TOUCH SCREEN TECHNOLOGY

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Introduction Of Touch Screen

- A touch screen is a display which can detect the presence and location of a touch within the display area.

- The term generally refers to touch or contact to the display of the device by a finger or hand.

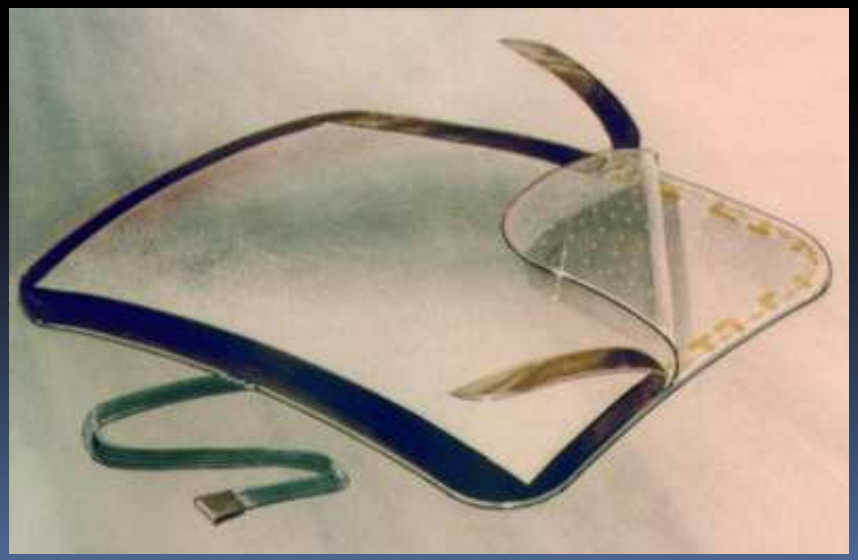
History

-1971
the first "touch sensor" was developed by Doctor Sam Hurst (founder of Elographics) called "Elograph".

History

-1974
the first true touch screen incorporating a transparent curved glass sensor surface came on the scene developed by Sam Hurst and Elographics.

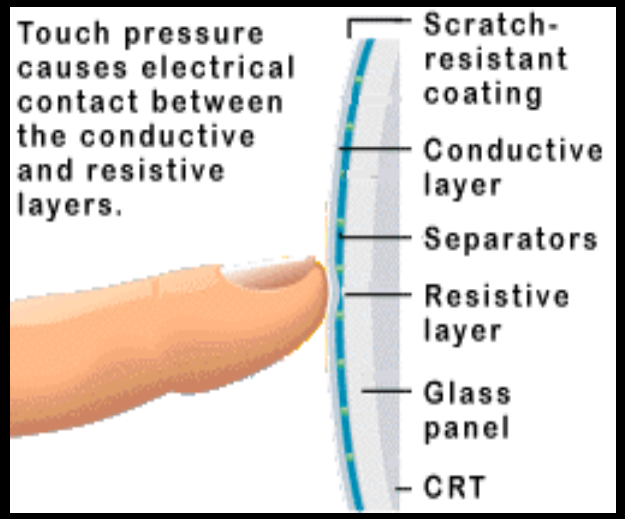
-1977
Elographics developed & patented *five-wire resistive* technology, called "AccuTouch".



Types

Resistive Touchscreens

-consists of a glass or acrylic panel that is coated with electrically conductive and resistive layers. The thin layers are separated by invisible separator dots.



Advantages

-High touch resolution

-Pressure sensitive, works with any stylus

-Not affected by dirt, dust, water, or light

- Costs are relatively low when compared with active touch screen technologies.

