ESP Radio
ESP8266 and VS1053 Internet radio

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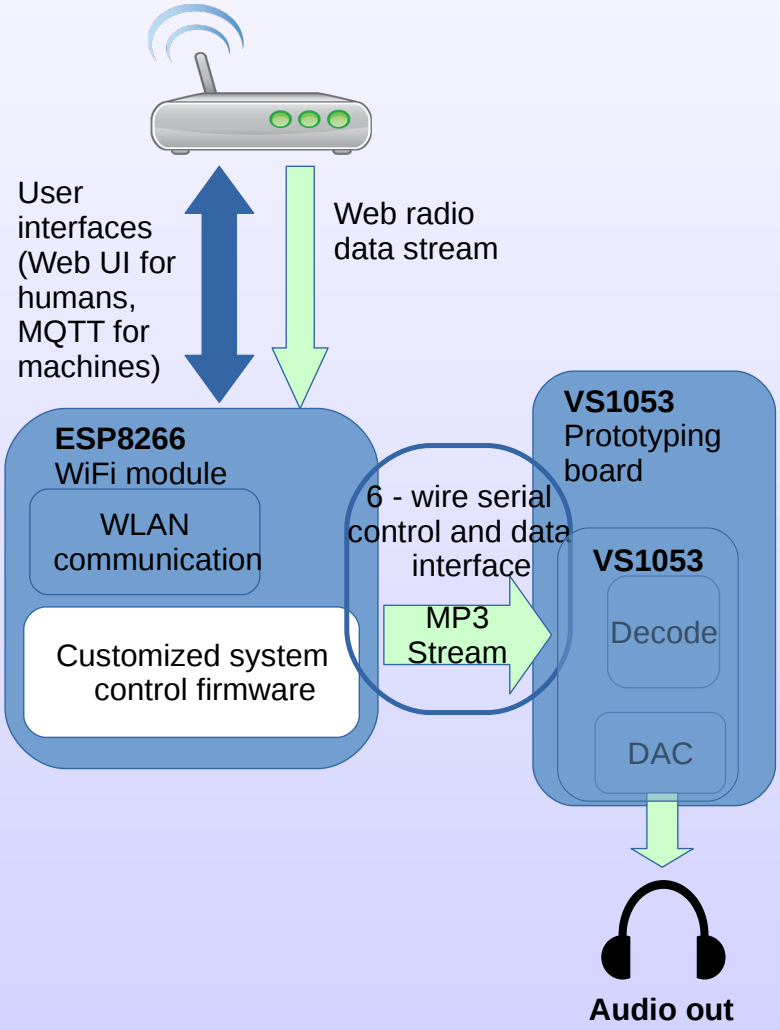
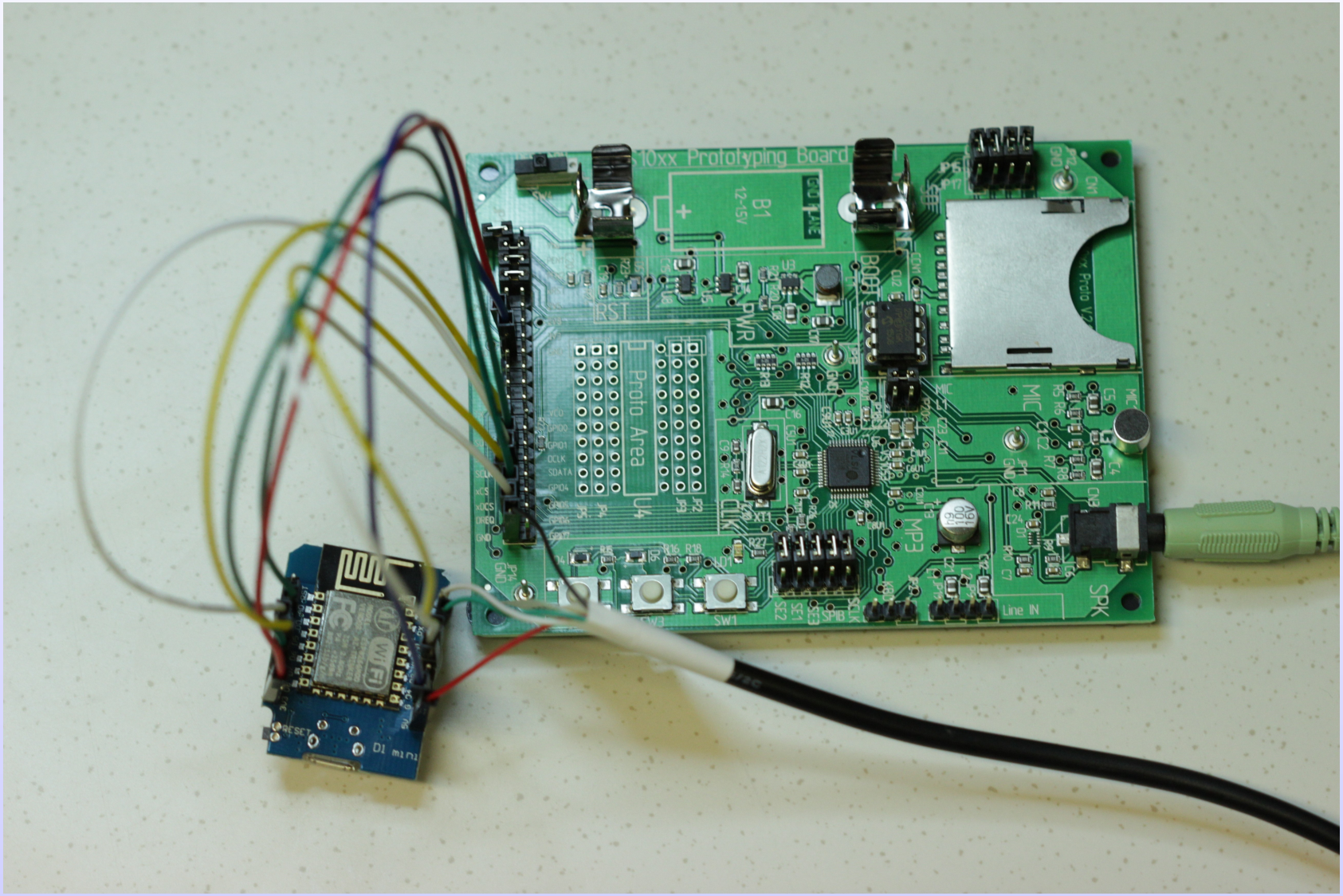
Block diagram



