Adding Touch Screens to IoT Products
Ideal for IoT
Inexpensive Microcontrollers

Widely available. Easy to find.
Inexpensive Screens

Less easy to find, but they are available.
Display Technology

TFT
older technology
Moddable Zero &
most other dev
boards

IPS
newer technology
Moddable One &
Moddable Two

IPS technology delivers brighter colors, faster pixel
updates, wider viewing angles, and has no “bad side”
Capacitive Touch
Challenges

• Limited ROM and RAM on microcontrollers

• Lack of a GPU makes it difficult to achieve acceptable frame rates for animations

• Preparing graphics assets for embedded systems is time-consuming and error-prone

• Graphics programming for microcontrollers requires highly specialized skills
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Moddable’s approach: Solve as many problems as possible in software
Moddable SDK Examples
Tools

• The Moddable SDK contains tools that convert resources into formats that can be rendered efficiently and stored compact on the microcontroller.

• The build system automatically makes use of these tools.
Poco Rendering Engine

• Provides high speed rendering, with alpha channel support, blending, and clipping.

• Delivers quality and performance in tiny footprint.

• No GPU or hardware accelerator required. Just software.
Higher Frame Rates

balls example runs at 166 fps on the ESP32
High Quality Text

- Automatic anti-aliasing and blending with background pixels
- Render any Unicode glyph in your fonts
Scalable TrueType Fonts

Monotype Spark font engine available for Moddable Two

Scalable fonts, outline glyph rendering, and layout for complex international scripts
Piu User Interface Framework

- Web developers use HTML/CSS; embedded developers use Piu

- A framework for building complex user interfaces with animations

- Tightly integrates with Poco to provide cascading styles, timeline animations, text layout, localization, touch handling, and more
Piu Object Construction

```javascript
let redSkin = new Skin({
  fill: "red"
});

let square = new Content(null, {
  top: 20,
  left: 120,
  width: 80,
  height: 80,
  skin: redSkin
});

application.add(square);
```
Changing Object Properties

```javascript
let blueSkin = new Skin({
  fill: "blue"
});
square.skin = blueSkin;
square.moveBy(0, 100);
```
Text Input for Small Screens

Easily enter Wi-Fi passwords and other short bits of text using our clever expanding keyboard.
One Software Platform, Different Hardware
Thank you