

The image features a vibrant city skyline at sunset, with a mix of modern glass skyscrapers and older brick buildings. The sky is a gradient of orange, red, and purple. In the foreground, there's a body of water reflecting the colors of the sky. A bridge with a tall tower is visible on the right side. Overlaid on the center of the image is the Node.js logo, which consists of the word 'node' in a stylized white font where the letters are interconnected, followed by 'js' in a white hexagon with a registered trademark symbol. Below the logo, the word 'INTERACTIVE' is written in a clean, white, sans-serif, all-caps font.

nodejs<sup>®</sup>  
INTERACTIVE





# JavaScript and the Internet of Things

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# What is the Internet of Things? (IoT)

Physical objects with embedded with electronics, sensors and software connected to the internet\*.



# IoT Examples

- Smart Thermostat
- Security Systems
- Smart Scales
- Health Monitor
- Fitness Tracker
- Smart Mirror



# History of Hobbyist Electronics\*

- Pre-Arduino Era
  - Expensive - 💰💰💰
- Arduino Era
  - Cheap(er) - 💰
- Today
  - Moore's Law Means Powerful Devices...



# JavaScript



# JavaScript IoT Strategies

- JavaScript Only Microcontrollers
- Embedded Linux Devices
- Hybrid Solutions

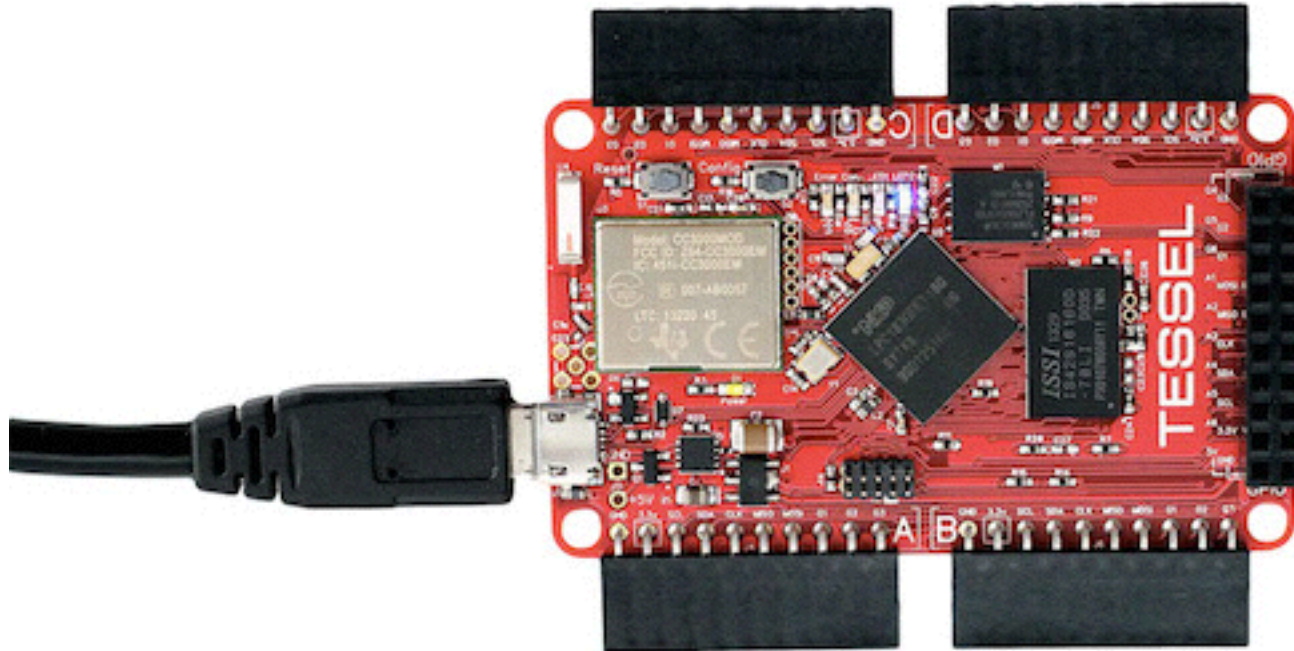


# JavaScript Only Microcontrollers

- Tessel 1
- Espruino / Espruino Pico
- ESP8266 / NodeMCU\*



