A dark, moody scene with a desk lamp, a pen holder, a pen, a stylus, and a keyboard, with a blue screen in the background.

**SELECT
THE PROPER
INTERACTION
DEVICE**

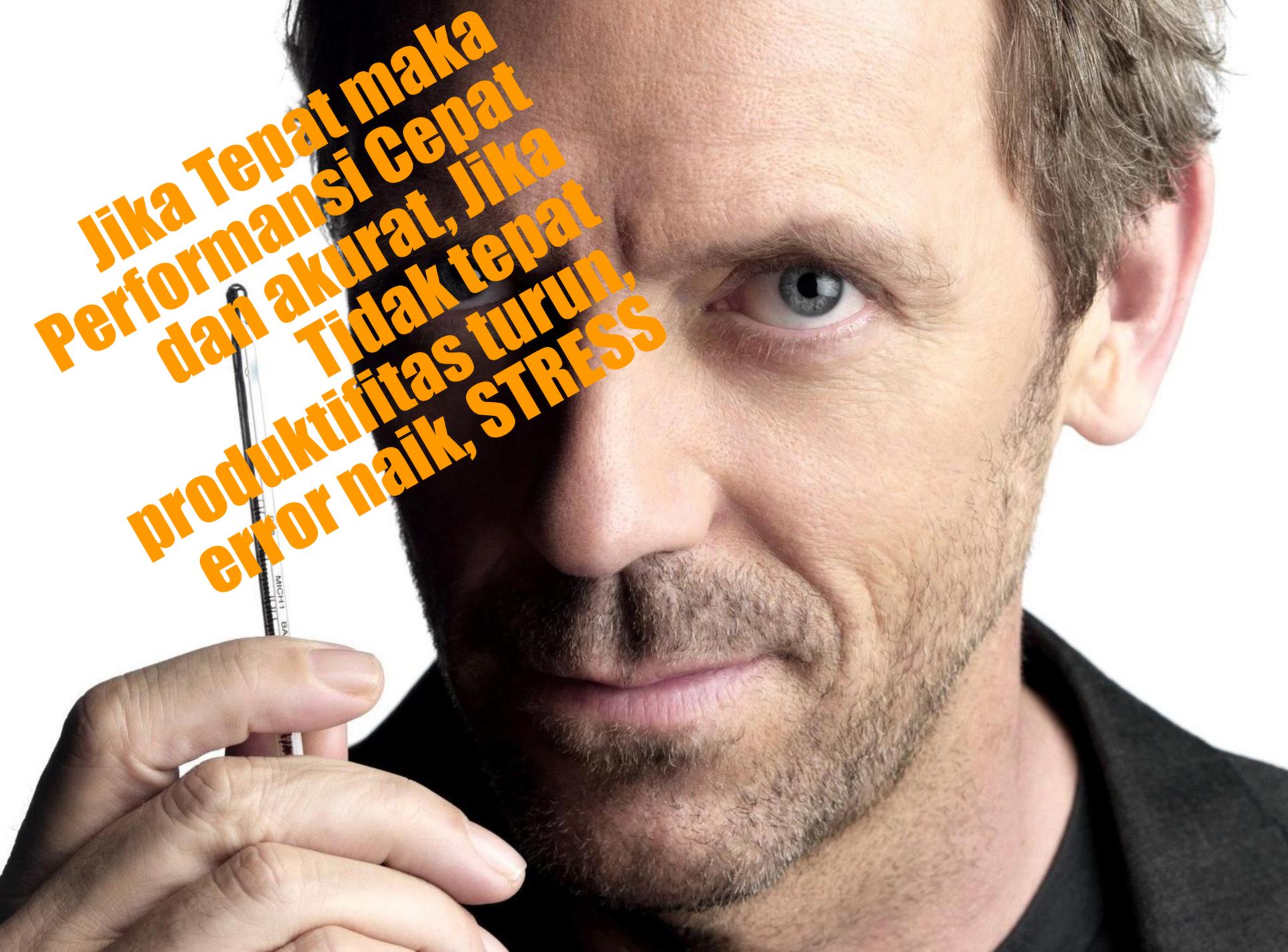


Interaction Device

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!**



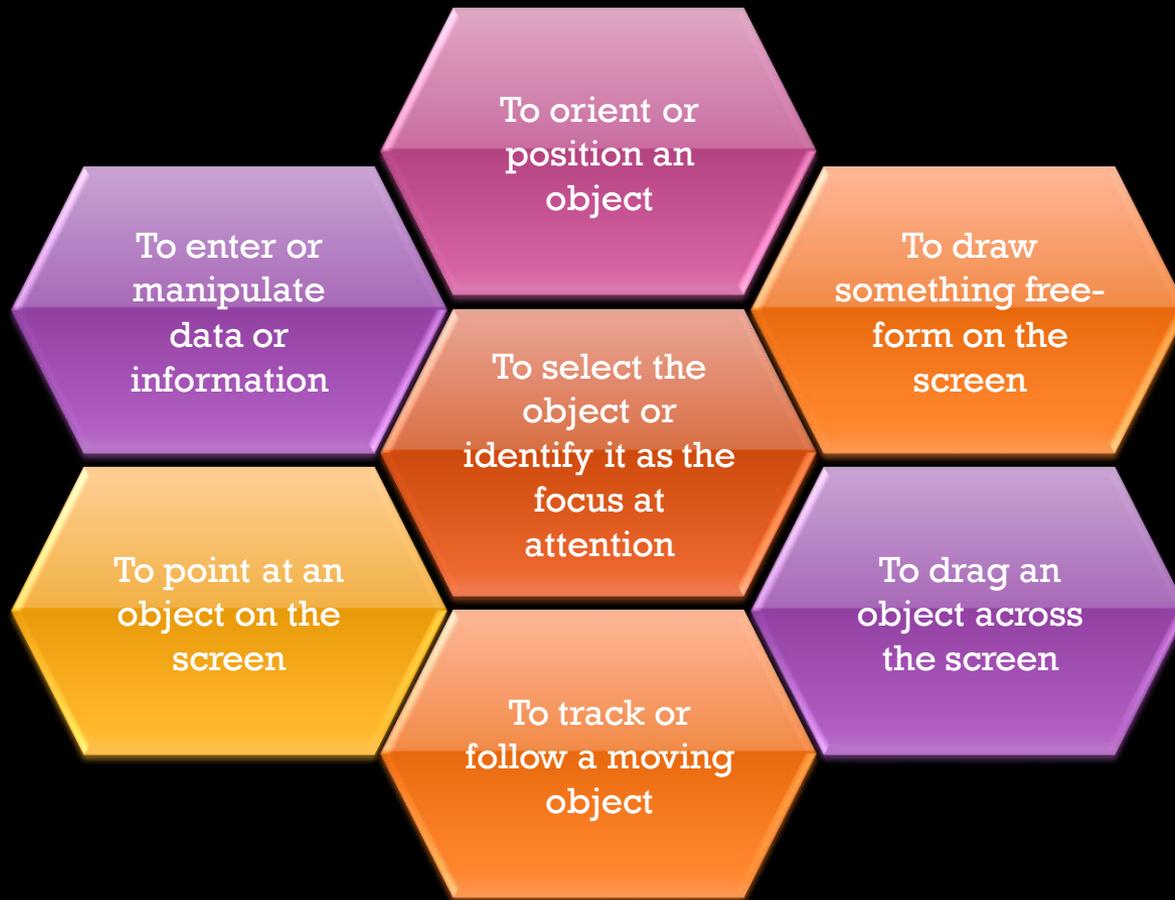


**Jika Tepat maka
Performansi Cepat
dan akurat, Jika
Tidak tepat
produktifitas turun,
