Select
the Proper Interaction Device

Interaction Device

adalah suatu mekanisme *input* atau *device* yang digunakan *user* untuk mengomunikasikan keinginan dan kebutuhannya kepada komputer, dan/atau mekanisme *output* atau *device* yang digunakan komputer untuk memberikan respon kepada *user*

Pemilihan Device yang tepat adalah hal PENTING!

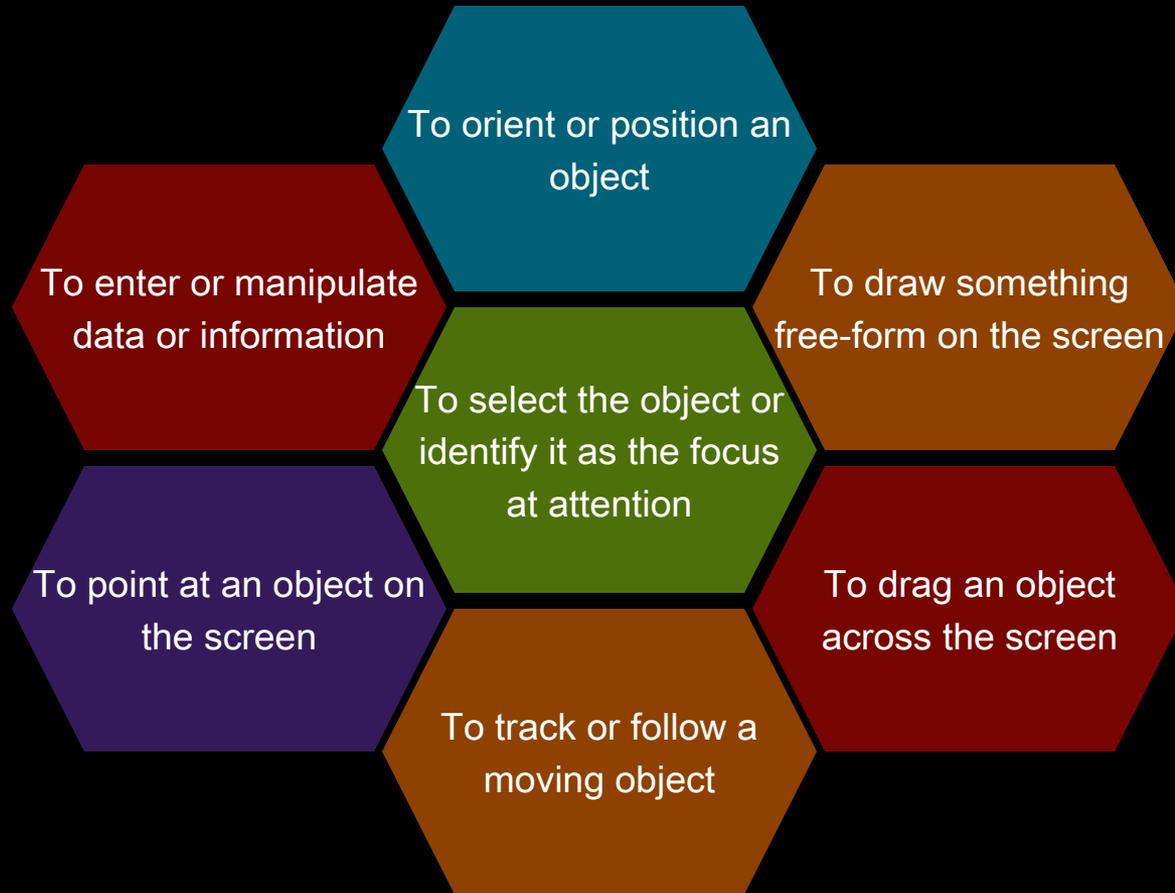Jika Tepat maka Performansi cepat dan akurat, Jika Tidak tepat produktifitas turun, error naik, STRESS

CHARACTERISTICS OF INPUT DEVICE

Task Performed using today system

To orient or position an object

To enter or manipulate data or information

To draw something free-form on the screen

To select the object or identify it as the focus at attention

To point at an object on the screen

To drag an object across the screen

To track or follow a moving object

Factor of consideration

Discrete VS Continous

Factor Of Consideration

Direct VS Indirect

n, distance, and
movement hand and
rresponding pointer

Trackball

Description

A spherical object (ball) that rotates freely in all directions in its socket.

Direction and speed is tracked and translated into cursor movement.

Advantages

Direct relationship between hand and pointer movement in terms of direction and speed.

Does not obscure vision of screen.

Does not require additional desk space (if mounted on keyboard)

Disadvantages

Movement is indirect, in a plane different from the screen.

No direct relationship exists between hand and pointer movement in terms of distance.

Requires a degree of eye-hand coordination.

Requires hand to be removed from keyboard keys.

Requires different hand movements.

Requires hand to be removed from keyboard (if not mounted on keyboard).

Requires additional desk space (if not mounted on keyboard).

