Subject: Human Machine Interaction
B.E Sem VIII

Module 6

ICONS

Learning Objective: Identify characteristics, usability of Icons

Icons

Icons represent objects and actions. It may stand alone on a desktop or

in a window, or be grouped together in a toolbar.

Kinds of Icons:

Marcus (1984) suggests icons fall into these categories:

Icon-Something that looks like what it means.

Index-A sign that was caused by the thing to which it refers.

Symbol-A sign that may be completely arbitrary in appearance.

Rogers (1989) provided an expanded definition for icon kinds.

Resemblance—An image that looks like what it means.

Symbolic—An abstract image representing something.

Exemplar—An image illustrating an example or characteristic of something.

Arbitrary—An image completely arbitrary in appearance whose meaning must be learned.

Analogy—An image physically or semantically associated with something

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Characteristics of Icons:

➢ Icon possesses the technical qualities of syntactics , semantics, and pragmatics.

➢ Syntactics refers to an icon's physical structure.

➢ Semantics is the icon's meaning.

➢ Pragmatics is how the icons are physically produced and depicted.

 Following factors influence an icon's usability:

❖ Familiar.

❖ Clear and Legible.

❖ Simple.

❖ Consistent.

❖ Direct.

❖ Efficient.

❖ Discriminable.

❖ Complexity of task.

❖ Familiar:

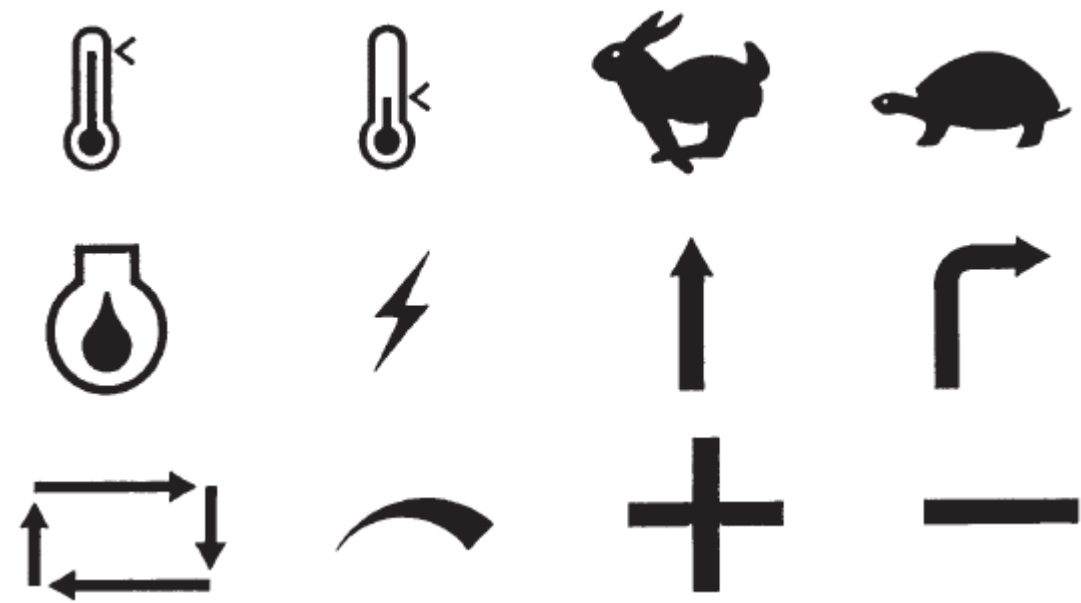fig.1 Some common icons. What do they stand for?

Hot	Cold	Fast	Slow
Engine Oil	Ammeter/Generator	Straight	Turn
Automatic	Variable Regulation (Increase/Decrease)	Plus/Positive	Minus/Negative

The icons depicted in Figure 1 have the above meanings:

Conti...

❖ **Clear and Legible:** Icons must appear correctly and consistently no matter what kind of screen is used. If color is used, it should contrast well with the background. Poor clarity will lead to identification errors and slower performance.

