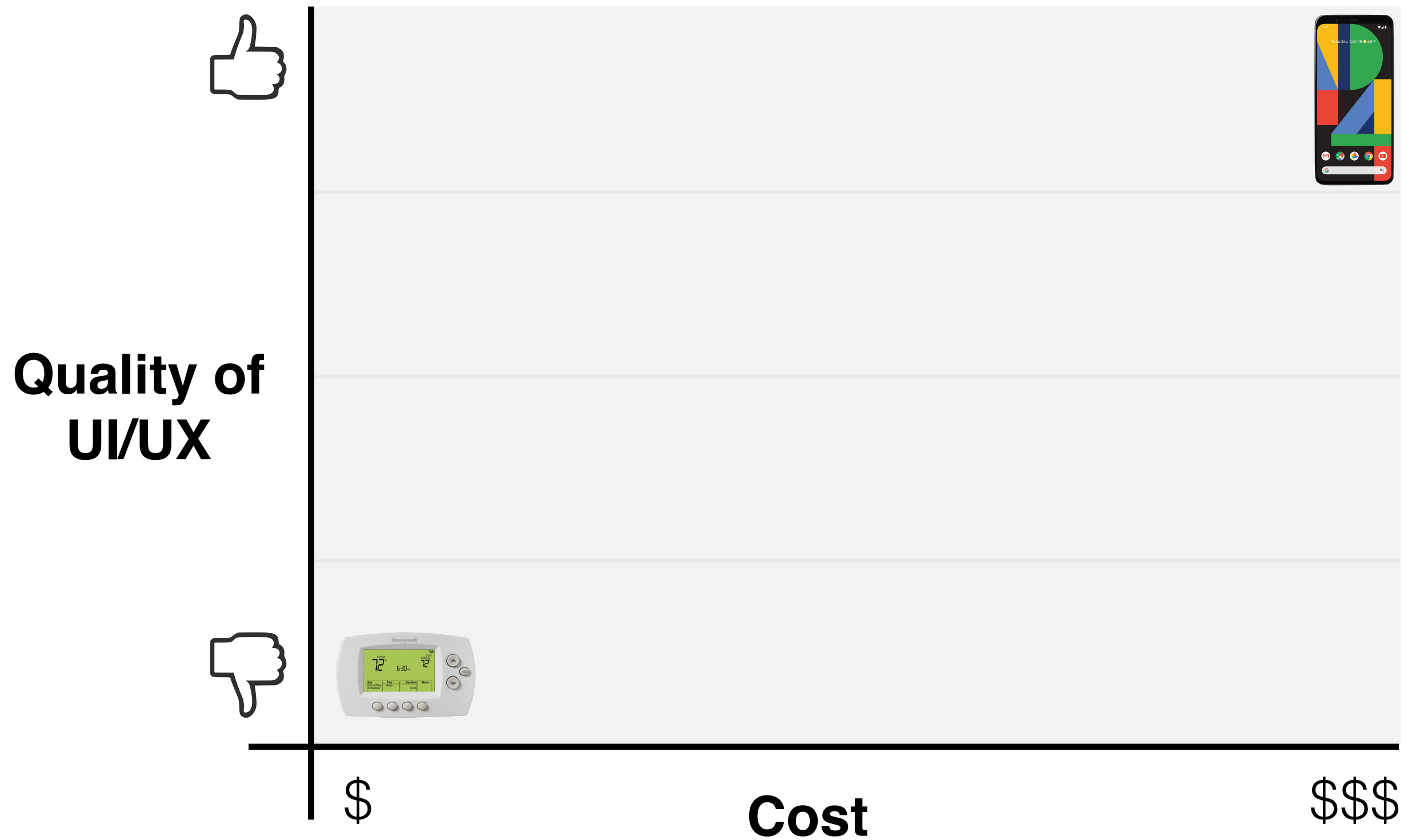




Adding Touch Screens to
IoT Products



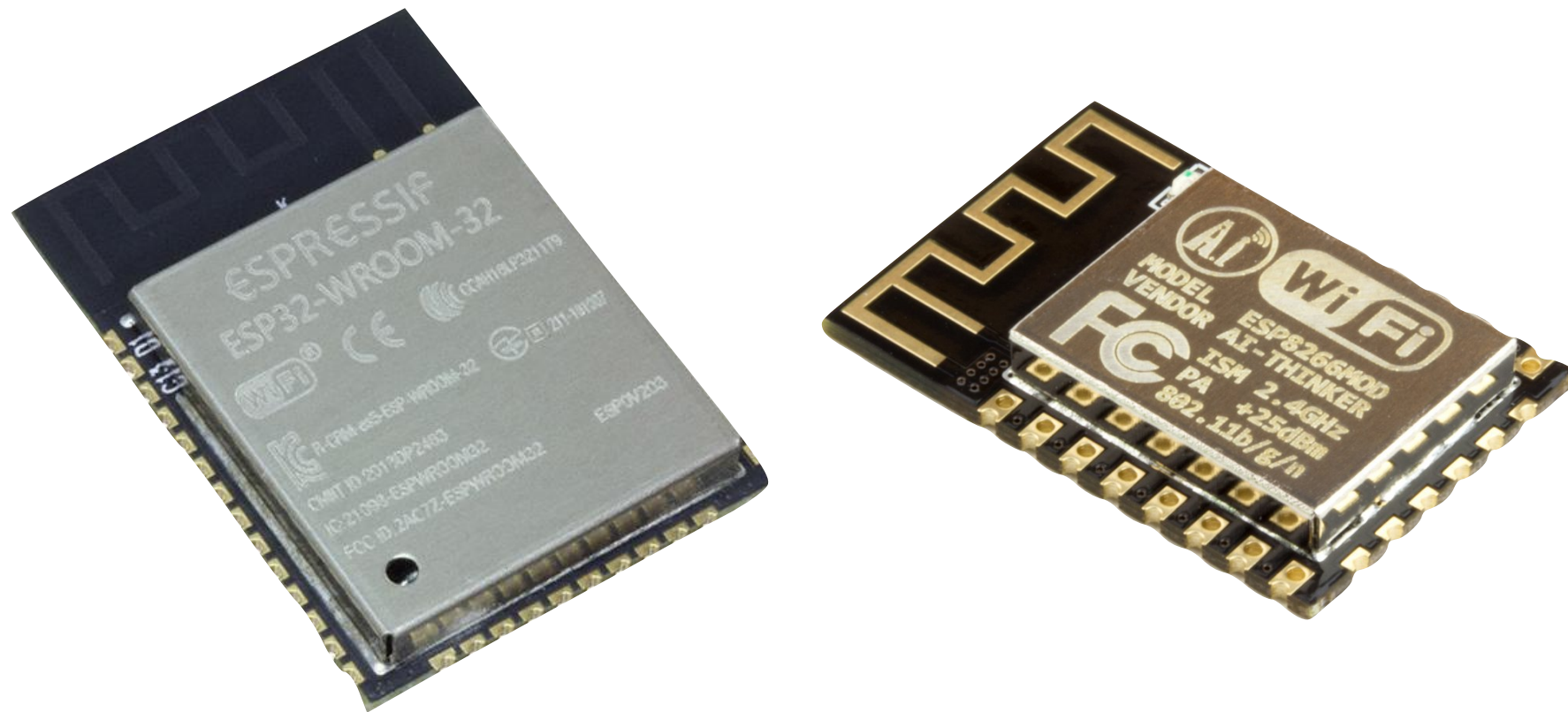






Inexpensive Microcontrollers

Widely available. Easy to find.



Inexpensive Screens

Less easy to find, but they are available.

