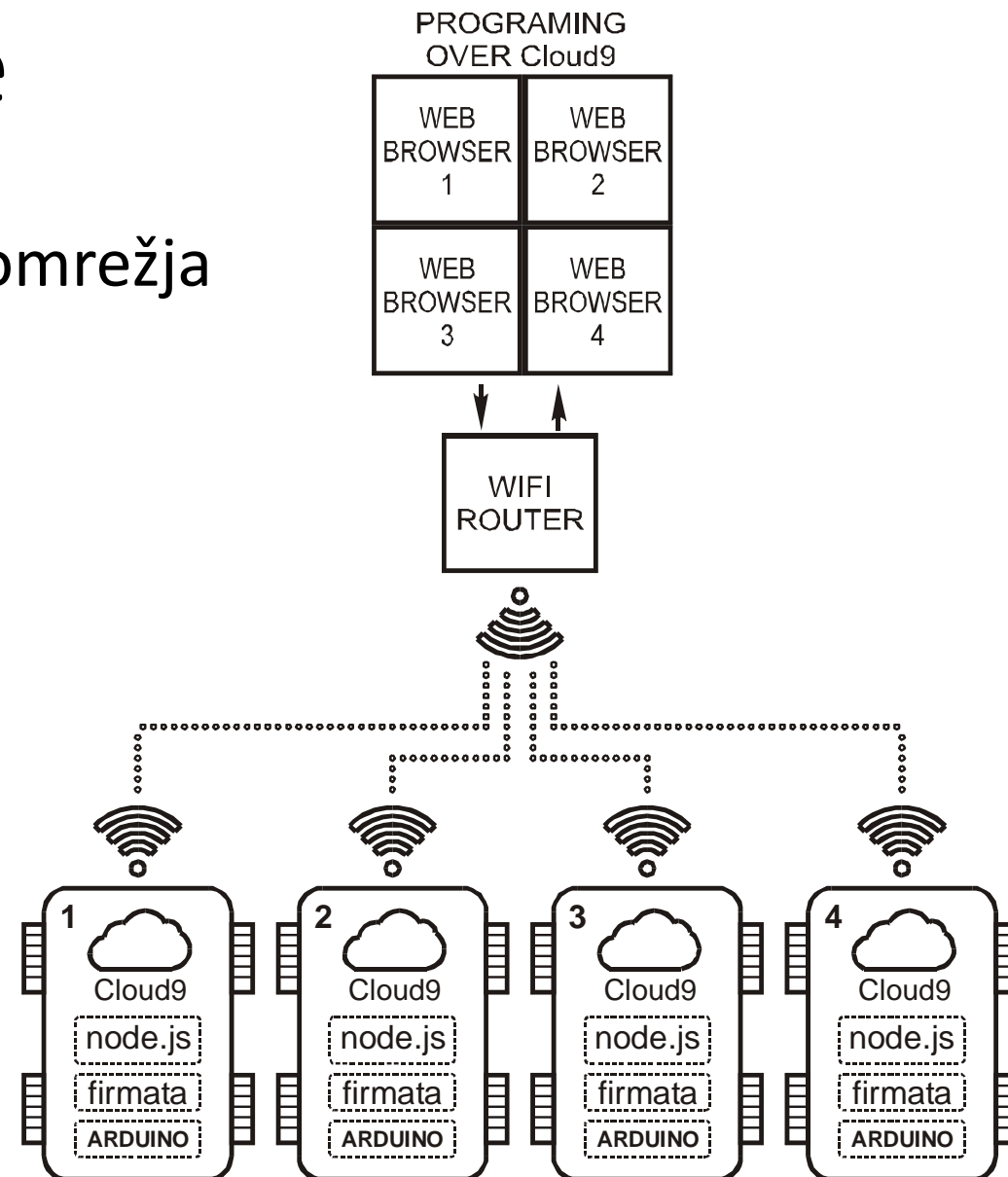
