Designing Wearable Experiences for IoT

Hardware and software tools built on open-source mbed Wearable Reference Design

Overview

Connected wearables offer a huge potential to design new experiences through expanding connectivity and capabilities for both consumer and enterprise devices as part of the growing Internet of Things. The open source mbed Wearable Reference Designs offers all key hardware and software tools required for your team to take a differentiated product to market faster.

The mbed Wearable Reference Design is architected and designed from the ground up to address the key challenges faced in the wearables market, like battery life, connectivity, usability (user experience) and miniaturization (small form factors).

The mbed Wearable Reference Design has been tested with a small batch of wrist mounted wearables and hence incorporates lessons learnt to support your rapid prototyping.

The mbed Wearable Reference Design consists of

- ARM Cortex-M3 Processor running mbed OS
- 9-axis motion sensor for activity monitoring
- GPS module for location tracking
- Incorporates a fingerprint sensor to authenticate user’s identity
- NFC integration for payments and pairing
- BLE communication to display notifications to wrist mounted LCD and smartphone devices
- Can be expanded with software development tools available from mbed Partners

Features

- Ultra Energy-Efficient: Tested to deliver 8-week long battery life
- Ready for interoperable connectivity: Optimized to run mbed OS, the modular, efficient OS built to enable IoT at scale
- Ease of use: APIs designed with wearable applications in mind – optimized for battery powered resource constrained devices
- Modular: Include or exclude features as needed
- Expandable: To support extensive UI capabilities, connectivity stacks and ease development effort for software developers

www.mbed.com/wearables

Market Scope

A Tech Pro Research report showed that 47% of companies surveyed are using, or planning to adopt wearables within their organization in 2016. Among those using them, smart watches, sensors and headsets were the three top categories of devices being used, or considered.

Target Applications

- Activity tracker
- Wearable healthcare device
- Smart watch
- Wrist mounted communication device
- Heart rate or vital signs monitor

Can also be used to design

- Embedded wearables for clothing
- Wearable for head mounted device
Wearable Reference Design Block Diagram

Resources available within the mbed Wearable Reference Design

Hardware resources
- Schematics
- PCB Layout
- Mechanical CAD files
- Examples for program/debug & test device

Software resources
- Software libraries
- APIs
- mbed Partner libraries

Technology Inside

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<td>BLE Communication</td>
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<td>Linear Technology LTC3103EDD, Texas Instruments TPS78230</td>
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