Disadvantages

-75 % clarity

-Resistive layers can be damaged by a sharp object

Types

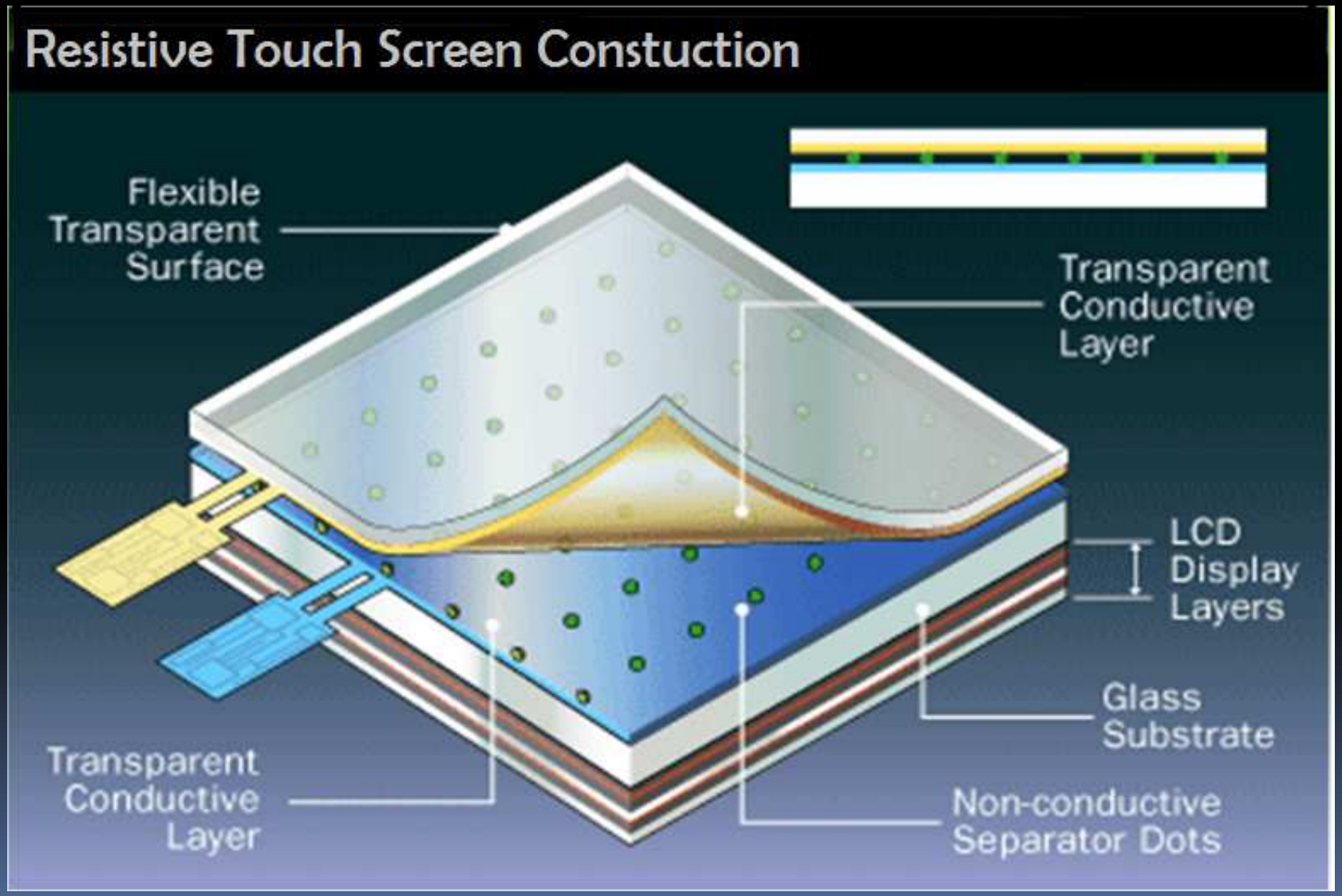
5-Wire Resistive Touchscreens

- better version of 4-Wire Resistive technology.

Advantages
-High touch resolution
-Pressure sensitive, works with any stylus
-Not affected by dirt, dust, water, or light
-More durable than 4-Wire Resistive technology
-May function even if top layer is damaged

Disadvantages
-75 % clarity
-Resistive layers can be damaged by a sharp object
-much expensive than 4-Wire Resistive technology