# Tessel 1





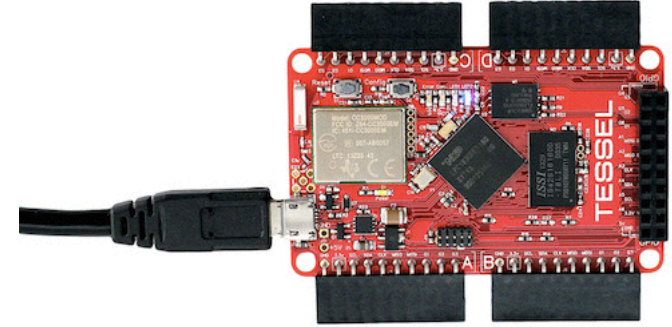
# Tessel 1

## Pros

- Built-in Wireless
- Plug and play modules
- Node.js compatible\*
- BYO Editor

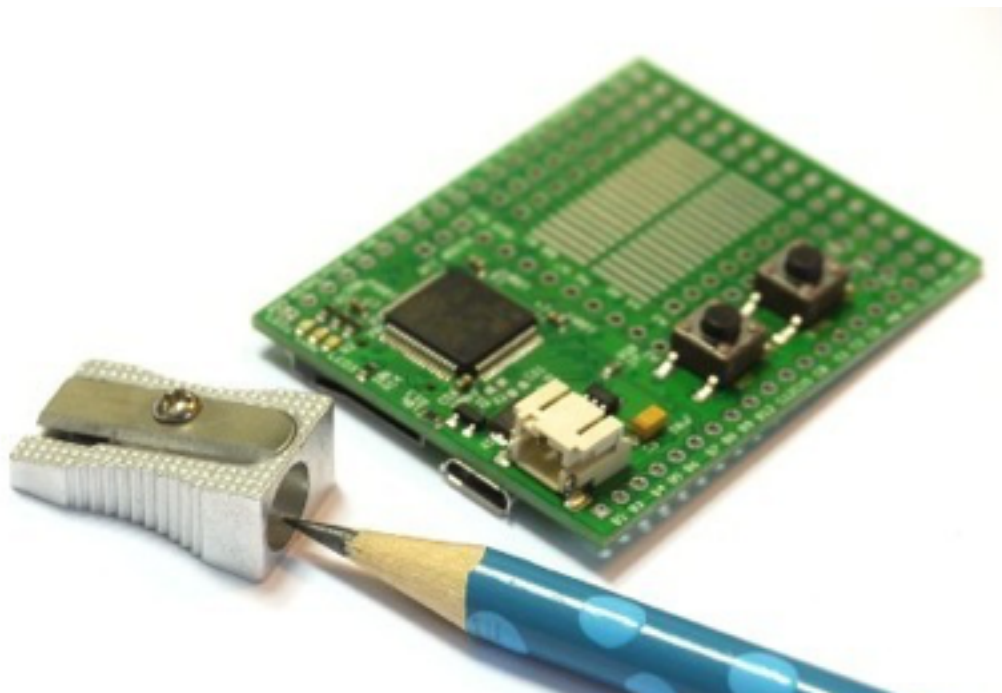
## Cons

- It gets bulky
- Expensive
- It's no longer available





# Espruino / Espruino Pico





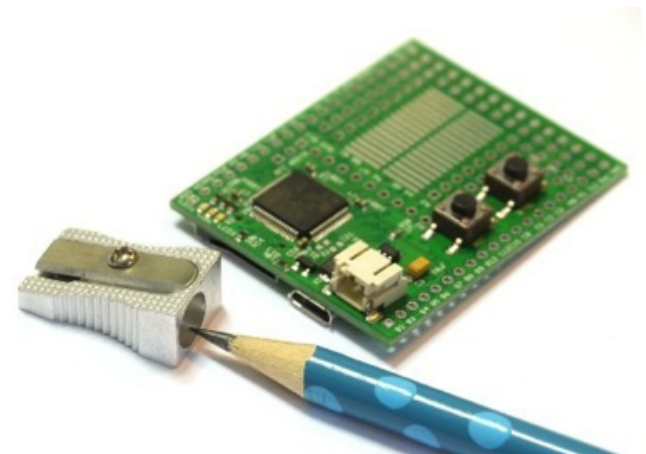
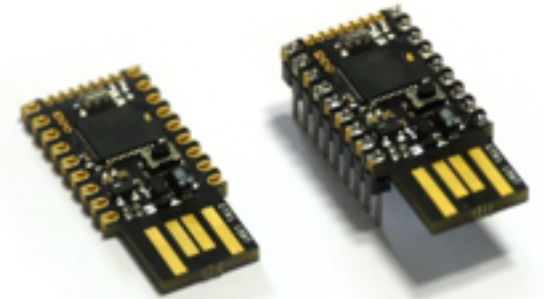
# Espruino / Espruino Pico

## Pros

- Web IDE
- Small / easily embeddable
- Community Forum

## Cons

- Web IDE
- It's just a thing
- Lots of soldering
- Expensive
- Uncharted seas

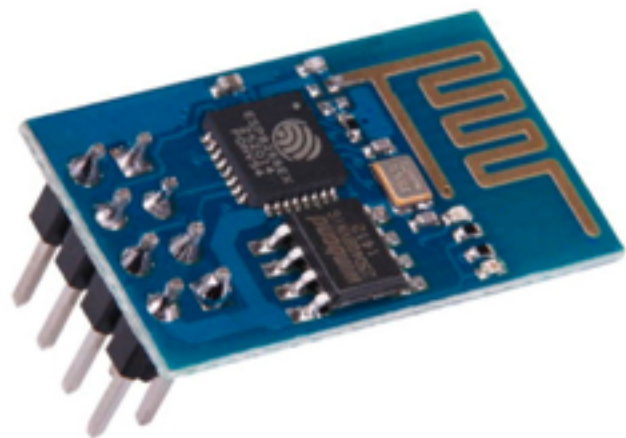




wifigotchi.com



# ESP8266 / NodeMCU



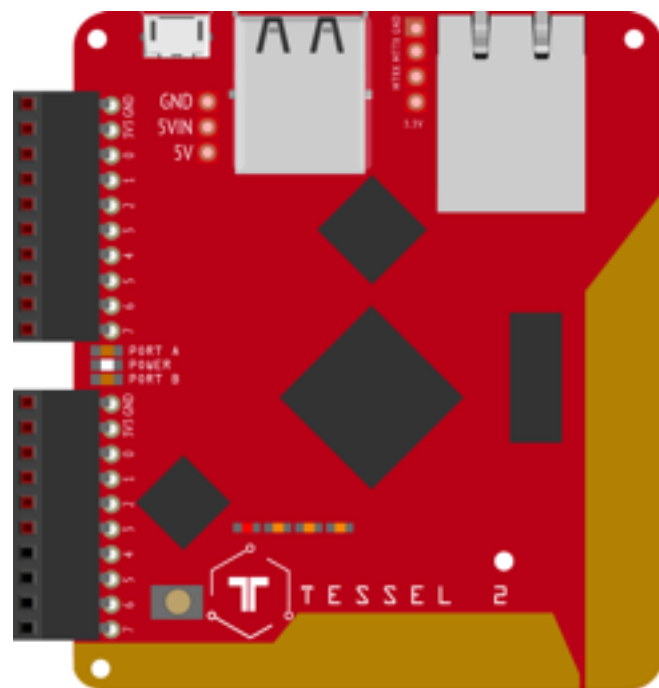


# Embedded Linux Devices

- Tessel 2
- Raspberry Pi
- C.H.I.P.