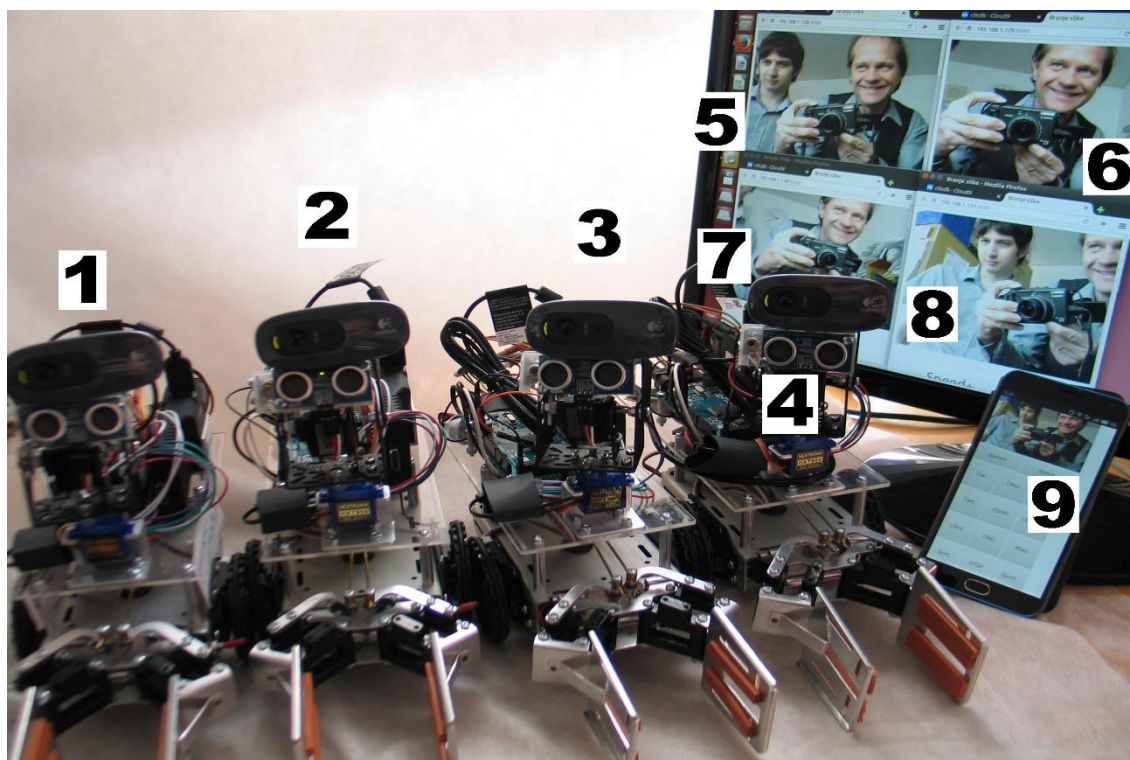