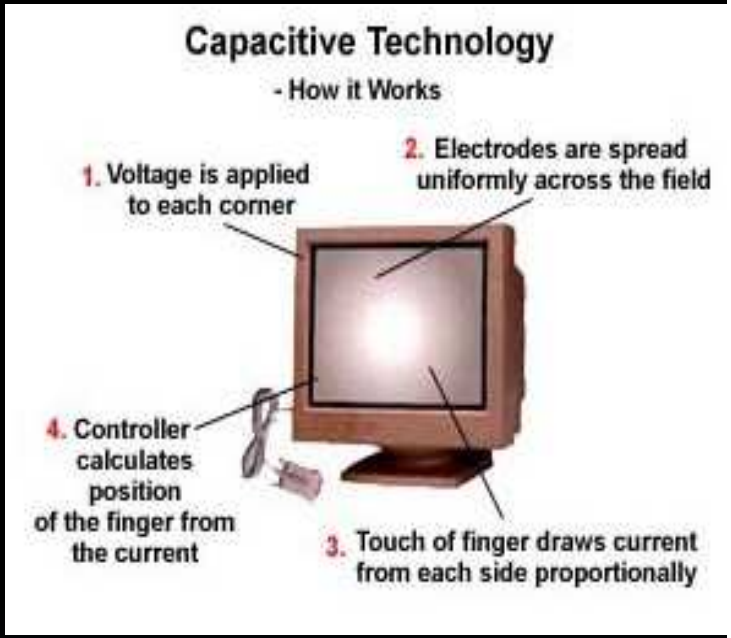
How It Works


Resistive Touch Screen Constuction
Flexible Transparent Surface
Transparent Conductive Layer
LCD Display Layers
Glass Substrate
Non-conductive Separator Dots
Transparent Conductive Layer

Types

Capacitive Touchscreens

-consists of a glass panel with a capacitive (charge storing) material coating its surface.



Advantages

-High touch resolution

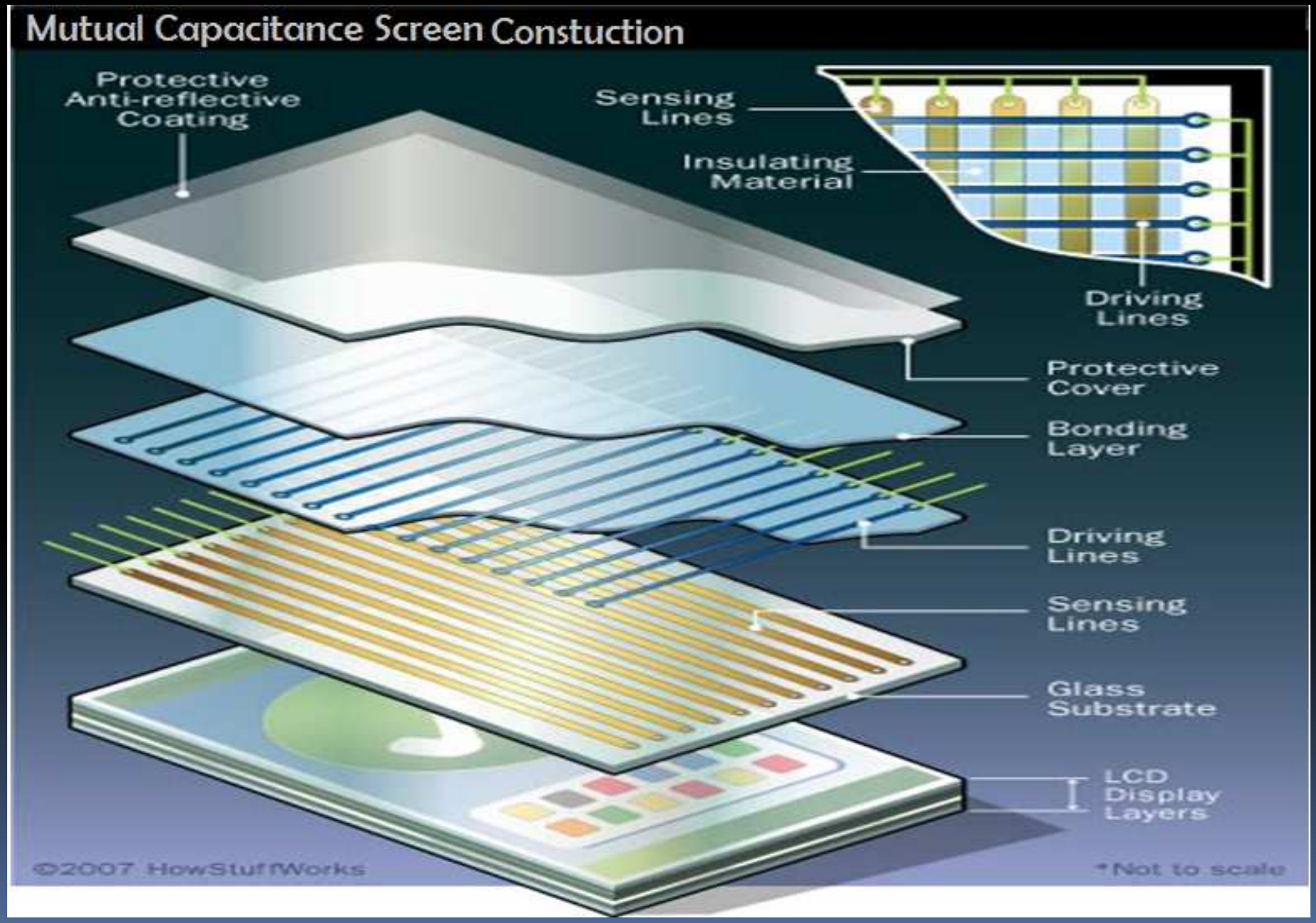
-Pressure sensitive, works with any stylus

