ENGI 301

Minimal Wi-Fi LED Widget Ticker Board Proposal

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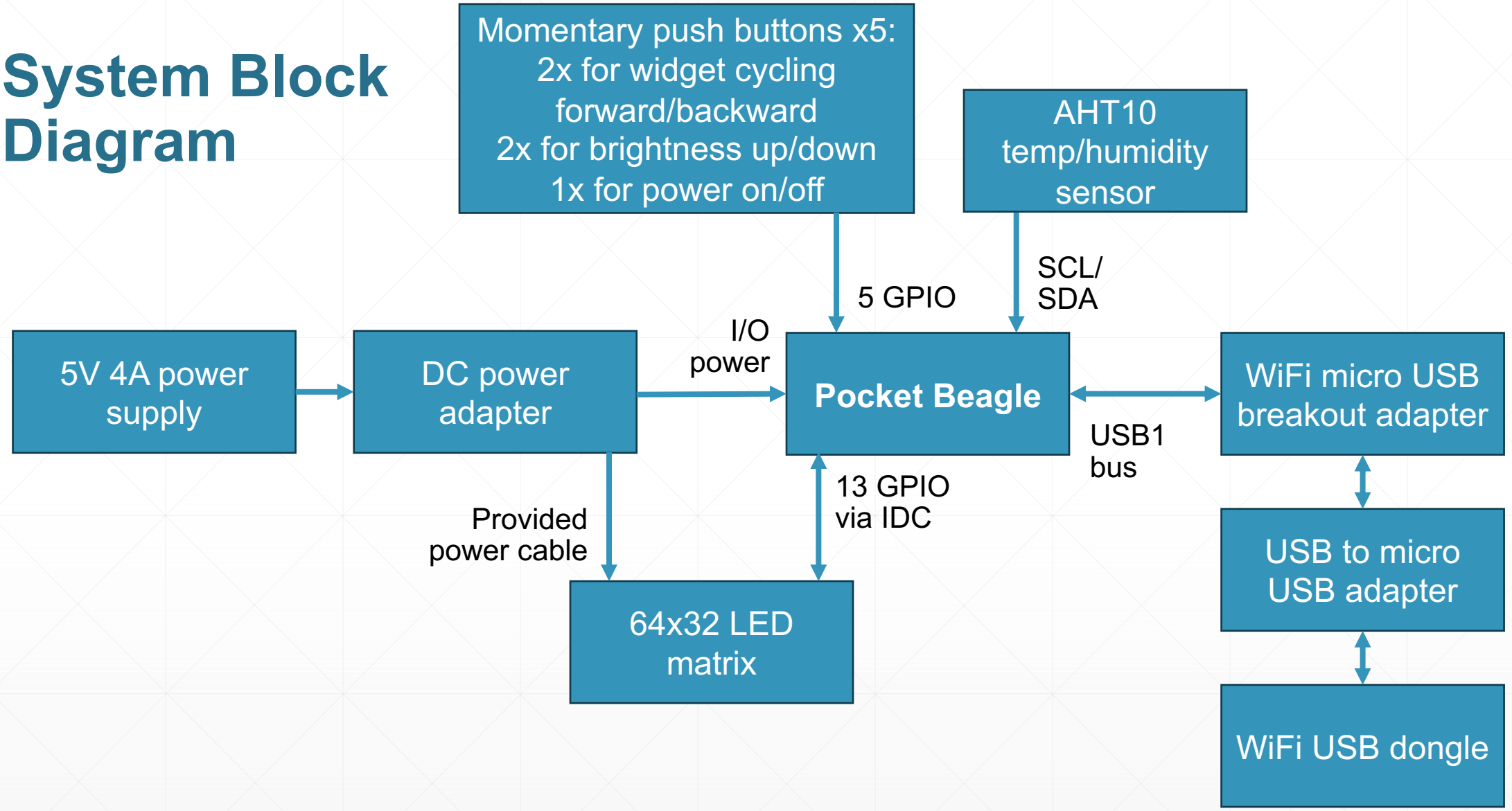
Background Information