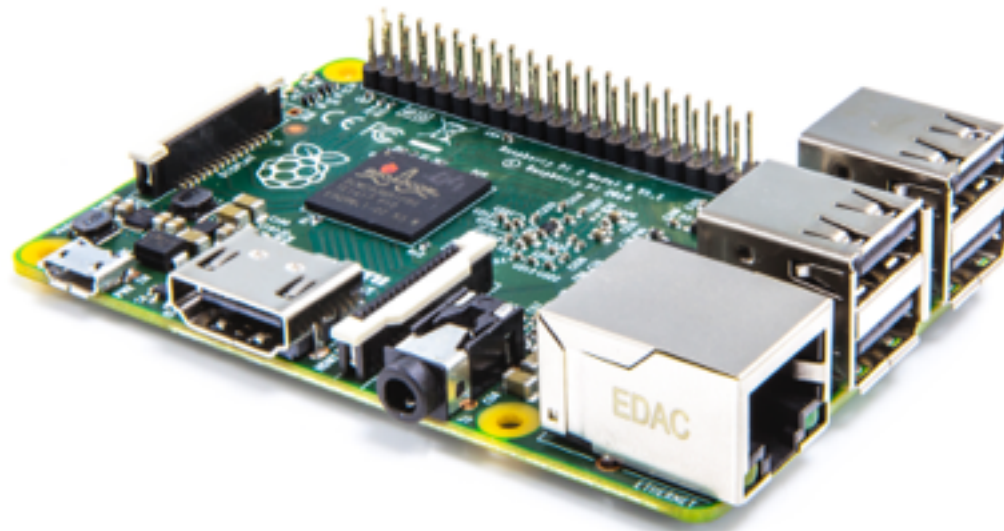
# Tessel 2



fritzing



# Raspberry Pi A+ / 2 B



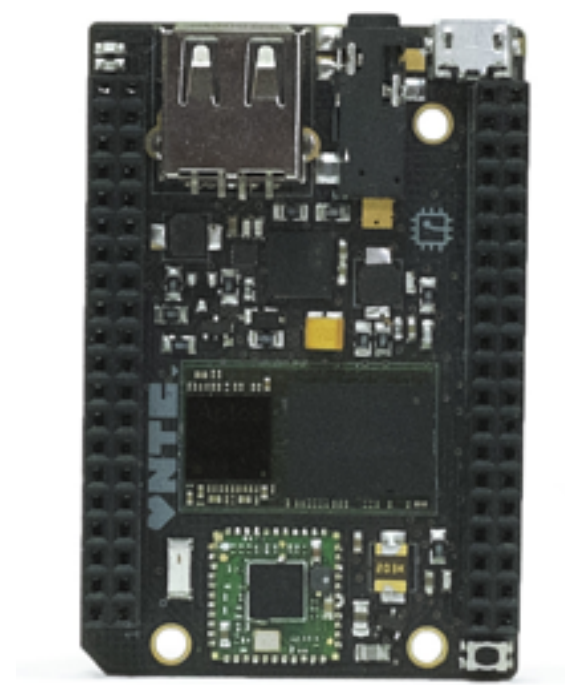


# Raspberry Pi Zero





# C.H.I.P.





# Embedded Linux Devices

## Pros

- Runs any software
- Can be cheaper than microcontrollers
- Mature ecosystems

## Cons

- Needs to boot up
- IO is not as responsive
- More points of failure and attack
- Expensive



# Hybrid Solutions





# Hybrid Solutions





# Hybrid Solutions





# Hybrid Solutions

## Pros

- You can program at a high level
- Get the benefits of both worlds
  - modern platform
  - responsive IO

## Cons

- You're dealing with more devices
- More hacky
- Even more points of failure / attack
- Most expensive



# The Present (and Future) is Awesome!

- Cheaper Embedded Linux Computers EVERYWHERE
- Use Modern Full Stack JavaScript
- Any Stack!
- We need help to make it mature!



# Questions

<http://twitter.com/chalkers>

<http://vine.co/chalkers>

<http://forefront.io>