-Not affected by dirt, dust, water, or light

Disadvantages

-Must be touched by finger, will not work with any non-conductive input

How It Works


Mutual Capacitance Screen Constuction
Protective Anti-reflective Coating
Sensing Lines
Insulating Material
Driving Lines
Protective Cover
Bonding Layer
Driving Lines
Sensing Lines
Glass Substrate
LCD Display Layers
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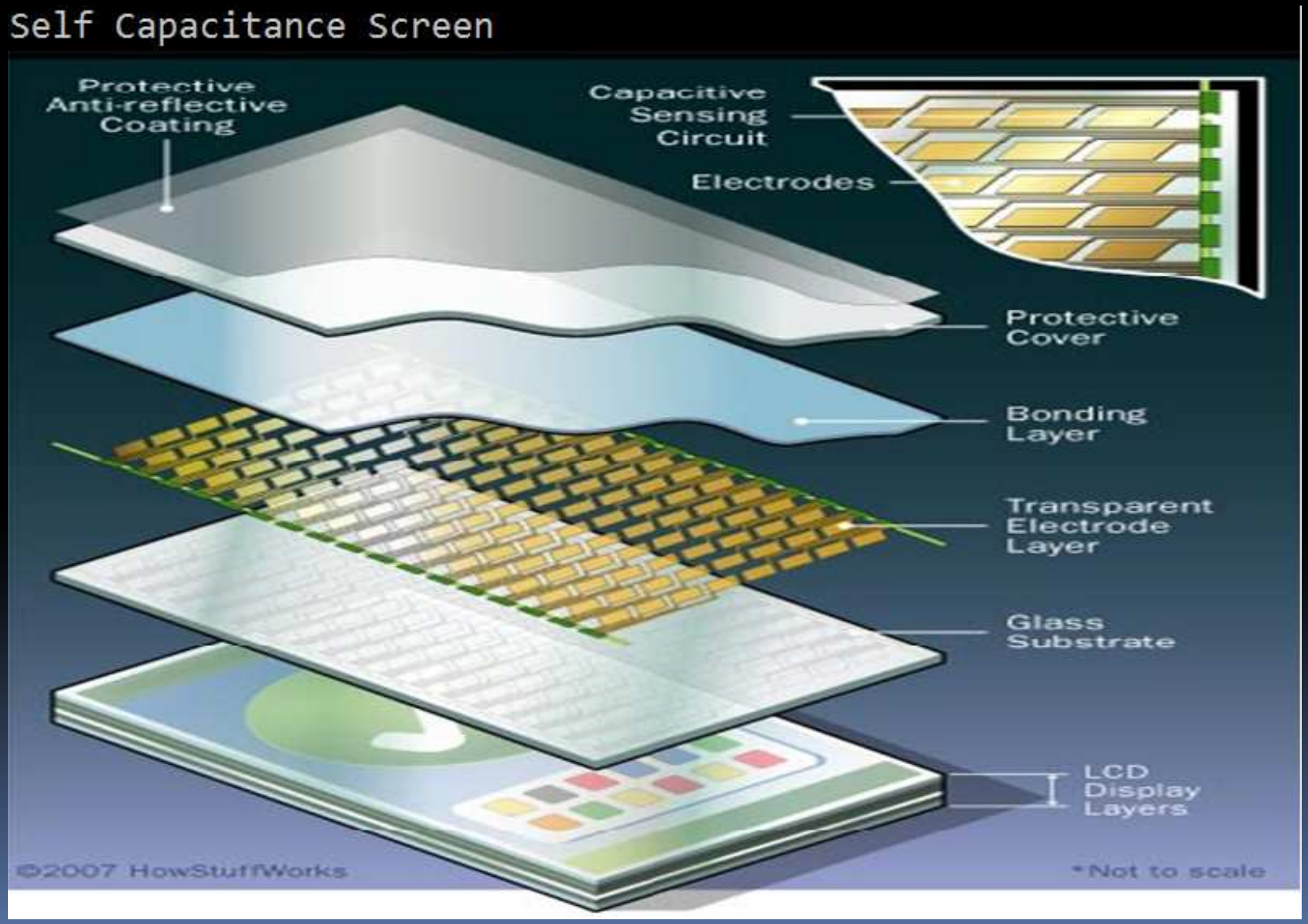
*Not to scale