Demo hardware



Overview of the system

- Project made by Ed Smallenburg
- No software from VLSI Solution
- Operation
    - ESP8266 WiFi-module loads MP3-stream from the Internet
    - VS1053 decodes digital stream to analog audio
    - Digital communication with 6 signals
- Custom software for ESP8266 available
    - https://github.com/Edzelf/Esp-radio

Features of the ESP8266 firmware

- Web radio player
    - Read digital audio stream from web
    - Feed data to VS1053 for decoding
- Web server for human user interface
- MQTT node for Internet of Things
- uDNS: Radio can be accessed from esp-radio.local

Demo hardware

- UART cable for power and debug
- 3V3 from ESP8266 board to VS1053 proto board
- Data signaling 6 wires (DREQ, xDCS, xCS, MISO, MOSI, SCK)
    - Low on xCS selects control SPI interface
    - Low on xDCS selects data SPI interface
    - High on DREQ is request for more data to decode
    - MISO, MOSI and SCK are data and clock lines
    - ESP8266 uses H/W SPI interface in communication

User Interface screenshot

More information

- Original project
    - https://github.com/Edzelf/Esp-radio/
- ESP8266 WiFi SoC
    - http://espressif.com/en/products/hardware/esp8266ex/overview
- Wemos D1 mini development boad
    - https://wiki.wemos.cc/products:d1:d1_mini
- VS1053
    - http://www.vlsi.fi/en/products/vs1053.html
- VS1053 prototyping board
    - http://www.vlsi.fi/en/support/evaluationboards/vs10xxprotoboard.html