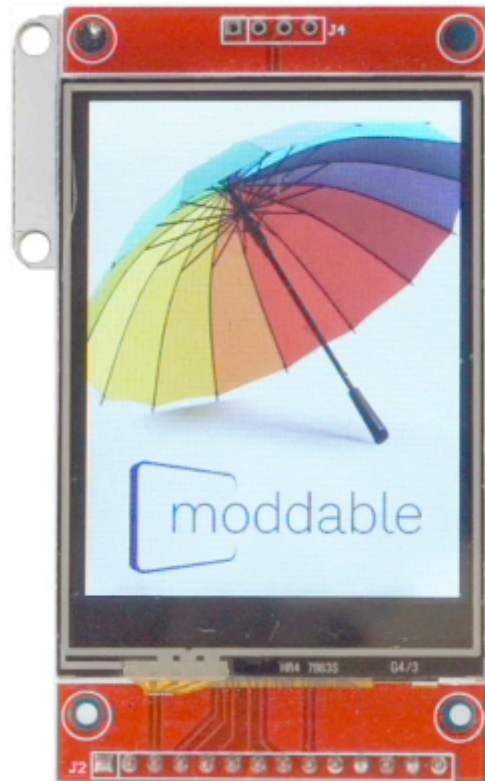


Display Technology

TFT

older technology

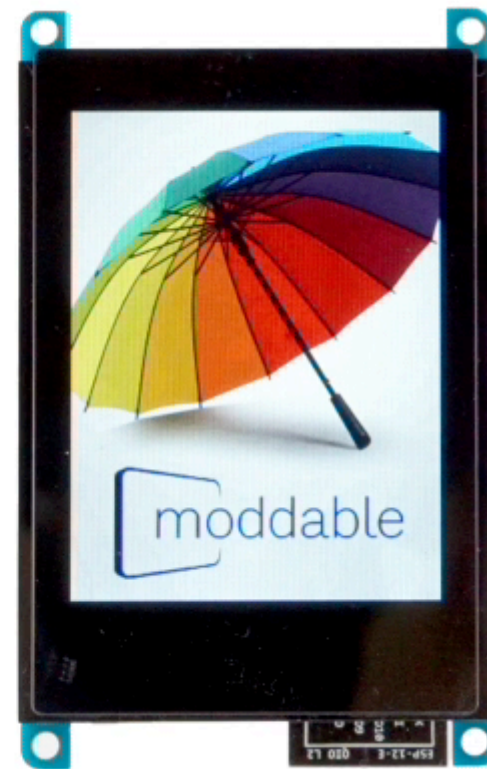
Moddable Zero &
most other dev
boards



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

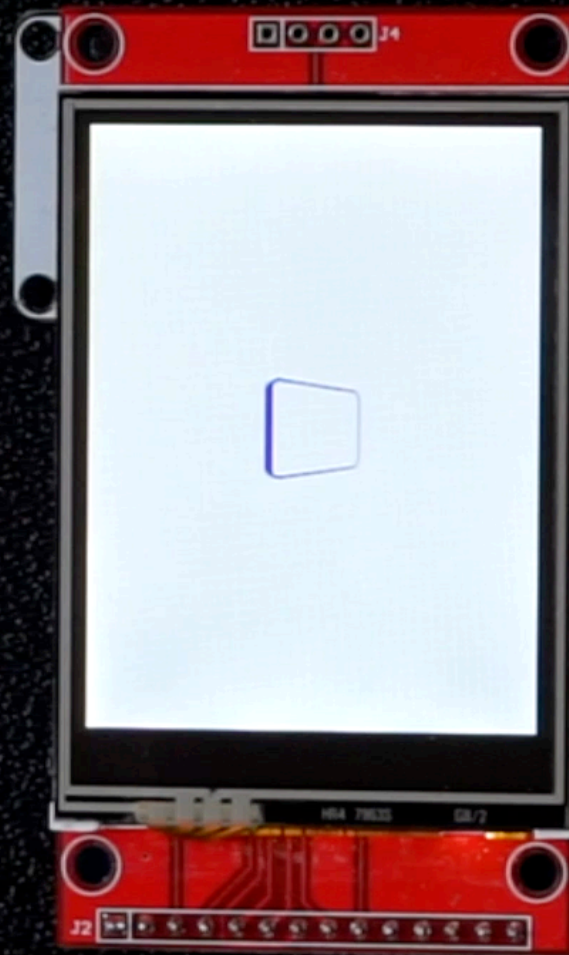
- Limited ROM and RAM on microcontrollers
- Lack of a GPU makes it difficult to achieve acceptable frame rates for animations
- Preparing graphics assets for embedded systems is time-consuming and error-prone
- Graphics programming for microcontrollers requires highly specialized skills

Challenges

- Limited ROM and RAM on microcontrollers
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Moddable's approach: Solve as many problems as possible in software