How It Works


Self Capacitance Screen
Protective Anti-reflective Coating
Capacitive Sensing Circuit
Electrodes
Protective Cover
Bonding Layer
Transparent Electrode Layer
Glass Substrate
LCD Display Layers
©2007 HowStuffWorks
*Not to scale

Types

PenTouch Capacitive Touchscreens

-is a durable Capacitive type touch screen with an attached pen stylus. It can be set to respond to finger input only, pen input only, or both.

Advantages

-High touch resolution

-Pressure sensitive, works with any stylus

-Not affected by dirt, dust, water, or light

Attached pen stylus for precise input

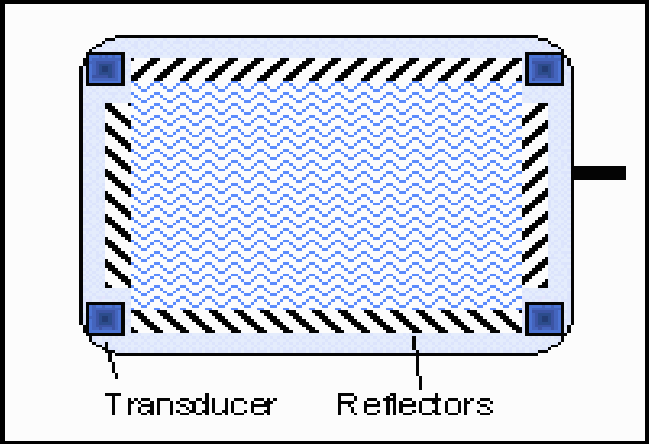
Disadvantages

- Must be touched by finger or attached pen stylus, will not work with any non-conductive input

Types

Surface Acoustic Wave Touchscreens

-is one of the most advanced touch screen types. It is based on sending acoustic waves across a clear glass panel with a series of transducers and reflectors. When a finger touches the screen, the waves are absorbed, causing a touch event to be detected at that point.



