smartConnect

ENSC 305W/440W Final Demo

*Your **connections**, Will change your **direction***

smartConnect

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Outline

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Background

Networking Events:

➢ Why people go to these events?

Business men: To grow their business
Entrepreneurs: To showcase their Project
Students and Job Seekers: To look for job opportunities

Different Reasons But One Motive: TO BUILD REAL CONNECTIONS

Background

➤ How People Do It:

        Talk to One Another
        Share Business Cards

➤ Limitation In This Conventional System:
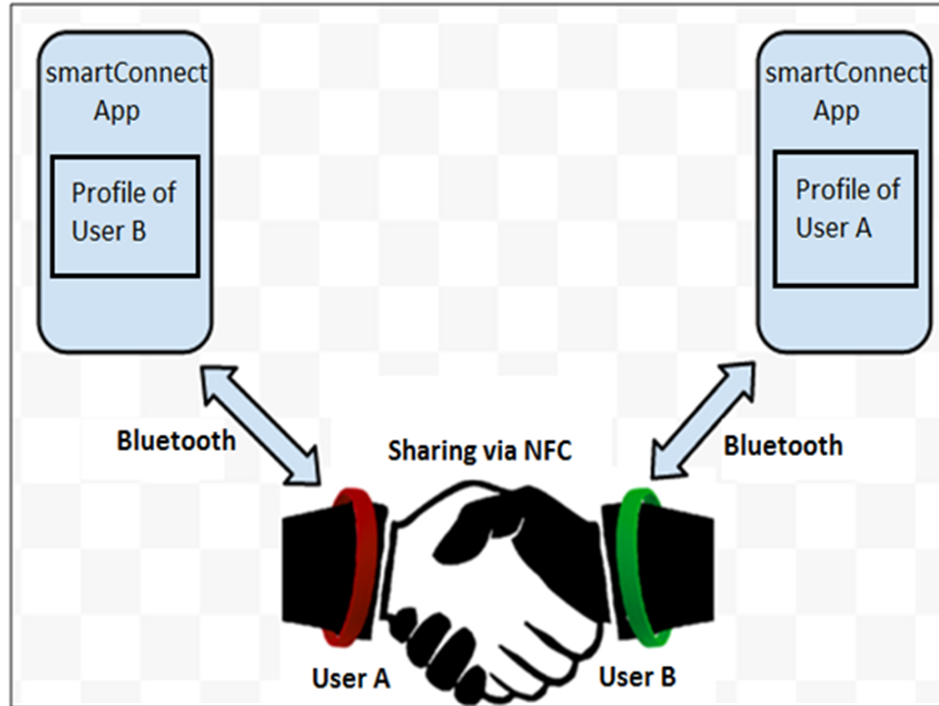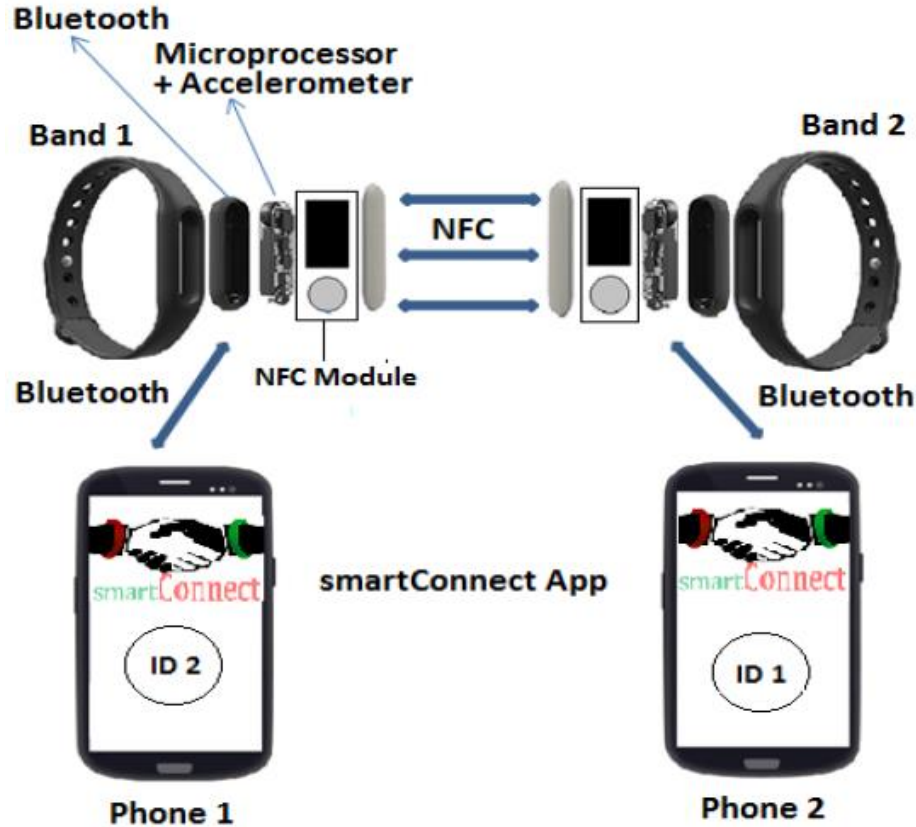
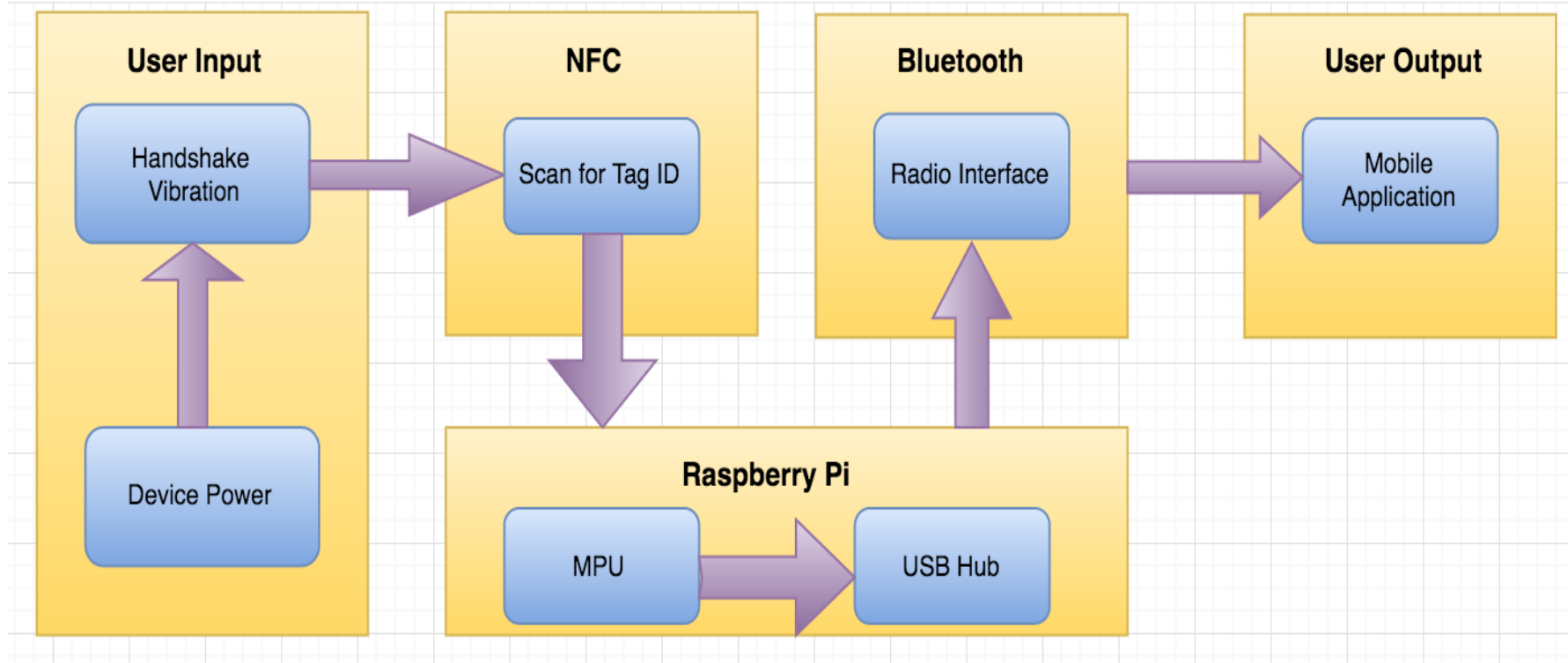   Small Scope

