WHAT IS TO BE EXPLAINED..

➢ INTRODUCING THE TECHNOLOGY
➢ HOW IT WORKS?
➢ TOUCH SCREEN DIVERSITY
➢ CONTROLLERS USED
➢ APPLICATIONS
➢ CLOSING THOUGHTS
A touchscreen is an input device that allows users to operate a PC by simply touching the display screen giving the output in the same page.

The display screen has a sensitive glass overlay placed on it and we could give the desired input by touching it.

A touch screen is based on CRT (Cathode Ray Tube) technology, that accepts direct onscreen input which is facilitated by an external (light pen) or an internal device (touchscreen overlay and controller).
HOW DOES A TOUCHSCREEN WORK?

The touchscreen has three major components:

- touch sensor
- controller
- software driver
1-TOUCH SENSOR

- It is a clear glass panel with a touch sensitive surface which is placed over a display screen so that the responsive area of the panel covers all the viewable area of the display screen. (see the picture)

- Generally an electrical current or signal goes through it and touching the screen causes a voltage / signal change. This change is responsible for the determination of the location of the touch to the screen
The controller is a small PC card that connects between the touch sensor and the PC. It takes information from the touch sensor and translates it into information that the PC can understand.
3. SOFTWARE DRIVER

- This is a software that allows touch screen and computer to compatibility. It helps the computer's operating system to interpret the touch event information that is sent from the controller.

- This makes touching the screen the same as clicking your mouse at the same location on the screen as most touch screen drivers today are a mouse-emulation type driver.
TOUCH SCREEN TYPES

- RESISTIVE TOUCH TECHNOLOGY
- SURFACE WAVE TECHNOLOGY
- CAPACITIVE TECHNOLOGY
RESISTIVE TOUCH TECHNOLOGY

1. Polyester Film.
2. Top Resistive Layer.
3. Conductive Transparent Metal Coating.
5. Insulating Dots.
6. Glass Substrate
Contd.

- Resistive touch screen monitor is composed of a flexible top layer and a rigid bottom layer separated by insulating dots, attached to a touch screen controller.

- The inside surface of each of the two layers is coated with a transparent metal oxide coating.
Contd.

- Pressing the flexible top sheet creates electrical contact between the resistive layers, producing a switch closing in the circuit.

- The touch screen controller gets the alternating voltages between the two layers and converts them into the digital X and Y coordinates of the activated area.
VS20UA CONTROLLER

- **Supply Voltage**
  5.0V DC

- **Maximum Current**
  20mA (Pick)

- **Resolution**
  12-bit
SURFACE WAVE TECHNOLOGY

- It has a transmitting and receiving transducers for both the X and Y axes.

- The touchscreen controller sends a five-megahertz electrical signal to the transmitting transducer, which converts the signal into ultrasonic waves within the glass.

- These waves are directed across the front surface of the touchscreen by an array of reflectors.

- Reflectors on the opposite side gather and direct the waves to the receiving transducer, which reconverts them into an electrical signal—a digital map of the touchscreen.
Contd.

When you touch the screen, you absorb a portion of the wave traveling across it. The received signal is then compared to the stored digital map, the change recognized, and a coordinate calculated. The digitized coordinates are transmitted to the computer for processing.
SAW Touch Screen Technology

Transducer

Reflectors

Touch pressure absorbs a portion of the acoustic waves. This change is then converted into X and Y co-ordinates.
2701RSU CONTROLLER

- **Voltaze**
  +5 VDC

**Baud Rate**
9600 (default) and 19200

- **Touch Resolution**
  12bit, size independent

- **Conversion Time**
  10 ms per coordinate
CAPACITIVE TOUCH SCREENS

- Surface Capacitive
- Projected Capacitive
SURFACE CAPACITIVE

- It has a uniform conductive coating on a glass panel.

- During operation, electrodes around the panel's edge evenly distribute a low voltage across the conductive layer & creates an uniform electric field.

- A finger touch draws current from each corner.

- Then the controller measures the ratio of the current flow from the corners and calculates the touch location.
5000RSU SERIAL CONTROLLER

- **Supply Voltage**: +5 VDC or +12
- **Baud Rate**: 9600 (default) and 19200
- **Touch Resolution**: 12bit, size independent.
- **Conversion Time**: Approximately 15 ms per coordinate set
PROJECTED CAPACITIVE

3 layers: - front and back protective glass provides optical and strength enhancement options & middle layer consists of a laminated sensor grid of micro-fine wires
Contd.

- During a touch, capacitance forms between the finger and the sensor grid.

- The embedded serial controller in the touch screen calculates touch location coordinates and transmits them to the computer for processing.
Capacitance forms between the finger and an electrode in the sensor grid.

Front glass layer

Sensor grid layers

Back glass layer

Touch controller chip
APPLICATIONS

- Public Information Displays
  tourism displays, trade show displays

- Customer Self-Service
  stores, restaurants, transportation hubs, ATM
  and airline e-ticket terminals.

- And many more uses...
  digital jukeboxes, computerized gaming,
  student registration systems, multimedia
  software, financial and scientific applications,
  and more.
<table>
<thead>
<tr>
<th>ADVANTAGES</th>
<th>DISADVANTAGES</th>
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<tbody>
<tr>
<td>Utilizes natural abilities of user</td>
<td>Slower alphanumeric data entry</td>
</tr>
<tr>
<td>requires no additional desk space</td>
<td>Less accuracy (more errors)</td>
</tr>
<tr>
<td>Durability</td>
<td>Finger may obstruct view of object on screen</td>
</tr>
<tr>
<td>display clarity</td>
<td></td>
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<tr>
<td>Direct manipulation</td>
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CONCLUSION

The touch screen technology is very user friendly, fast & fun to operate. So it may replace the mouse and keyboard completely in future.
THANK YOU