VIRTUAL KEYBOARD
What is the Virtual Keyboard?

- Optically projected Keyboard
- Miniature, stand alone accessory.
- Fully functional as a standard keyboard.
- Connect via Bluetooth.
- Employed with Pcs, tablet Pcs, laptops, PDAs and smart phones.
VIRTUAL KEYBOARD
WHY?

- To get rid of heavy and chunky keyboards
- Some zany inventions for portable keyboards were too odd.
  like:
  - Roll-up keyboard
  - Wrist Keyboard
  - Frog pads
- Alternative mechanism for disabled users who can not use physical keyboards.
- Extremely functional input device for PDAs.
- As emulation software for systems having fewer buttons.
VIRTUAL KEYBOARD

IDEA AND SCHEME

Invented and patented by IBM in 1992.

1) Emits two laser beam:
   a) Red beam: project keyboard image
   b) Invisible beam: sensing function

2) Optically detect human hand and finger motions.

3) Interprets them as operations on a physically non-existent input device like painted surface.
OVERVIEW
HOW VIRTUAL KEYBOARD WORKS?

Unique, patent-pending electro-optical technology implemented using standard, low-cost components.
**Step 1:**

**Template creation (Projection Module)**

1) A template of the desired interface is projected onto the adjacent interface surface.

2) The template is produced by illuminating a specially designed, highly efficient holographic optical element with a red diode laser.

3) The template serves only as a reference for the user and is not involved in the detection process.
**Step 2:**

*Reference plane illumination (Micro-illumination Module TM)*

1) An infra-red plane of light is generated just above the interface surface.
2) This light is invisible to the user and floats a few millimeters above the surface.
Step 3:

**Map reflection coordinates (Sensor Module)**

1) When the user touches a key position on the interface surface:
   a) Light is reflected from this plane in the vicinity of the key
   b) It is directed towards the sensor module.
2) Reflected light from user interactions with the interface surface is passed through an infra-red filter.

3) Imaged on to a CMOS image sensor in the sensor module.
4) Custom hardware embedded in the sensor chip (the Virtual Interface Processing Core TM) then makes a real-time determination of the location of the reflected light.

5) The processing core can track multiple reflection events simultaneously and can thus support both multiple keystrokes and overlapping cursor control inputs.
BEHAVIOUR
‘Very near to traditional one’

- Sound setup to emit key click sound.
- Adjustable key sensitivity.
- Enable repeat rate and auto-repeat.
- Provide facility for automatic timeout for power saving.
- Easily chargeable.
- Micro-switch: automatic switch on or off
APPLICATIONS

- Freed from PDAs miniature keyboard.
- Boon for disabled persons.
- Rid from strain caused by laptops.
- Can be connected with any informational device.
- Really cool to be used for speed enhancement and error reduction.
WHAT ARE THE LIMITATIONS OF VIRTUAL KEYBOARD?

1) Need of installation of HID (Human interface devices) and SPP (serial port profile for compatibility.

2) NO use in extreme Light conditions.

3) Require proper pairing with monitor.

4) High cost.

5) Charging problem

6) Need extra care for sensible parts.
THANK YOU