May be difficult to control.

May be fatiguing to use over extended time.

Joystick

Description

A stick or bat-shaped device anchored at the bottom.

Variable in size, smaller ones being operated by fingers, larger ones requiring the whole hand.

Variable in cursor direction movement method, force joysticks respond to pressure;

movable ones respond to movement.

Variable in degree of movement allowed, from horizontal-vertical only to continuous.

Disadvantages

Movement indirect, in plane different from screen.

Indirect relationship between hand and pointer in terms of speed and distance.

Requires a degree of eye-hand coordination.

Requires hand to be removed from keyboard keys.

Requires different hand movements to use.

Requires hand to be removed from keyboard (if not mounted on keyboard).

Requires additional desk space (if not mounted on keyboard).

May be fatiguing to use over extended time.

May be slow and inaccurate.

Advantages

Direct relationship between hand and pointer movement in terms of direction.

Does not obscure vision of screen.

Does not require additional desk space (if mounted on keyboard).

Graphic Tablet or Trackpad

Description

Pressure-, heat-, light-, or light-blockage-sensitive horizontal surfaces that lie on the desktop or keyboard.

May be operated with fingers, light pen, or objects like a stylus or pencil.

Pointer imitates movements on tablet.

Advantages

Direct relationship between touch movements and pointer movements in terms of direction, distance, and speed.

More comfortable horizontal operating plane.

Does not obscure vision of screen

Disadvantages

Movement is indirect, in a plane different from screen.

Requires hand to be removed from keyboard.

Requires hand to be removed from keyboard keys.

Requires different hand movements to use.

Requires additional desk space.

Finger may be too large for accuracy with small objects

Touch Screen

Description

A special surface on the screen sensitive to finger or stylus touch.

Advantages

Direct relationship between hand and pointer location in terms of direction, distance,and speed.
Movement is direct, in the same plane as screen.
Requires no additional desk space.
Stands up well in high-use environments.

Disadvantages

Finger may obscure part of screen.
Finger may be too large for accuracy with small objects.
Requires moving the hand far from the keyboard to use.
Very fatiguing to use for extended period of time.
May soil or damage the screen.

Touch Screen

Design Guidelines

Screen objects should be at least 3⁄4 × 3⁄4 inches in size.

Object separation should be at least 1⁄8 inch.

Provide visual feedback in response to activation. Auditory feedback may also be appropriate.

When the consequences are destructive, require confirmation after selection to eliminate inadvertent selection.

Provide an instructional invitation to begin using.

Light Pen

Description

A special surface on a screen sensitive to the touch of a special stylus or pen
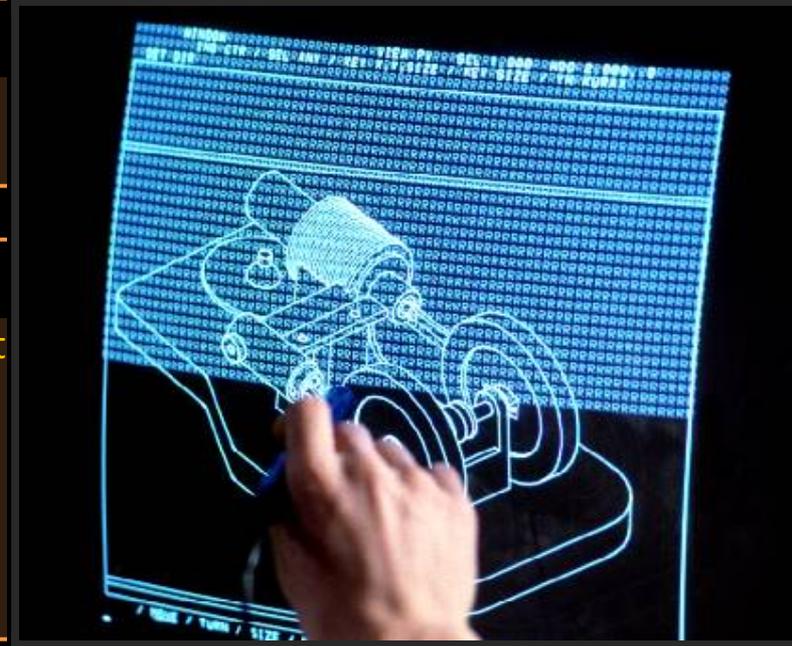
Advantages

Direct relationship between hand and pointer movement in terms of direction, distance, and speed.

Movement is direct, in the same plane as screen.

Requires minimal additional desk space.

Stands up well in high-use environments.

More accurate than finger touching.

Disadvantages

Hand may obscure part of screen.

Requires picking it up to use.

Requires moving the hand far from the keyboard to use.