Moddable SDK Examples



Tools

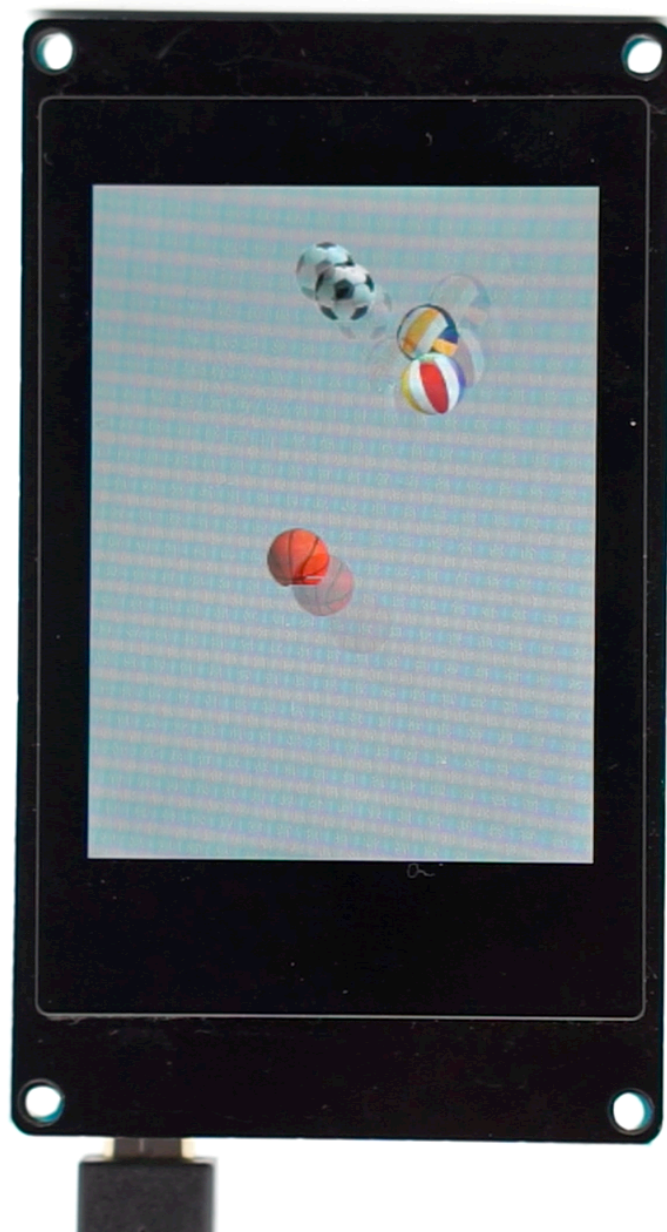
- The Moddable SDK contains tools that convert resources into formats that can be rendered efficiently and stored compact on the microcontroller.
- The build system automatically makes use of these tools.

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

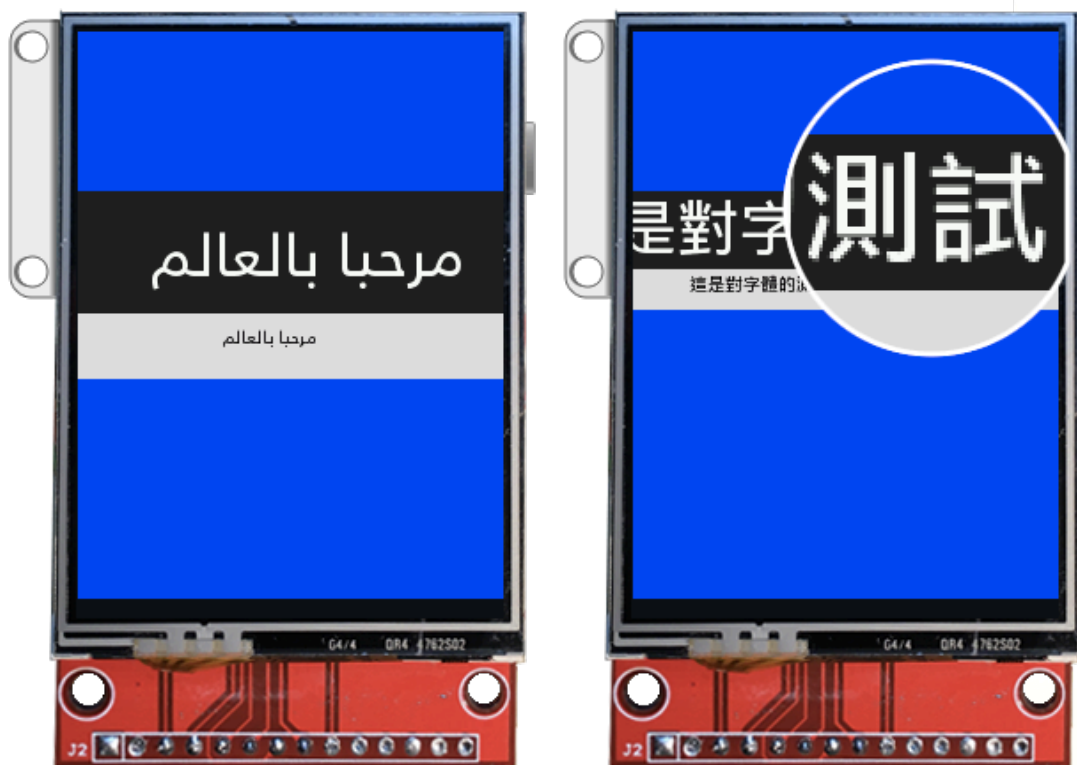
- Automatic anti-aliasing and blending with background pixels
- Render any Unicode glyph in your fonts