# Dostop in programiranje

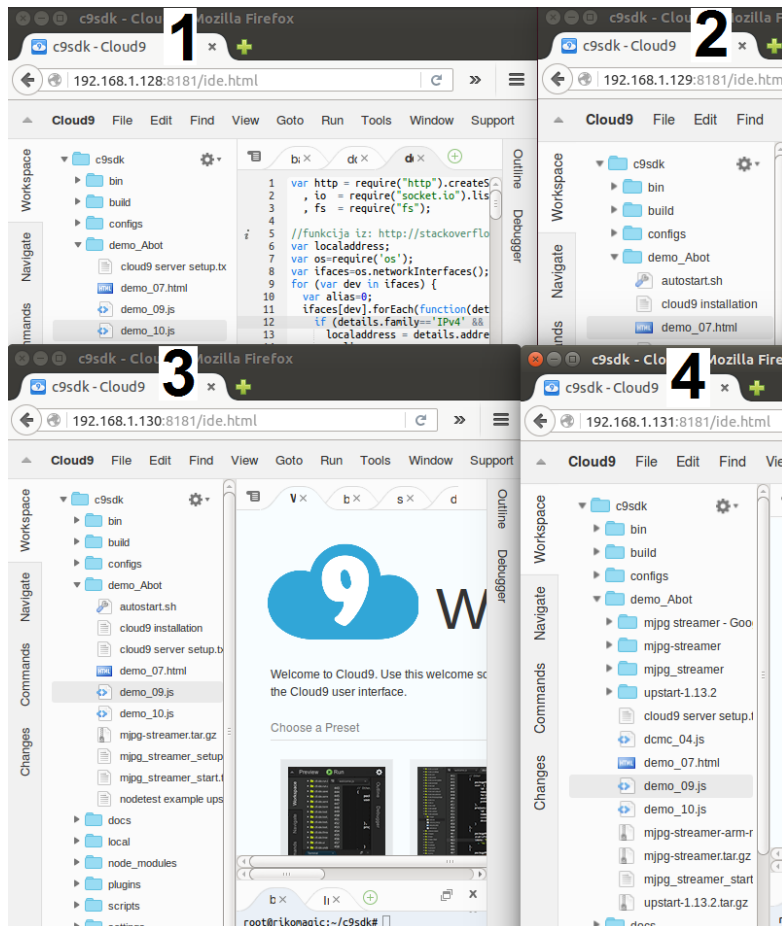
- Štiri platforme povezane prek WiFi omrežja
- Dostop: Cloud9



# Dostop in programiranje (nad.)

VSC

- node.js – JavaScript – Cloud9 (paralelno, 4 platforme)



```
<script src="/socket.io/socket.io.js"></script>

var robotIP00 = "192.168.1.131:8080"; // robotIP00 is IP address
var robotIP01 = "192.168.1.130:8080"; // robotIP01 is IP address
var robotIP02 = "192.168.1.129:8080"; // robotIP02 is IP address
var robotIP03 = "192.168.1.128:8080"; // robotIP03 is IP address

var socket0 = io.connect(robotIP00);
var socket1 = io.connect(robotIP01);
var socket2 = io.connect(robotIP02);
var socket3 = io.connect(robotIP03);

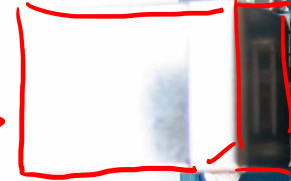
buttonForward.addEventListener('click', function() {
  socket0.emit("commandArduino", {"noOfCommand": 1});
  socket1.emit("commandArduino", {"noOfCommand": 1});
  socket2.emit("commandArduino", {"noOfCommand": 1});
  socket3.emit("commandArduino", {"noOfCommand": 1});
});

buttonStop.addEventListener('click', function() {
  socket0.emit("commandArduino", {"noOfCommand": 0});
  socket1.emit("commandArduino", {"noOfCommand": 0});
  socket2.emit("commandArduino", {"noOfCommand": 0});
  socket3.emit("commandArduino", {"noOfCommand": 0});
});
```

