LOW POWER EMBEDDED DESIGN PROJECT PROPOSAL

Team Name : WearTech

Team Mates:

Sanjana Kalyanappagol
saka2821@colorado.edu

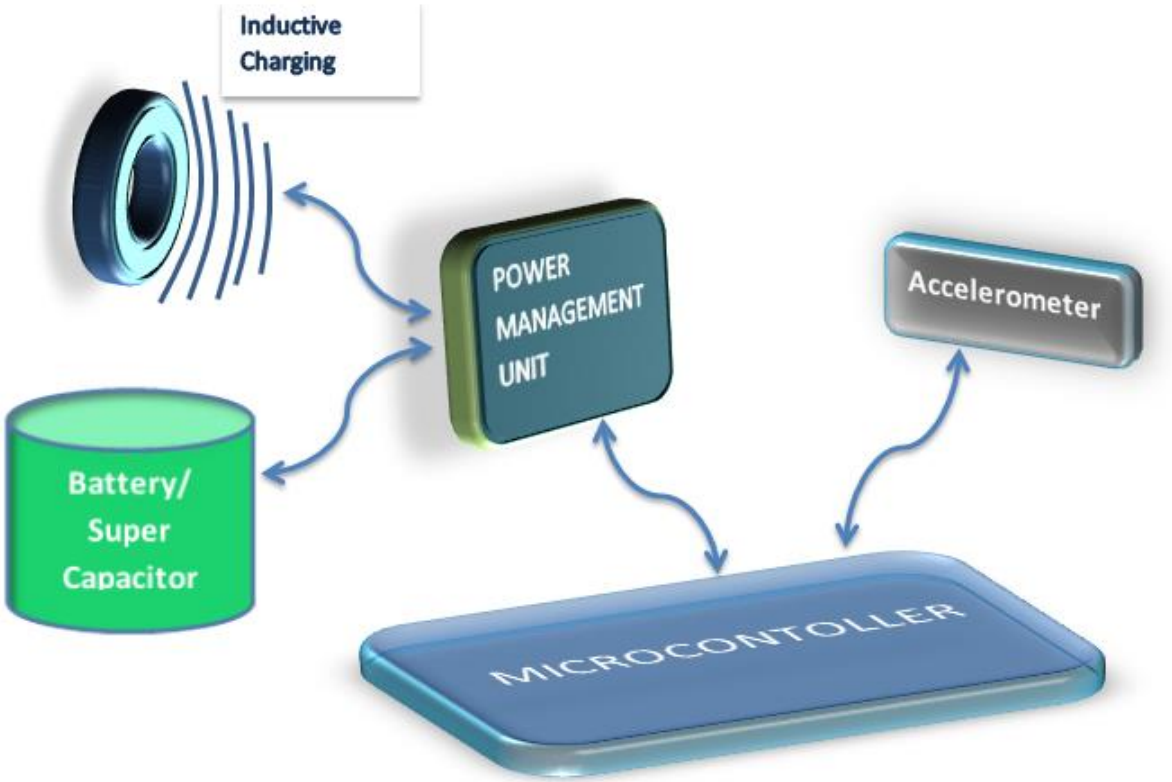
Shekhar Satyanarayana
shsa5563@colorado.edu

Introduction

What is the Project: A wearable ring/cap which is used to take short notes and control other devices through the movements defined in the Mobile App.

What problem does the project solve? Or, what value does it provide? : With the advent of technology, it is bane to open your mobile/laptop/book to take a note of something important that strikes you all of a sudden or take a phone number of someone you meet unexpectedly. Say you are in a harsh environment, What if you had a wearable device with you all the time as a look-out for such situations.
In the Corporate world, say you are in a meeting and you need to take notes, rather than using notes/pens and disturbing others you can easily take notes of all the important points you need. Say in an unanticipated meeting, wouldn't you feel more secure,safe and confident with our device always at help.
In the field of Software Development & maintenance, one can face a lot of issues/bugs to be fixed within due dates. And with that constantly in mind, Most of us get solutions to the same when we are involved in our day-to-day activities such as driving,eating,talking with a friend, etc. Hence we would end up looking for a pen & paper, if not we would waste time memorising the solution we had just found unless we have this device around which can keep a record of every thought that you want to be saved at any point of time.
Now with the buzz of IoT we have seen a lot of devices which could communicate with our home appliances. We provide an integrated solution with the new Bluetooth Mesh Network, the Ring/Cap a single device which controls the home appliances and be a note taker. The end-applications to such a device are enormous, it can be used to define the movement of a wheelchair, it can be used by old people/patients to communicate.

Block Diagram



Key Critical Requirements

Battery Life Requirements: Since we are targeting for a prototype of the device, we presume we can limit to a battery life of 2hours.

End product physical dimensions: The product is a wearable thus, as small a device can be would be best. But since it is a prototype we can limit within 3”x 5”

Other Requirements:
Wireless charging - Inductive charging.
The movement of the accelerometer recorded must be processed with less margin of error and detect the exact character/gesture.
The Ring/Cap should communicate & control other devices in the Bluetooth mesh (Say a simple on/off)

Key Blocks

Microcontroller: Blue gecko
Radio Technology: BLE/ Bluetooth Mesh
Energy harvesting : Inductive charging of capacitor/battery through Power sockets.

Guidance

Prof.Keith Graham : Insights on wireless charging, bluetooth mesh network

References

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5. Bluetooth Mesh Networking/ An Introduction to Developers by Martin Woolley