Scalable TrueType Fonts

Monotype Spark font engine available for Moddable Two

Scalable fonts, outline glyph rendering, and layout for complex international scripts

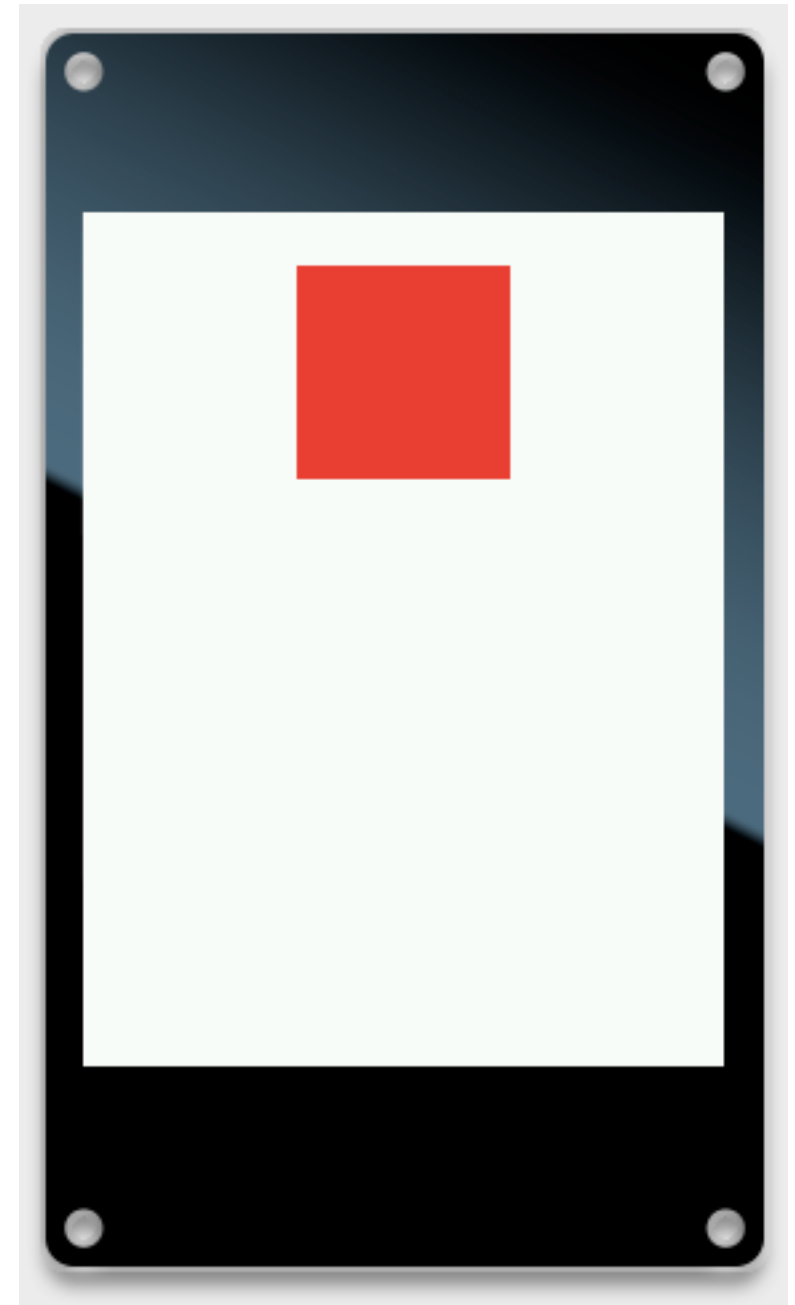


Piu User Interface Framework

- 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

```
let redSkin = new Skin({  
    fill: "red"  
});  
  