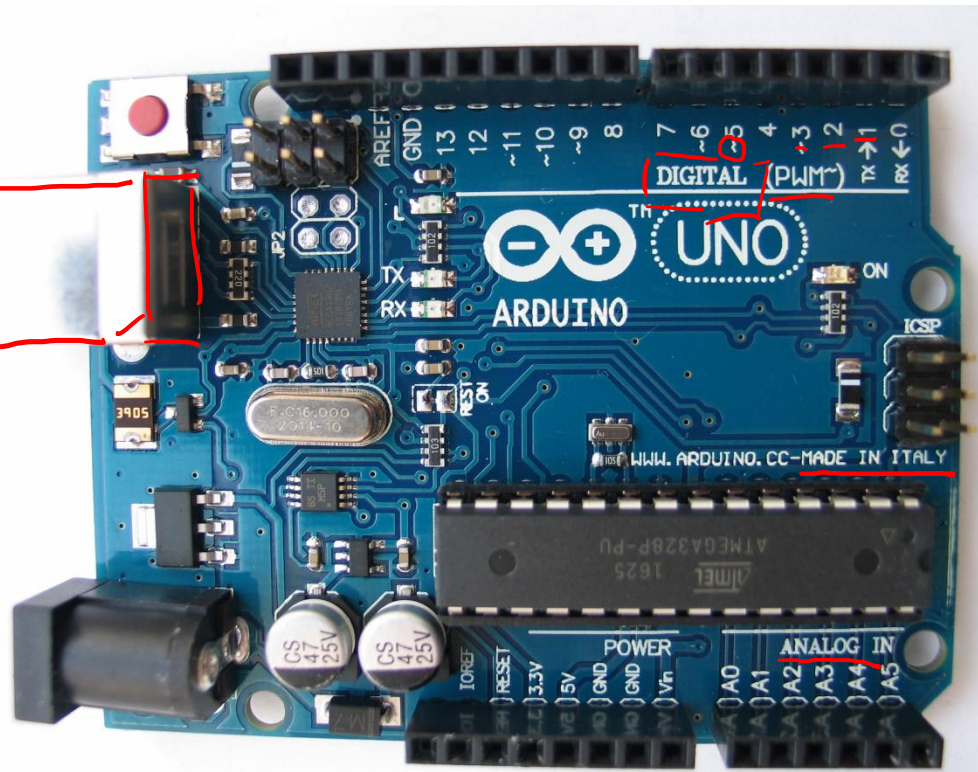


# Arduino

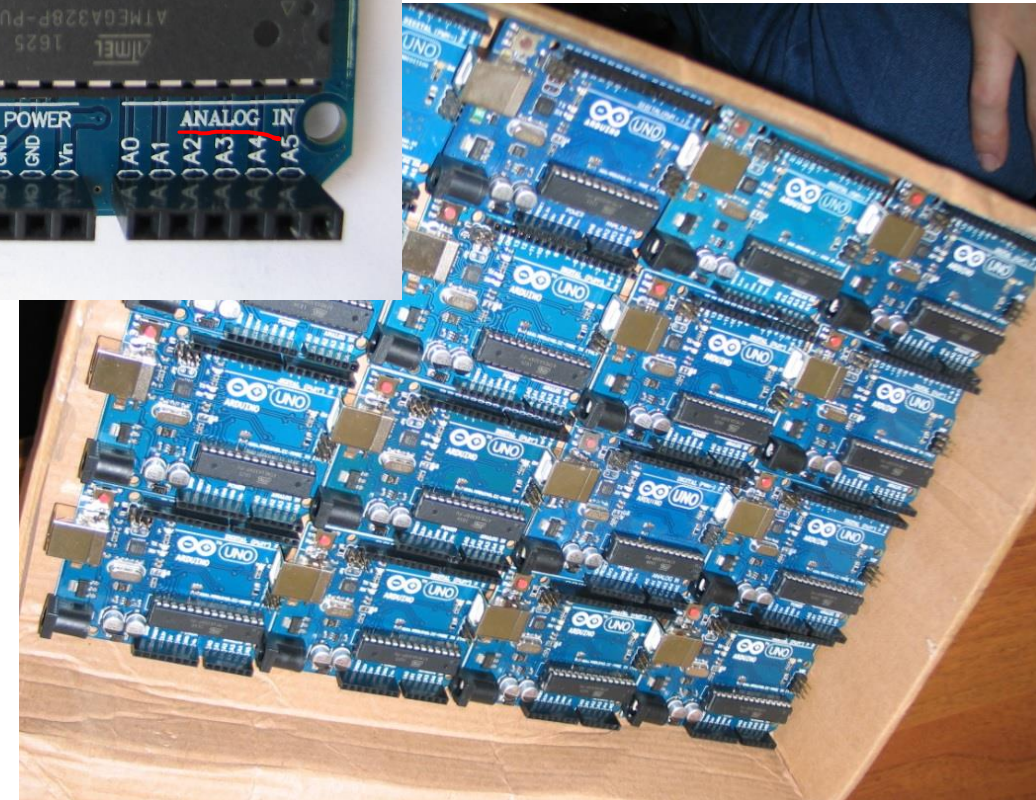
USB



- Odprtokodni HW SW
- Razvit kot orodje za oblikovalce, t.j. ne-inženirje, z namenom kreiranja digitalnih projektov na inštitutu „Interaction Design Institute“ (IDII)
- 14 digitalnih vhodov/izhodov (pin-ov)
- 6 analognih vhodov
- Različne izvedbe