Advantages

-High touch resolution

-Highest image clarity

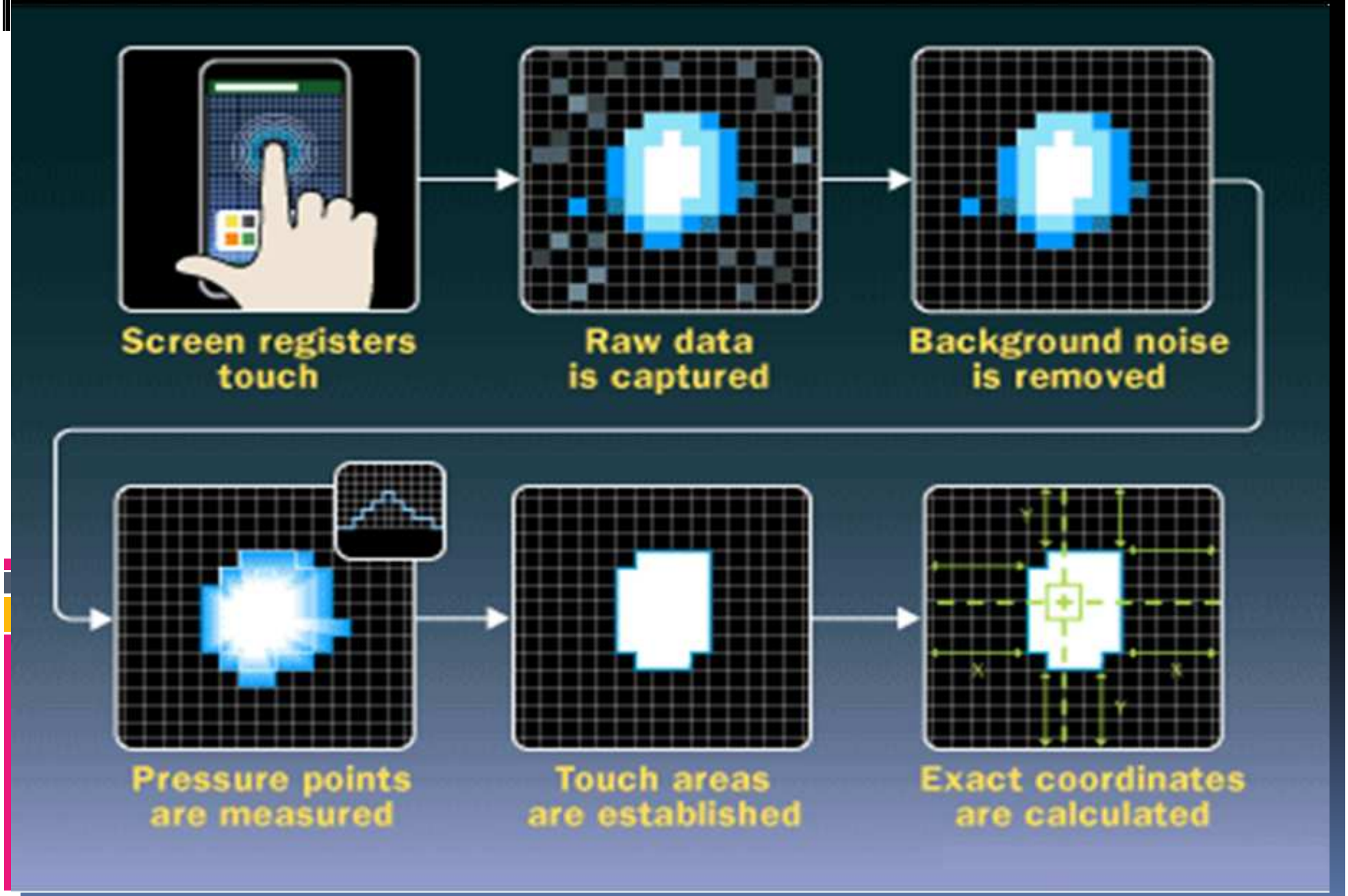
- All glass panel, no coatings or layers that can wear out or damage.

