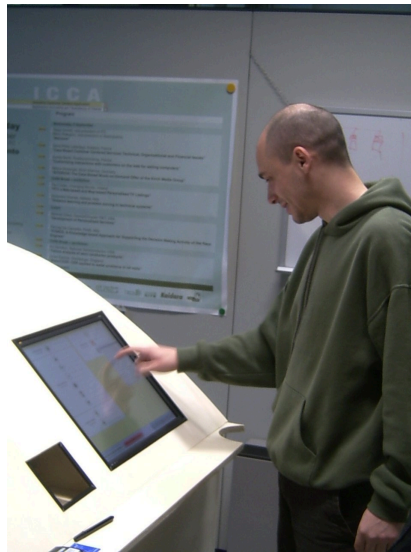


Welcome: the display shows; the touch system senses

Chapter 1 | Reading 1 of 3



Touch kiosk: screen angle, reach and target size are integration choices.

Maurizio Napolitano from Trento, Italy | [Source](#) | [CC BY 2.0](#). Unmodified photograph; scaled for display.

Two systems, one experience

An LCD, OLED or microLED produces an image. A touch system locates an interaction and reports it. They can be physically integrated, but a bright picture does not prove accurate touch, and accurate touch does not prove a readable picture.

Think of five cooperating elements: the surface the user touches; the sensor; the controller and its firmware; the host interface and operating-system input stack; and the application. A failure at any one can look like a bad touchscreen. The course follows that chain from physics through integration and use.

We begin with everyday explanations, then examine the mechanisms, electrical interfaces, optical and mechanical integration, and application-specific tradeoffs. Basic voltage, current and wavelength concepts help; no touch-controller design experience is assumed.

This course is a living document. We revise chapters as technology, practical experience and guidance evolve. Standards also change through revised editions, so check which edition applies to your project. Enrolled learners will typically have access to updated chapters as they are released.

Welcome: the display shows; the touch system senses

Chapter 1 | Reading 2 of 3

What a good touch system must do

Describe intended actions before choosing a sensor: tap, drag, draw, pinch, confirm or operate through gloves. Specify the smallest target, active area, viewing position, permitted false activations, and response time. Include release detection: an input that never lets go can be more troublesome than a missed tap.

Accuracy describes how close a reported coordinate is to a known reference touch position. Precision describes how closely repeated measurements agree under the same conditions. Resolution is the reporting increment. A 16-bit coordinate field does not establish submillimetre accuracy. Latency also belongs to the complete chain: sensing, filtering, transport, operating system, application and display update.

Throughout the course, example numbers and animations are teaching models, not measured performance of an FPD.DEV product.

Welcome: the display shows; the touch system senses

Chapter 1 | Reading 3 of 3

Learning route

Chapters 1-2 build a selection vocabulary. Chapters 3-11 explain the sensing families and feedback options. Chapters 12-15 connect them to displays, hosts and verification. Chapters 16-20 examine commercial, industrial, aviation, military and ground-transport use. Chapters 21-22 turn requirements into a custom-product brief.

For each mechanism, ask: what physical quantity changes, what measures it, how is position inferred, and what else can produce the same change? This last question explains most difficult failures.

The exercises ask for engineering reasoning rather than memorized brand claims. Use the glossary for terminology and the references for implementation details.

Apply the idea

Sketch the five elements for a ticket machine. Where would you investigate if the image works but no touch is reported?

Discussion: Check that the touch controller has power and that the host computer recognizes it. Then check whether touch reports arrive, whether their coordinates map to the right display, and whether the application responds. A working picture alone does not prove that this input chain works.

References:

S17 USB-IF - [HID specifications and usage tables](#)

S18 Microsoft - [Required touchscreen HID collections and reports](#)