
GadgEon
Engineering Smartness

Dedicated Short-range Conferencing System

Communication Equipment, namely headsets for facilitating communications with and among aged hearing challenged persons or among persons in a noisy environment

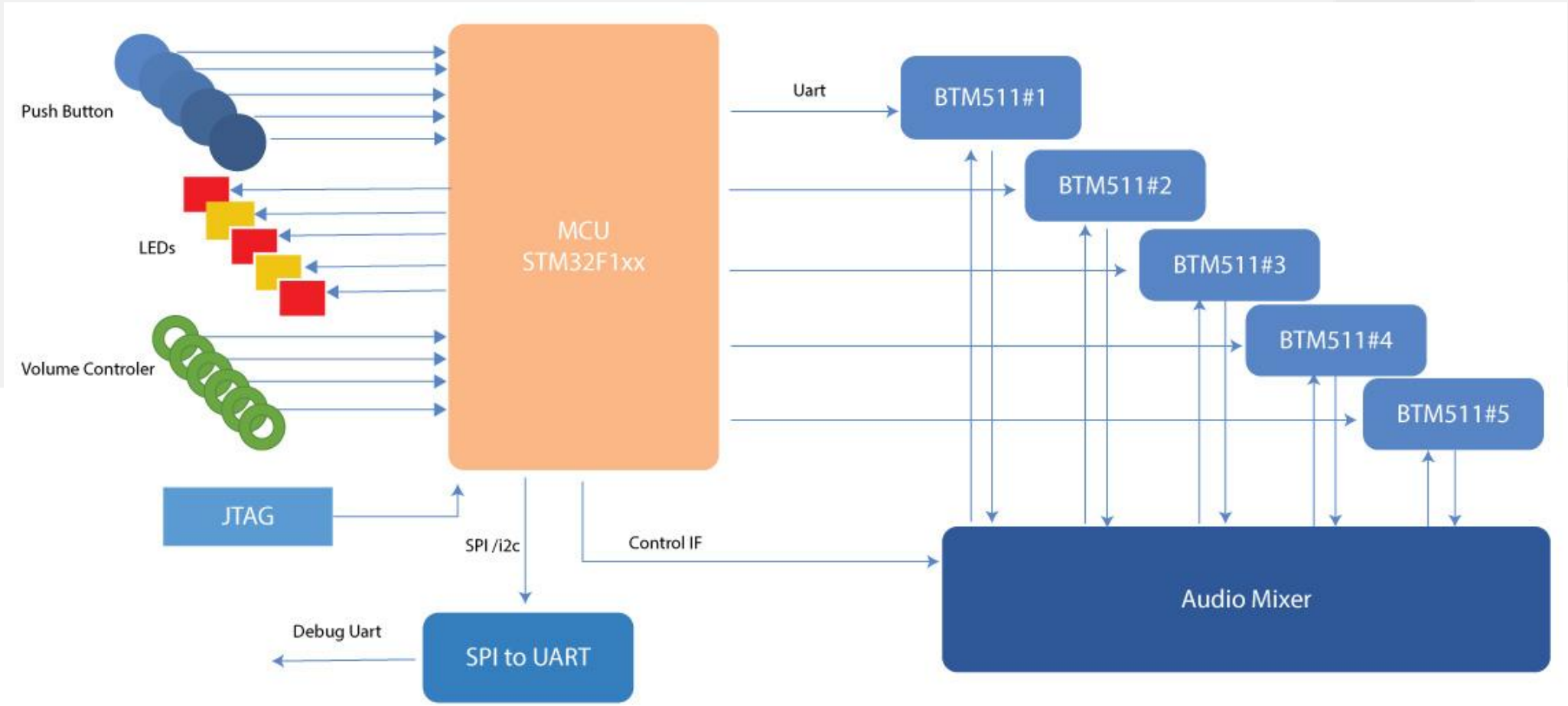
Challenge

- QoS 2.4-GHz Bluetooth 3.0
- Noise filtering DSP algorithm

Outcome

- Complete Architecture, Design and Implementation of Hardware & Firmware
- Dynamic Noise Reduction Algorithm Based on signal separation method

Audio conference device –Architecture



WHAT DID GADGEON DO?	PLATFORMS/ TECHNOLOGIES USED
1) Architecture of the product for Bluetooth connectivity, digital audio processing and mixing.	Requirements Gathering & Analysis, Uses cases, Architecture development, identification of functional components.
2) Hardware design, prototyping, boardbring up for Bluetooth module interface to controller and I2S interface for mixing and streaming.	Cadence allegro, fully digital design for reduced noise.
3) Embedded bootloader and firmware for Bluetooth pairing with headsets, audio streaming, mixing and firmware update over Bluetooth.	STM32 libraries, Keil, FreeRTOS, COTS Bluetooth module, STA309 Mixer from ST. STA309 driver for mixing of audio streams, I2S interface configuration Bootloader customization for firmware upgrade.
4) Created algorithms for noise cancellation using adaptive LMS algorithm and blind signal separation algorithms for demonstration.	Octave DSP development platform, TMS320C6746, TI Code Composer Studio

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