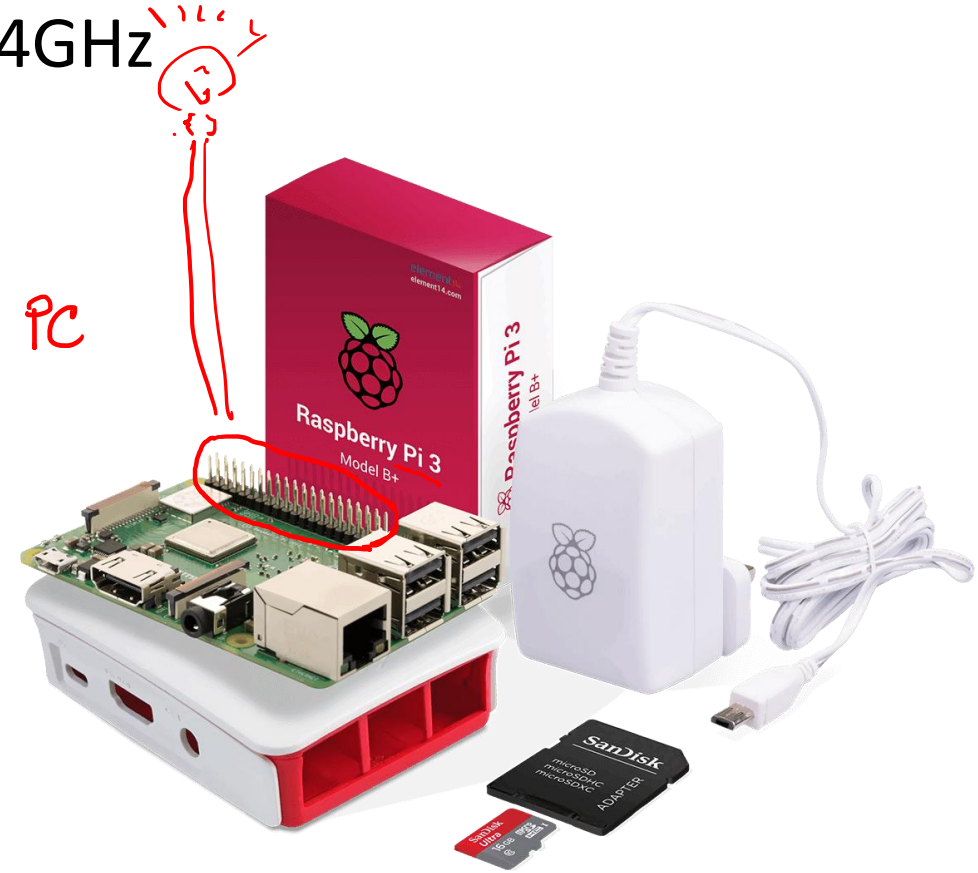


206-25€



# Raspberry Pi 3 B+

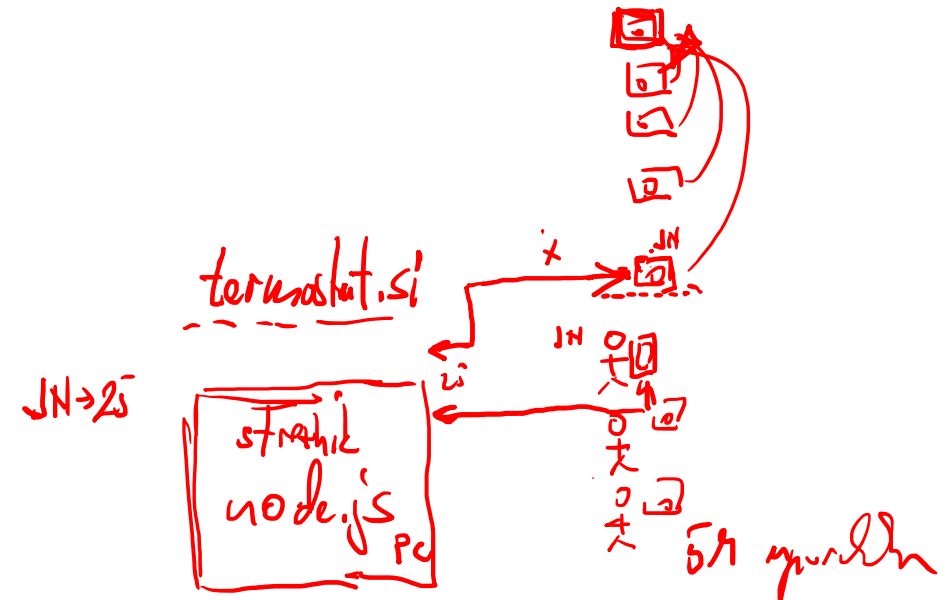
- Cortex-A53 (ARMv8) 64-bit SoC @ 1.4GHz
- Cel Linux računalnik
- WiFi integriran
- 1GB LPDDR2 SDRAM
- Primeren za mobilne aplikacije



# Alternative: Stari dobri PC

NAVIDENI STROJ

- Z nameščenim linux operacijskim sistemom – funkcionalnost je ista kot MK802 Mini PC
- Na tovrstni platformi je možno razviti vso kodo in jo nato prenesti na drugo platformo
- Nizka cena, če imate računalnik že doma
- Primer: <https://youtu.be/4IVl-xEh1Bw>



# Alternative

- [Beagle Bone](#)
- Chip \$9
- Intel NUC, Galileo, Edison etc.
- Veliko drugih  
*esp8266, esp32*
- Običajno z Linux operacijskim sistemom