❖ **Simple:** Is the icon simple? Is the shape clean and devoid of unnecessary embellishments? Too many parts will only confuse the screen viewer.

❖ **Consistent:** Are families of icons consistent in structure and shape? Are the same icons displayed on different screens consistent in shape and structure?

❖ **Direct:** How "sign-like" is the icon; how well does it convey its intended meaning? Also, how does one easily convey concepts such as bigger, smaller, wider, or narrower?

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Conti...

❖ **Efficient:** A graphics screen may be less efficient, consuming more screen display space than a word or requiring more physical actions by the user than text.

❖ **Discriminability :** The symbols chosen must be visually distinguishable from other symbols.

❖ **Context:** The context of a symbol may change its meaning.

❖ **Complexity of task:** The more abstract or complex the symbol, the more difficult it is to extract or interpret its intended meaning.

Choosing Icons

A Successful Icon:

❖ Looks different from all other icons.

❖ Is obvious what it does or represents.

❖ Is recognizable when no larger than 16 pixels square.

❖ Looks as good in black and white as in color.

Size of icon:

Supply in all standard sizes.

➢ 16 × 16 pixels.

➢ 16- and 256-color versions.

➢ 32 × 32 pixels

➢ 16- and 256-color versions.

➢ Effective: 24 × 24 or 26 × 26 in 32 × 32 icon.

➢ 48 × 48 pixels

➢ 16- and 256-color versions.

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➢ Use colors from the system palette.

➢ Use an odd number of pixels along each side.

   - Provides center pixel around which to focus design.

➢ Minimum sizes for easy selection:

   - With stylus or pen: 15 pixels square.

   - With mouse: 20 pixels square.

   - With finger: 40 pixels square.

➢ Provide as large a hot zone as possible.

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Choosing Images

➢ Use existing icons when available.

➢ Use images for nouns, not verbs.

➢ Use traditional images.

➢ Consider user cultural and social norms.

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Creating Images

➢ Create familiar and concrete shapes.

➢ Create visually and conceptually distinct shapes.

　— Incorporate unique features of an object.

　— Do not display within a border.

➢ Clearly reflect objects represented.

➢ Simply reflect objects represented, avoiding excessive detail.

➢ Create as a set, communicating relationships to one another through common shapes.

➢ Provide consistency in icon type.

➢ Create shapes of the proper emotional tone.

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Drawing Images

- Provide consistency in shape over varying sizes.

- Do not use triangular arrows in design to avoid confusion with other system symbols.

- When icons are used to reflect varying attributes, express these attributes as meaningfully

- as possible.

- Provide proper scale and orientation.

- Use perspective and dimension whenever possible.

- Accompany icon with a label to assure intended meaning.

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Icon Animation and Audition

➤ Animation:

Use:

➤ To provide feedback.

➤ For visual interest.

➤ Make it interruptible or independent of user's primary interaction.

➤ Do not use it for decoration.

➤ Permit it to be turned off by the user.

➤ For fluid animation, present images at 16 or more frames per second.

Design Process

➢ Define the icon's purpose and use.

➢ Collect, evaluate, and sketch ideas.

➢ Draw in black and white.

➢ Draw using an icon-editing utility or drawing package.

Test for user:

— Expectations.

— Recognition.

— Learning.

➢ Test for legibility.

➢ Register new icons in the system's registry.

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Screen Presentation

➢ Follow all relevant general guidelines for screen design.

➢ Limit the number of symbols to 12, if possible, and at most 20.

Arrange icons:

— In a meaningful way, reflecting the organization of the real world.

— To facilitate visual scanning.

— Consistently.

➢ Place object and action icons in different groups.

➢ Present an interactive icon as a raised screen element.

➢ Ensure that a selected icon is differentiable from unselected icons.

➢ Permit arrangement of icons by the user.

➢ Permit the user to choose between iconic and text display of objects and actions.

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