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
- Health Monitor
- Fitness Tracker
- Smart Mirror

- Weather Stations
- Real-time Price Displays
- Smart Locks
- Smart(er) Cars
- Energy Saving Apps
History of Hobbyist Electronics

• Pre-Arduino Era
  • High Friction / Expensive - 💰💰💰
• Arduino Era
  • Lower Friction / Cheaper - 💰
• Today
  • Moore’s Law Means Powerful Devices…
JavaScript
JavaScript IoT Strategies

• JavaScript Only Microcontrollers
• Emended Linux Devices / Single Board Computers
• Hybrid Solutions / Client-Host
JavaScript Only Microcontrollers

- Espruino / Espruino Pico
- ESP8266 / NodeMCU* (and Family)
Espruino / Espruino Pico
Microcontroller
(JavaScript)
Espruino / Espruino Pico

**Pros**
- Web IDE
- Small / easily embeddable
- Community Forum
- Compatible other boards

**Cons**
- Web IDE
- It’s just a thing
- Lots of soldering
- Expensive*
- Uncharted seas
wifigotchi.com
ESP8266 / NodeMCU

Microcontroller
(Arduino / Lua / Espruino’s JavaScript Runtime)
Adafruit Huzzah Family

ESP8266 Based Microcontroller
(Arduino / Lua / Espruino’s JavaScript Runtime)
Embedded Linux Devices / Single Board Computers

• Tessel 2
• Raspberry Pi
• C.H.I.P.*
Tessel 2
Embedded Linux Device
Raspberry Pi A+ / 3 B
Embedded Linux Device
Raspberry Pi Zero
Embedded Linux Device
C.H.I.P.*
Embedded Linux Device
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
- Still expensive
Hybrid Solution

Host PC with Client Microcontroller
Hybrid Solution
Host PC with Client Microcontroller
Hybrid Solution

Host PC with Client Microcontroller
Hybrid Solution
Host PC with Client Microcontroller

https://vine.co/v/Mum1MOA1TmX

https://vine.co/v/MuHdbYql3jp
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

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