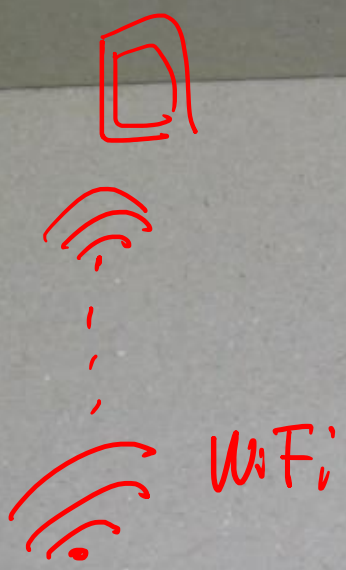
# Tehnologija





# Povezava

PC  
Navidezni stroj



USB

Microkontroler  
ARDUINO

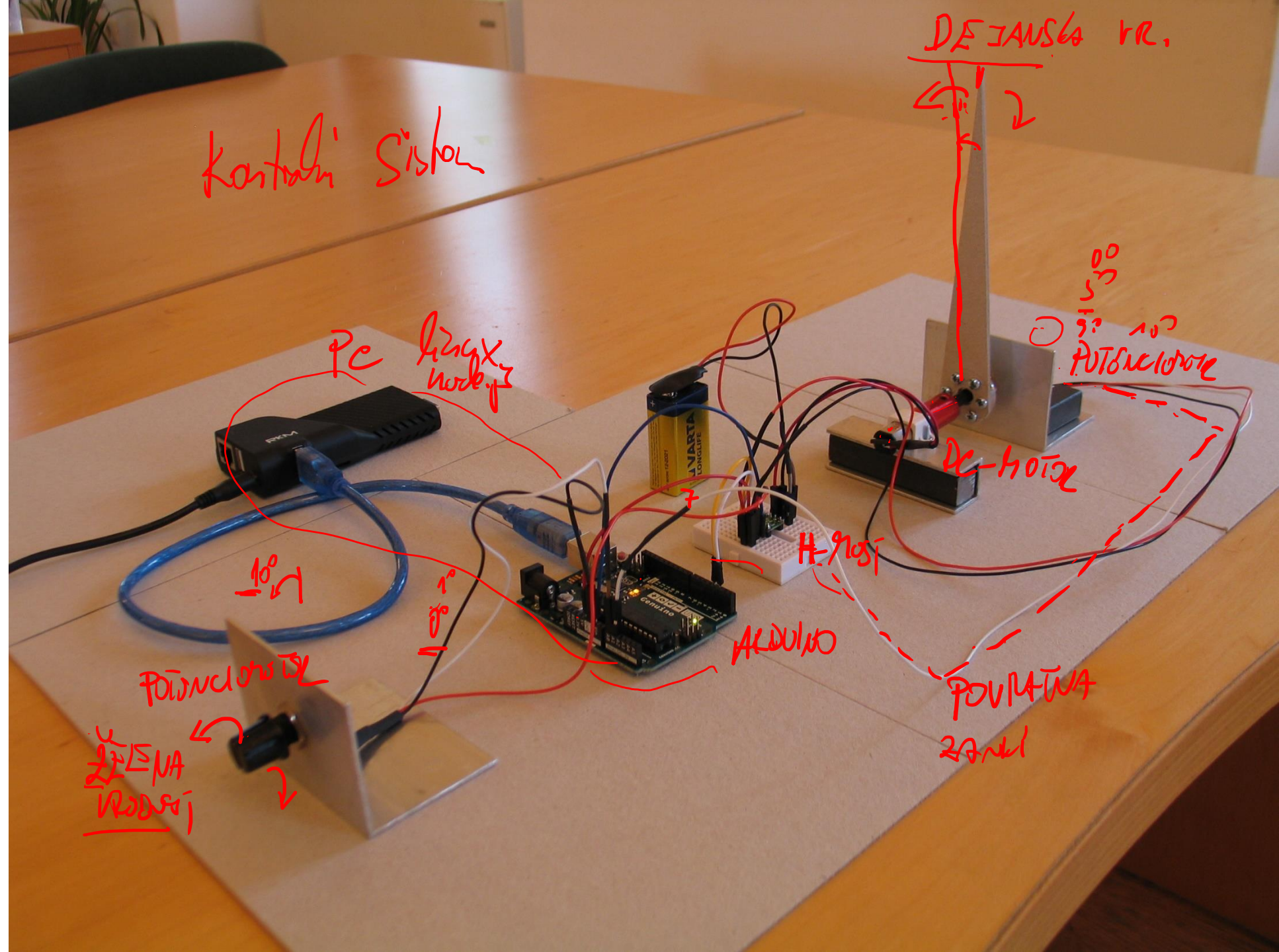
PC



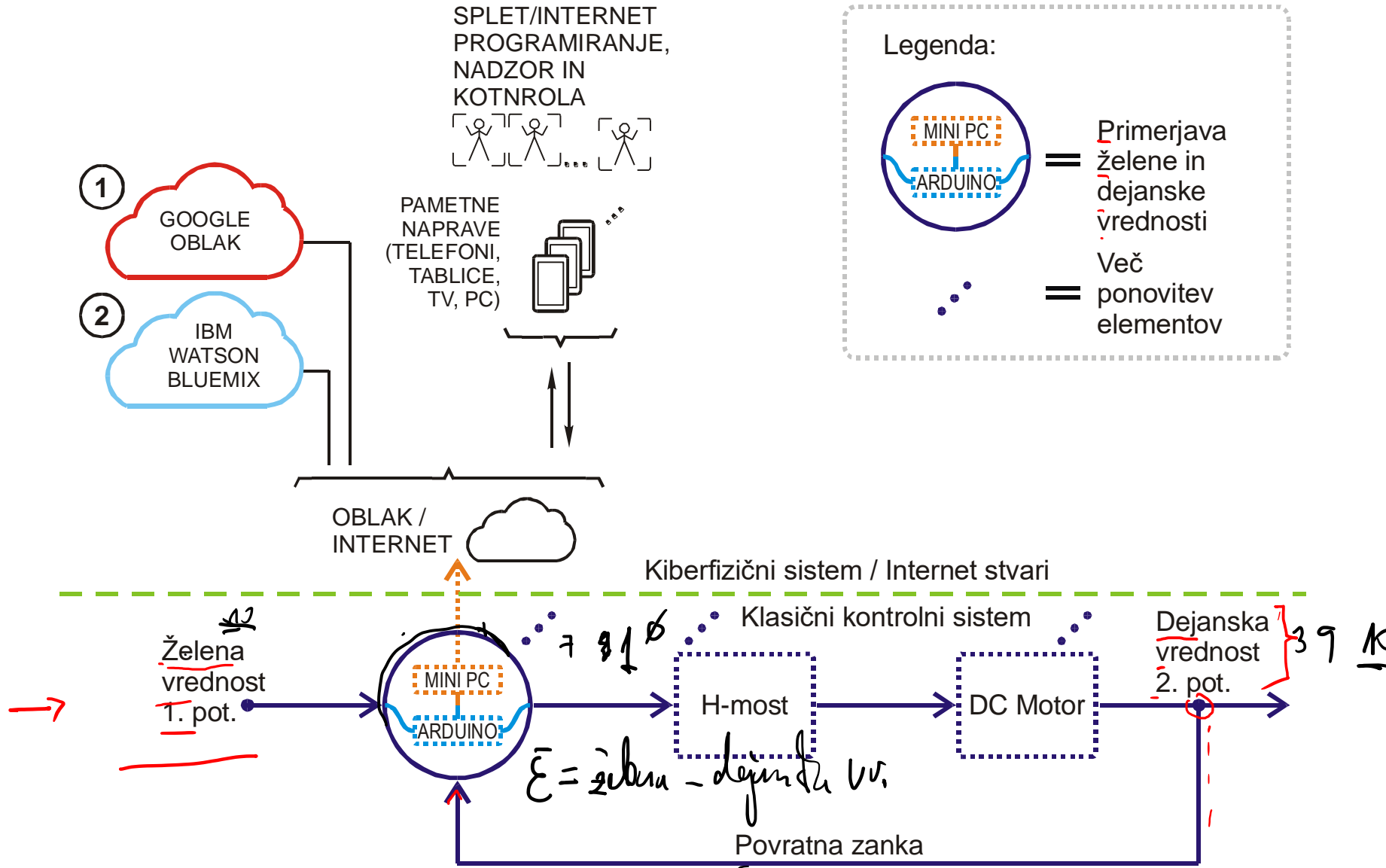


# Primer

- Arduino
- Mini PC
- H-most
- DC motor
- Programiranje v brskalniku
- JavaScript



# Realizacija sistema s povratno zanko



- SD-CPS-IoT
- Učna platforma
- Povezanost
- Interakcija s spletom in njegovimi uporabniki