error naik, STRESS**

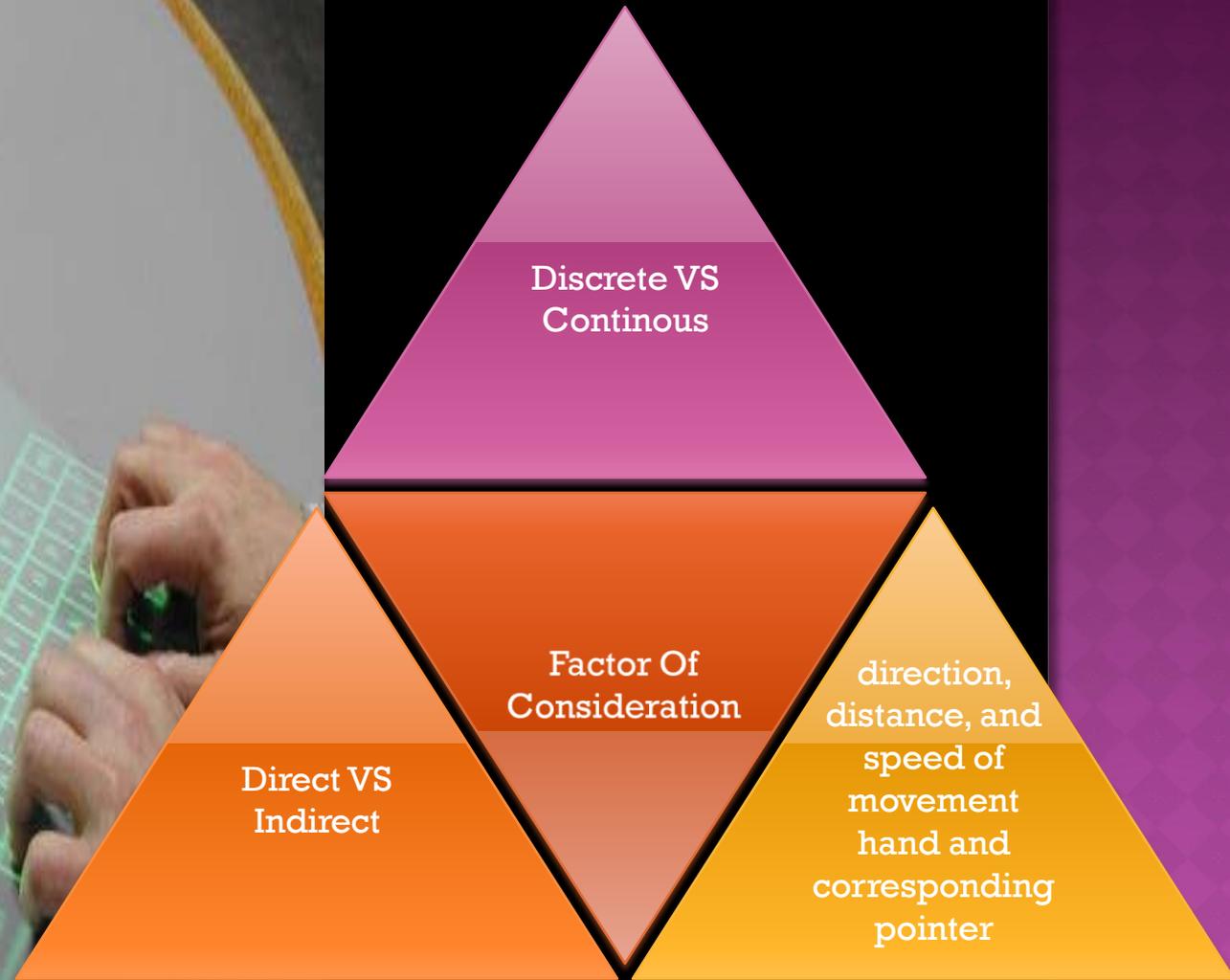
CHARACTERISTICS OF INPUT DEVICE



Task Performed using today system



FACTOR OF CONSIDERATION



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 $3/4 \times 3/4$ 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

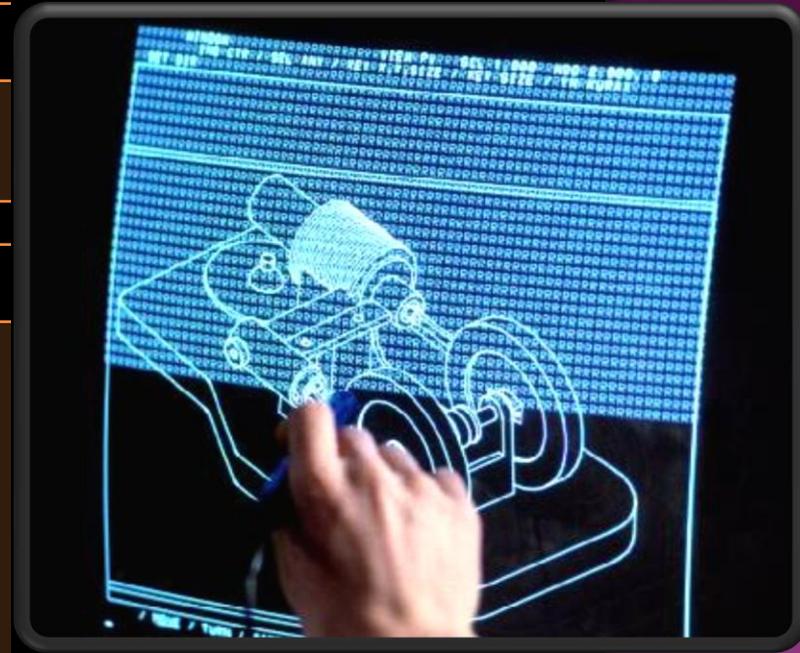
- ❑ A special surface on a screen sensitive to the touch of a special stylus or pen