Disadvantages

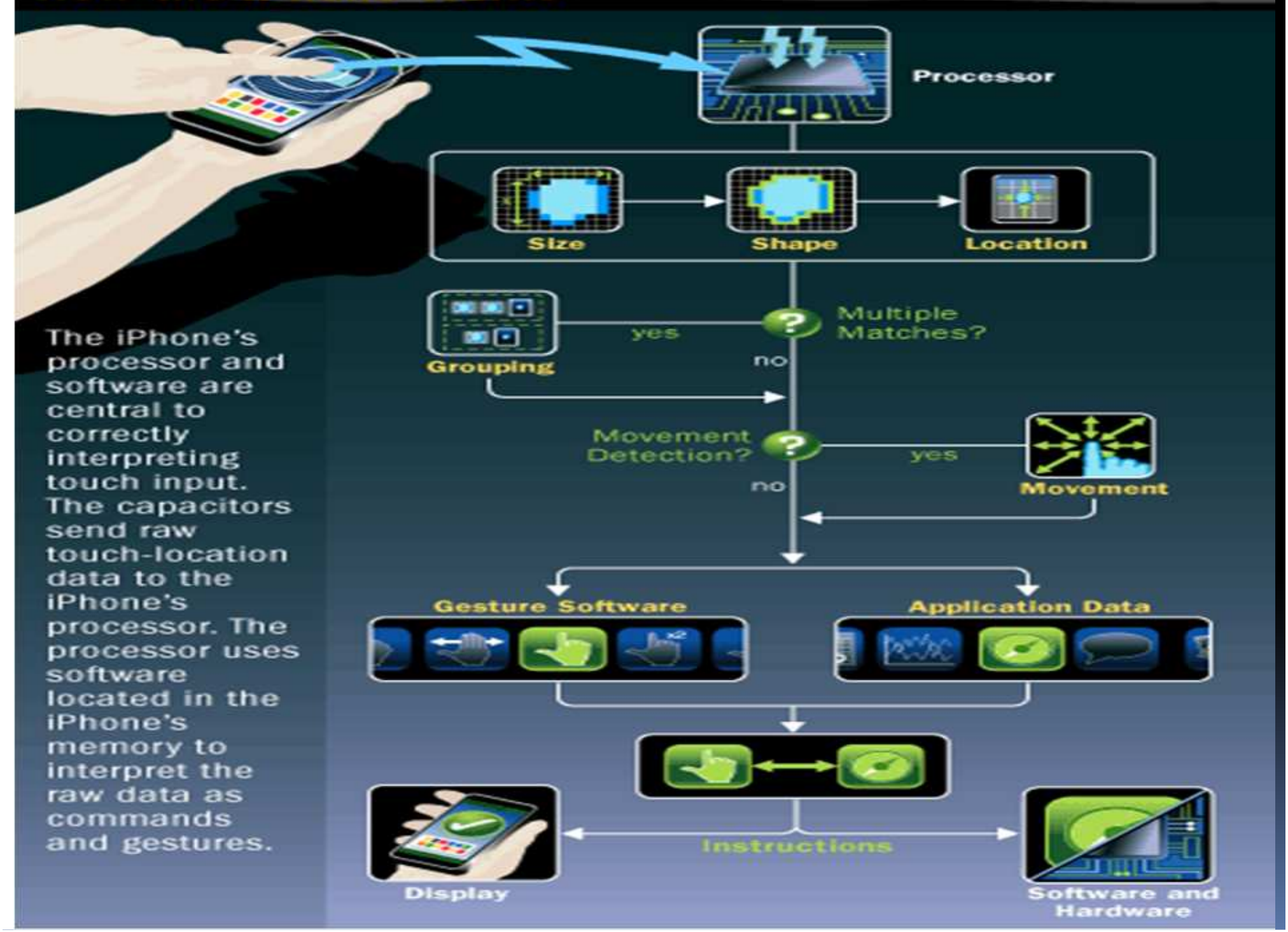
- Must be touched by finger, gloved hand, or soft-tip stylus. Something hard like a pen won't work

- Not completely sealable, can be affected by large amounts of dirt, dust, and / or water in the environment.

Touch Sensing Process



How the iPhone Works



The iPhone's processor and software are central to correctly interpreting touch input. The capacitors send raw touch-location data to the iPhone's processor. The processor uses software located in the iPhone's memory to interpret the raw data as commands and gestures.

