues & concepts

- Chunking
  - A chunk is a unit of information in short-term memory
  - Chunking is a technique that seeks to place the information in a way that accommodates to the limits the humans have to process bits of information.
    - Smaller chunks are easier to remember than larger lists
      - Most people can remember a list of 5 words for 30 seconds, but few can remember a list of ten words for 30 seconds.

Usability issues & concepts

- Chunking
  - Chunking is a technique that refers to elements that must be memorized
    - Menu items, telephone numbers…
  - It is not required to divide all the elements in a screen or page in groups of 5 or so

Usability issues & concepts

- Colour
  - It is an important feature that can make a design more visually pleasing and aesthetic
  - Can be used to reinforce layout design and the meaning of elements

Usability issues & concepts

- Colour
  - Aspects to consider:
    - Number of colours: Keep it low, up to five. Use second cue
    - Colour combinations: Analogous (neighbours), complementary, or combinations of colours found in nature
    - Saturation: Attracts attention
      - When performance and efficiency are important, the use of desaturated colours may help, perceived as more professional
      - Saturated colours are perceived as more exciting and dynamic
    - Symbolism: The meanings of colours may vary among cultures

Usability issues & concepts

- Colour

Usability issues & concepts

- Consistency:
  - **Internal consistency:** It refers to how the elements of the application are consistent with each other. Induces trust.
  - **External consistency:** Elements inside and outside the application.
  - **Aesthetic consistency:** Consistency in style and appearance (logos or trademarks with same size and colours).
  - **Functional consistency:** There is coherence between the expected and the effective results of our actions. Improves the learning curve.

Usability issues & concepts

- Five Rack Hats. Five ways to organize information:
  - **Category:** similarity relatedness
  - **Time:** chronological sequence
  - **Location:** geographical or spatial references
  - **Alphabet:** alphabetical sequence
  - **Continuum:** magnitude (highest to lowest, best to worse)

Usability issues & concepts

- LATCH principle. Redefinition of the Five Rack Hats. Information is organized according to:
  - **Location:** Information comes from different places
  - **Alphabet:** Usually for large amounts of data (dictionary…)
  - **Time:** Events with fixed durations
  - **Category:** To classify goods/elements of similar importance. Suitable for shops…
  - **Hierarchy:** By magnitude, order of importance

Usability issues & concepts

- Garbage-in garbage-out: Computer scientists have long known that inadequate input information often generates bad results
  - **Type error:** The input is provided in an incorrect type. If undetected, it may generate large amounts of garbage. Ex.: Numerical fields filled with a phone number or credit card number…
  - **Quality error:** The input has the correct type but has some defects. Ex.: Amounts of money. May be alleviated with confirmations and previews.

Usability issues & concepts

- **Banner blindness**

Usability issues & concepts

- **Inverted pyramid:** Writing style that presents first a summary of the contents and then uses the "waterfall effect" to provide the details:
  - Conclusion, then key points, then details
- **Satisficing:** Users prefer quick'n'dirty solutions that are "good enough" than the most reasonable and correct solution
  - Users are lazy and want instant gratification

Usability issues & concepts

- **Cliffhanger-Effect (Zeigarnik-Effect)**: Lets the user without unanswered questions.
  - And ask them to perform an action to find the results
- **Minesweeping:** User interactions aimed to identify links on a website.
- **Mistery-Meat Navigation:** Designs that are too difficult to understand.

Usability issues & concepts

- Iconic representation: Images try to represent objects or actions. Four types:
  - **Similarity:** The icon is similar to the action/object to be represented. Adequate for simple objects.
  - **Example:** Elements can be related to the image.
  - **Symbolic: Unlock icon**
  - **Arbitrary: Nuclear, plague**

Usability issues & concepts

- Orientation Sensitivity: Efficient perception of line orientation is highly limited.
  - Vertical or horizontal orientations are ok, while oblique orientations are more difficult to distinguish.
  - Two main phenomena in visual perception:
    - **Oblique effect:** The relative deficiency in perceptual performance for oblique contours as compared to the performance for horizontal or vertical contours.
    - **Pop-out effect:** It is the tendency of certain elements in a display to pop out as figure elements, and therefore be easily detectable.

Usability issues & concepts

- **Pictorial superiority effect:** Concepts are much more likely to be remembered experientially if they are presented as pictures rather than as words.
  - Time of exposure is small
  - After thirty seconds
    - Before 30 seconds, the same amount of information can be recalled in text than in pictures

Usability issues & concepts

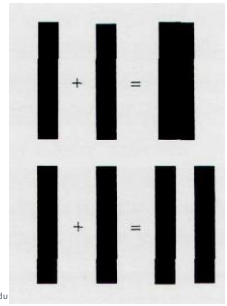
- **Rule of thirds**

Usability issues & concepts

- **Signal to noise ratio:** Measure used in science and engineering that compares the level of a desired signal to the level of background noise.
  - A ratio higher than 1:1 indicates more signal than noise.
  - The goal of communication is maximizing signal and minimizing noise.

Usability issues & concepts

- 1+1 = 3



UX Principles & Laws

- Usability issues & concepts
- **Gestalt Laws**
- Usability principles

Gestalt Laws

- Gestalt Laws relevant for visual design are:
  - Präganz Law
  - The law of closure
  - The law of similarity
  - The law of proximity
  - The law of symmetry
  - The law of continuity
  - The law of common fate

Gestalt Laws

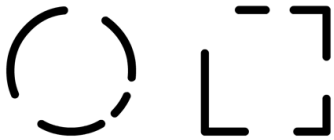
- **Pragnänz Law:** Law of good figure, simplicity. We tend to perceive simpler shapes

Gestalt Laws

- **Pragnänz Law:** Law of good figure, simplicity. We tend to perceive simpler shapes

Gestalt Laws

- **The law of closure:** The mind may experience elements it does not perceive through sensation, in order to complete a regular figure



Gestalt Laws

- **The law of similarity:** The mind groups similar elements into collective entities or totalities. This similarity might depend on relationships of form, colour, size, or brightness.

Gestalt Laws

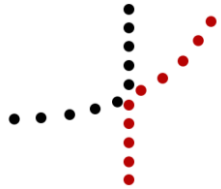
- **The law of proximity:** Spatial or temporal proximity of elements may induce the mind to perceive a collective or totality.

Gestalt Laws

- **The law of symmetry:** Symmetrical images are perceived collectively, even in spite of distance.

Gestalt Laws

- **The law of continuity:** The mind continues visual, auditory, and kinetic patterns. Elements on a line/curve may be perceived as more related than elements not on the line/curve.



Gestalt Laws

- **The law of common fate:** Elements with the same moving direction are perceived as a collective or unit.

User Experience example

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