Very fatiguing to use for extended period of time.
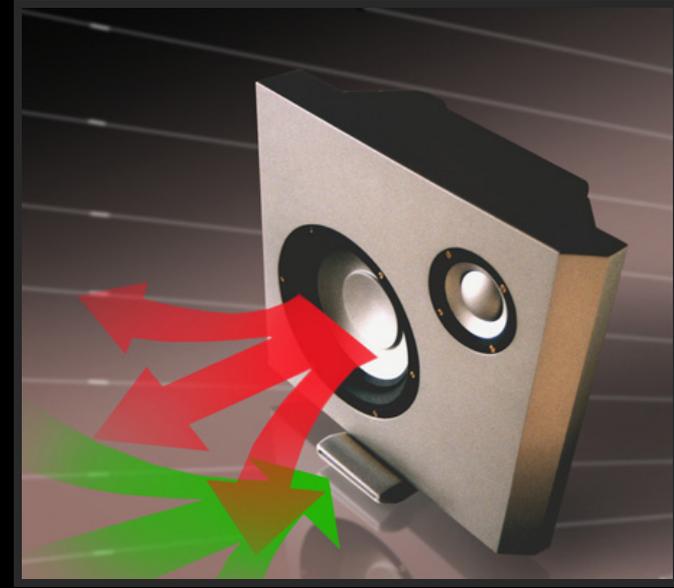
Voice

Description

Automatic speech recognition by the computer.

Advantages

Simple and direct.

Useful for people who cannot use a keyboard.

Useful when the user's hands are occupied.

Disadvantages

High error rates because of difficulties in

- **Recognizing boundaries between spoken words.**
- **Blurred word boundaries because of normal speech patterns.**

Slower throughput than with typing.

Difficult to use in noisy environments.

Impractical to use in quiet environments.

Mouse

Description

Arectangular or dome-shaped, movable, desktop control containing from one to three buttons used to manipulate objects and information on the screen.

Movement of screen pointer mimics the mouse movement.

Advantages

Direct relationship between hand and pointer movement in terms of direction, distance, and speed.

Permits a comfortable hand resting position.

Selection mechanisms are included on mouse.

Does not obscure vision of the screen.

Disadvantages

Movement is indirect, in a plane different from screen.

Requires hand to be removed from keyboard.

Requires additional desk space.

May require long movement distances.

Requires a degree of eye-hand coordination.

Mouse

Mouse Usage Guidelines

Provide a "hot zone" around small or thin objects that might require extremely fine mouse positioning.

Never use double-clicks or double-drags as the only means of carrying out essential operations.

Do not use mouse plus keystroke combinations.

Do not require a person to point at a moving target

Keyboard

Description

Standard typewriter keyboard and cursor movement keys.

Advantages

Familiar.

Accurate.

Does not take up additional desk space.

Very useful for

- Entering text and alphanumeric data.
- Editing text and alphanumeric data.
- Keyed shortcuts — accelerators.
- Keyboard mnemonics — equivalents.

Advantageous for

- Performing actions when less than three mouse buttons exist.
- Use with very large screens.
- Touch typists.

Disadvantages

Slow for non-touch-typists.

Can be over-elaborate.

Slower than other devices in pointing.

Requires discrete actions to operate.

No direct relationship between finger or hand movement on the keys and cursor movement on screen in terms of speed and distance.

Keyboard

Keyboard Usage Guidelines

Provide keyboard accelerators.

— Assign single keys for frequently performed, small-scale tasks.

— Use standard platform accelerators.

— Assign Shift+key combinations for actions that extend or are complementary to the actions of the key or key combination used without the Shift+key.

Assign Ctrl+key combinations for

• Infrequent actions.

• Tasks that represent larger-scale versions of the task assigned to the unmodified key.

Provide keyboard equivalents.

— Use standard platform equivalents.

— Use the first letter of the item description.

— If first letter conflicts exist, use

• Another distinctive consonant in the item description.

• A vowel in the item description.

Provide window navigation through use of keyboard keys.

Other Input Device

Gesture Recognition
Facial Expression
Eye Tracking device
Fingerprint
Handwriting

SELECTING THE PROPER INPUT DEVICE

Panduan dalam memilih Input device yang sesuai

Karakteristik Task

Karakteristik User dan preferences

Karakteristik dari environment

Karakteristik dari Hardware

Karakteristik dari device dipandang dari aplikasi yang dibuat/digunakan

Fleksibilitas

Minimalisir pergerakan tangan dan mata

Pointer Guidelines

Pointer :

    Harus selalu terlihat

    Harus kontras dengan background

    Harus memiliki ukuran yang konsisten ketika bergerak

    Area Hotspot harus mudah dikenali posisinya

User harus selalu bisa menentukan posisi pointer

Bentuk pointer

Pergunakan bentuk/variasi bentuk dari pointer secukupnya

Berikan kebebasan kepada user saat menggerakkan pointer di dalam layar

Animasi seharusnya tidak:

    membingungkan

    Mengurangi kemampuan untuk berinteraksi

Output Device

Screen

Image

Color

Size

Speaker

Penggunaan Sound bisa berupa simple beep, speech, music dan sound effect.