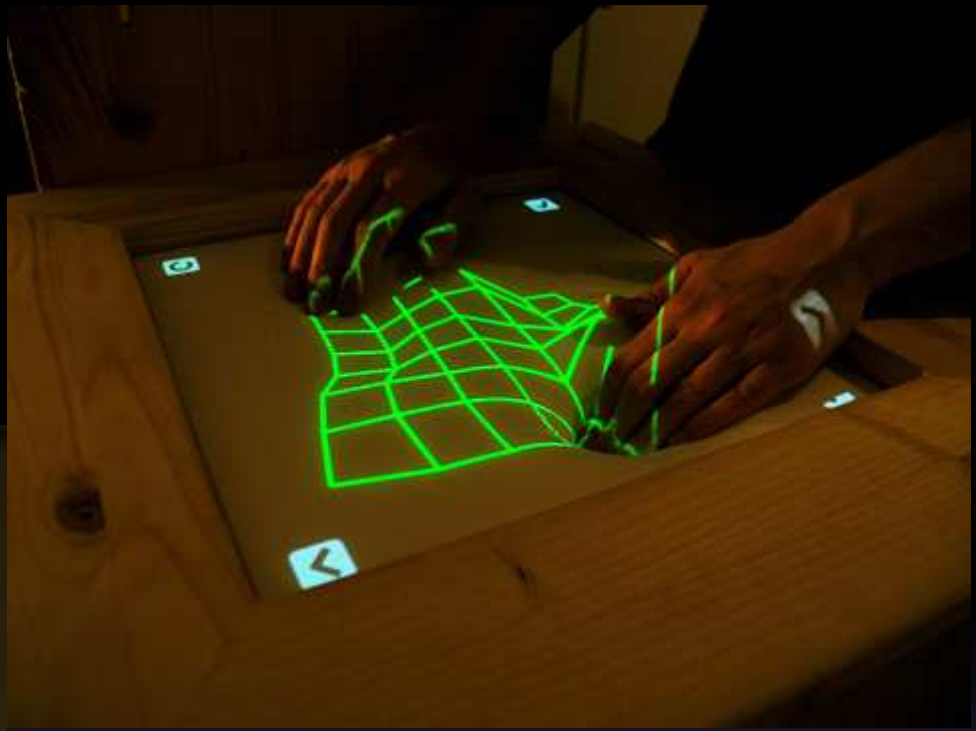
Multi-Touch

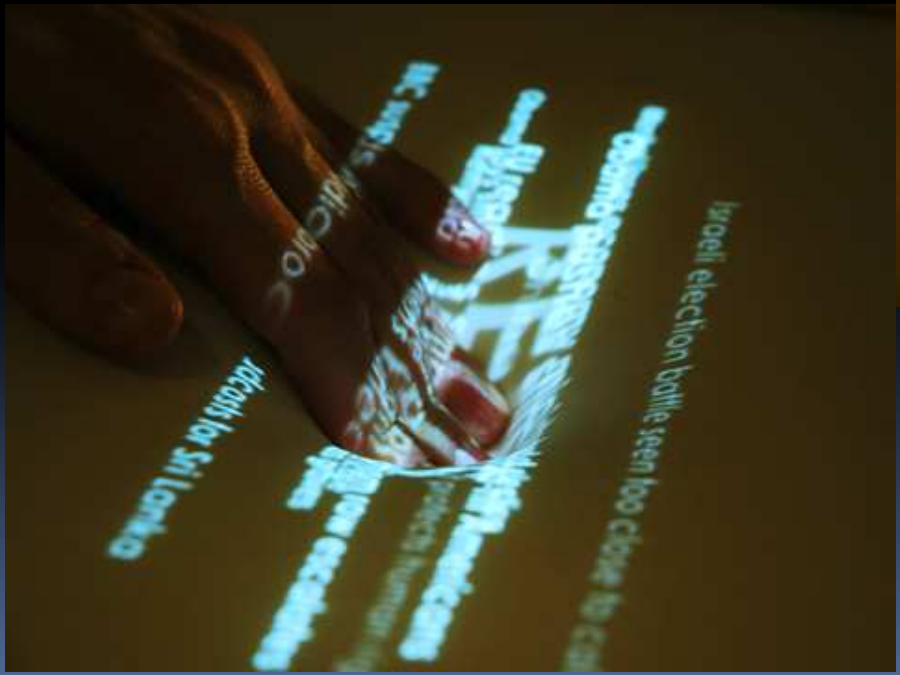
- **Multi-touch** denotes a set of interaction techniques which allow computer users to control graphical applications with several fingers.
- Multi-touch consists of a touch screen or touchpad, as well as software that recognizes multiple simultaneous touch points.

Comparing Touch Screen Technologies

- A resistive system registers a touch as long as the two layers make contact, which means that it doesn't matter if you touch it with your finger or a rubber ball.
- A capacitive system, on the other hand, must have a conductive input, usually your finger, in order to register a touch.
- The surface acoustic wave system works much like the resistive system, allowing a touch with almost any object -- except hard and small objects like a pen tip.

Future of Touch Screen Technology





What Are Touch screens Used For?

- Public Information Displays
- Retail and Restaurant Systems
- Customer Self-Service
- Control and Automation Systems
- Computer Based Training
- Assistive Technology

Feed Back

- Any questions or suggestions regarding Touch Screen Technology or this presentation are welcome.

Thank You