let square = new Content(null, {  
    top: 20,  
    left: 120,  
    width: 80,  
    height: 80,  
    skin: redSkin  
});  
  
application.add(square);
```

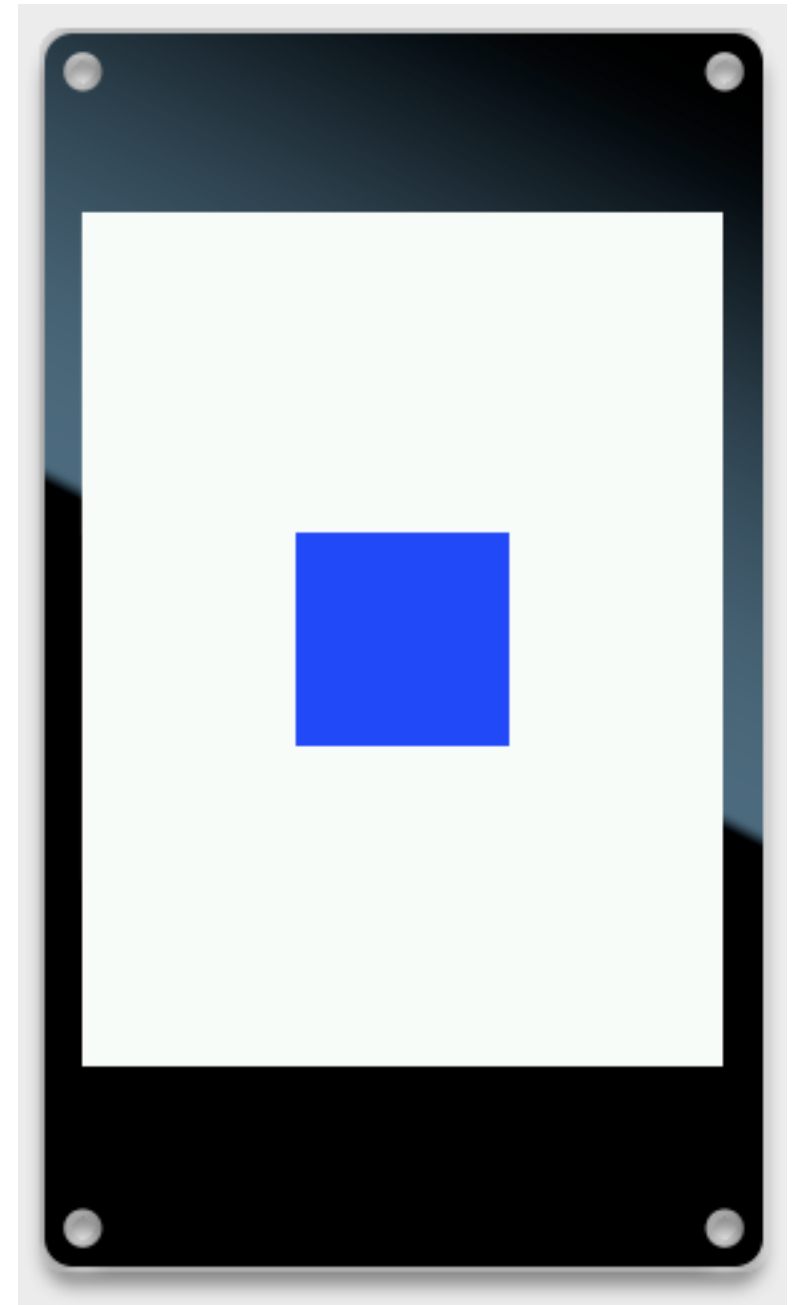


Changing Object Properties

```
let blueSkin = new Skin({  
    fill: "blue"  
});
```

```
square.skin = blueSkin;
```

```
square.moveBy(0, 100);
```