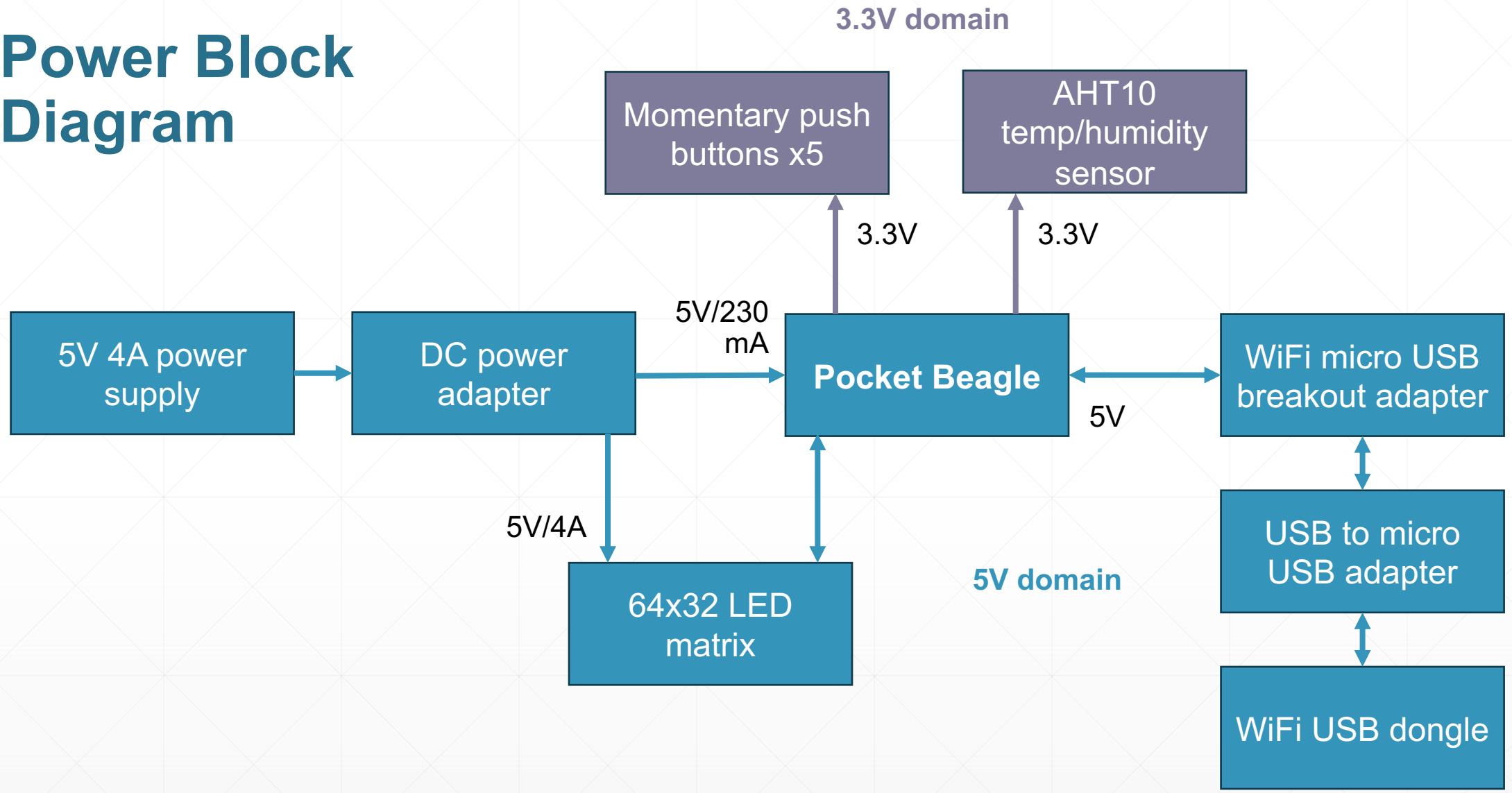
In an age where messages and media are shared instantly and young adults spend hours before screens, retro-style low-resolution displays have caught my attention as a medium to stay connected and informed but not overwhelmed and distracted. The company Tidbyt (see https://tidbyt.com) makes an intriguing app-enabled display in this style, though with a high price. I plan to design a low-cost self-contained LED board (i.e. with a wood or acrylic housing) with WiFi, with open-source support for multiple widgets (i.e. via a menu system). Some widgets that may be designed include:

- A long-distance relationship message display board (I am currently in a long-distance relationship and this is a gift idea!), which retrieves messages sent via email or SMS text (see https://www.twilio.com/en-us/messaging and https://docs.python.org/3/library/smtplib.html).
- A Spotify album artwork and currently-playing song display board using Spotify's web API (see https://developer.spotify.com/documentation/web-api).
- A current city weather display board, possibly with indoor temperature and humidity measurements) using the National Weather Service's API (see https://www.weather.gov/documentation/services-web-api) and sensors.
- A daily affirmation or rotating quote-of-the-day display board.

System Block Diagram



Power Block Diagram



Components / Budget

Component	Need to Buy	Cost
64x32 3mm pitch RGB LED matrix (via Adafruit)	**Yes***	$44.95
5V 4A switching power supply (Adafruit)	**Yes**	$14.95
WiFi USB dongle (Amazon)	**Yes**	$9.99
AHT10 temperature and humidity sensor (Amazon)	**Yes**	$3.00 (for 2)
Female DC power adapter (2.1mm jack to screw terminal block) (Adafruit)	**Yes**	$2.00
Acrylic or wood sheet housing material (OEDK or elsewhere)	Yes*	TBD
WiFi micro USB female breakout adapter	No	N/A
Male micro USB to female USB adapter	No	N/A
Pocket Beagle, various wires and resistors, solder, etc.	No	N/A

** Indicates that I will cover the cost or can contribute to the cost.*