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

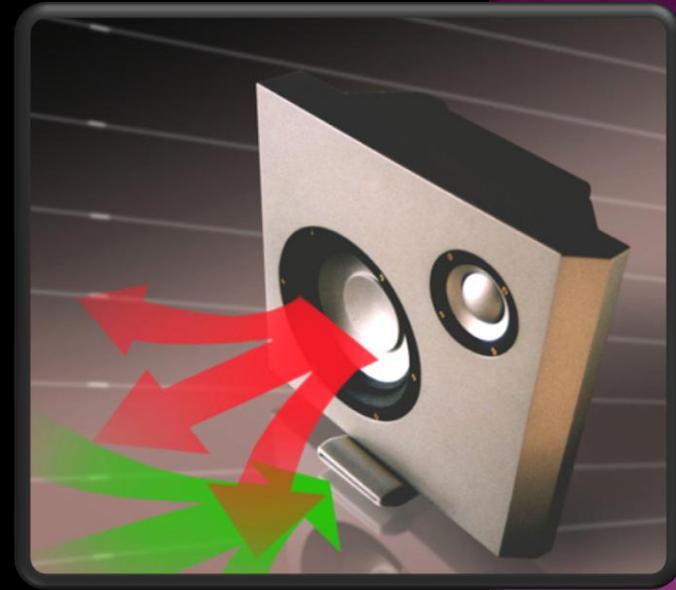
- ❑ Automatic speech recognition by the computer.

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

- ❑ A rectangular 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



End Call

004017255782

Call time: 00:02:41

Messages	1	2	3
Addr. Book	4	5	6
ations	7	8	9
ices	*	0	#

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.