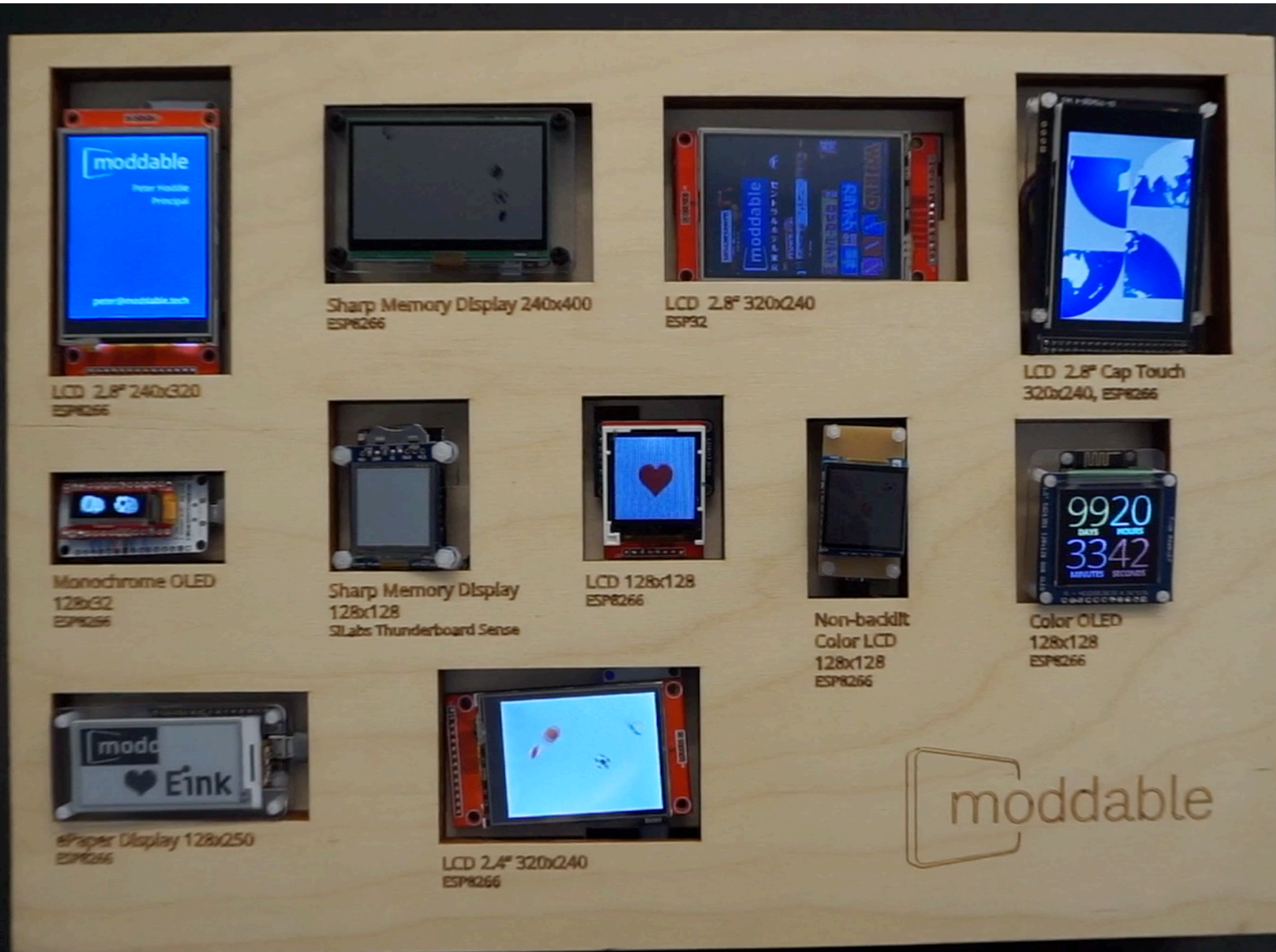


Text Input for Small Screens

Easily enter Wi-Fi passwords and other short bits of text using our clever expanding keyboard



One Software Platform, Different Hardware





Thank you