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Introduction
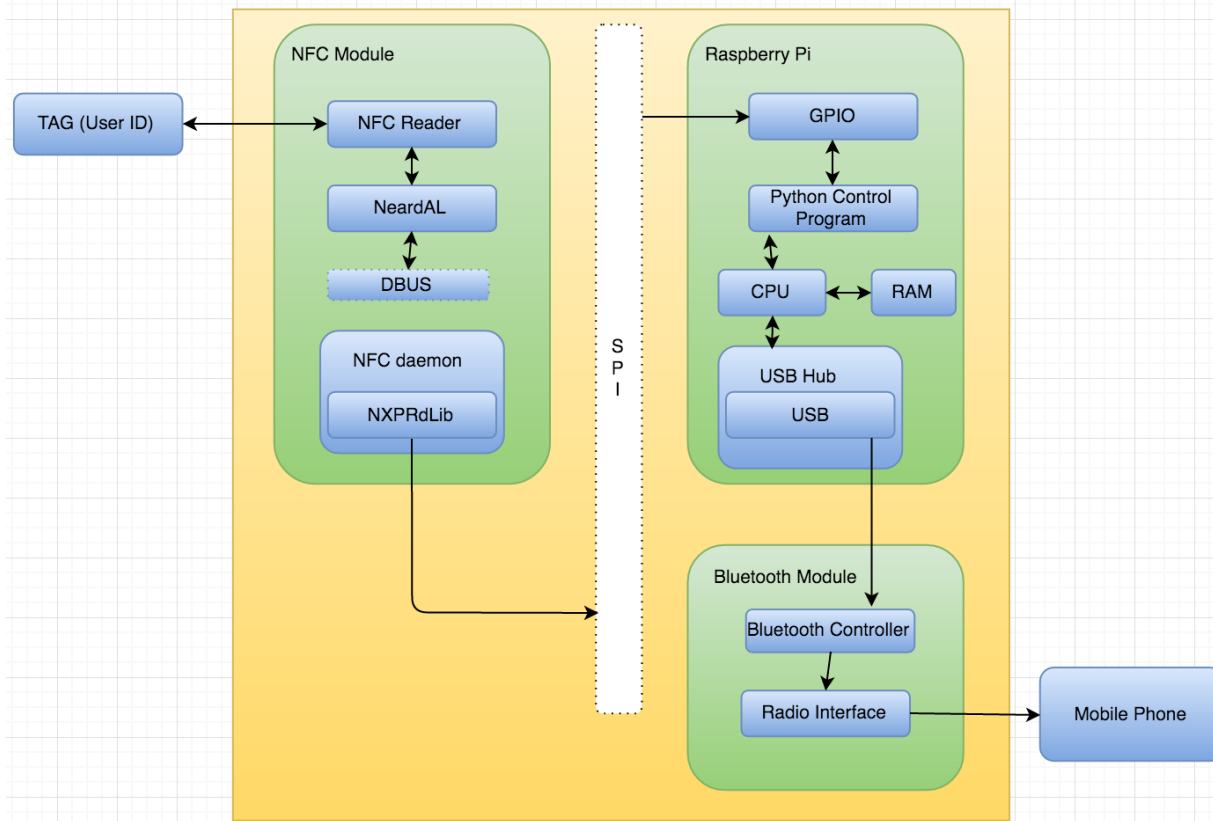
How does smartBand work?
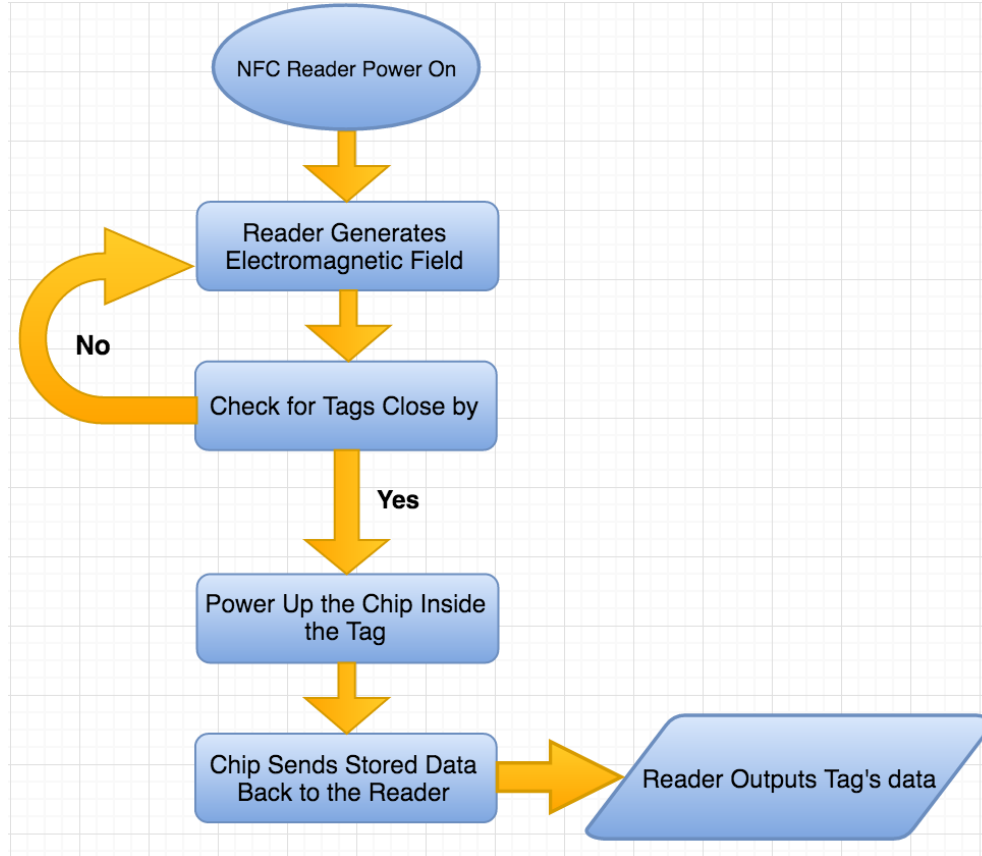
System Overview
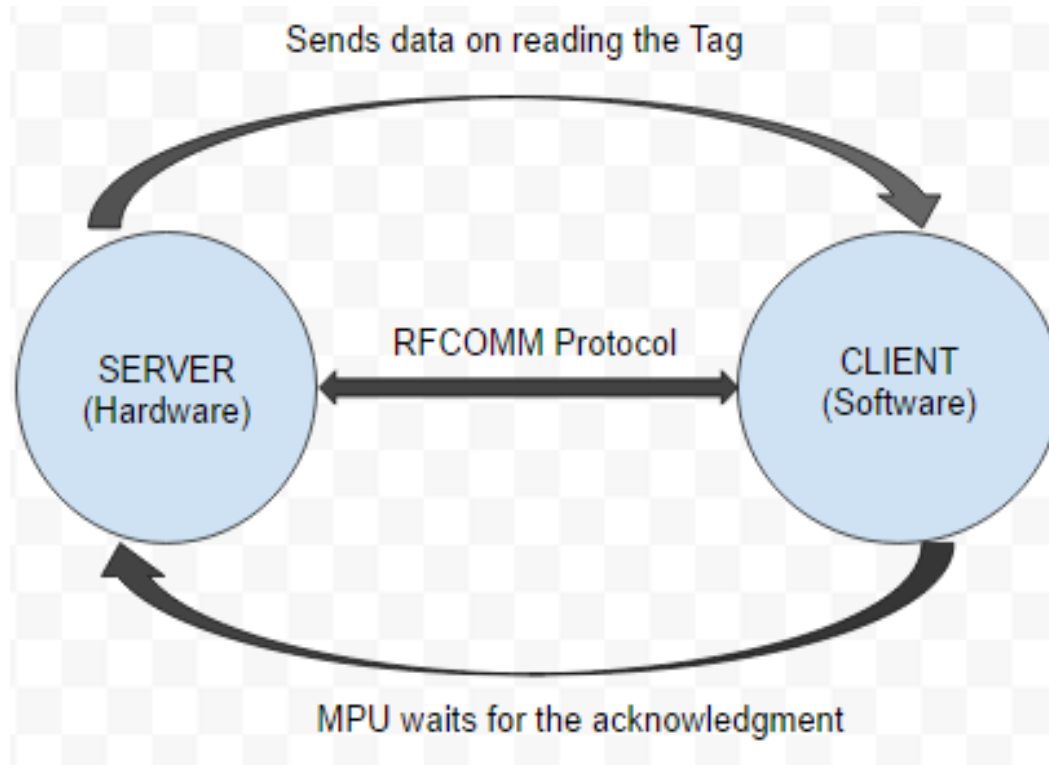
System Overview

Hardware

Firmware – NFC Interface (Tag + Reader)

Firmware – Bluetooth Interface

Bluetooth communication script → Bluez library

Sends data on reading the Tag

SERVER
(Hardware)

RFCOMM Protocol

CLIENT
(Software)

MPU waits for the acknowledgment

Firmware

➢ **Microprocessor interface**

    Reading User ID from NFC tag →

        SPI protocol

        nxppy open source

➢ **3- axis Accelerometer (MMA7455) interface**

    Reading data from register and calculating to detect hand shake
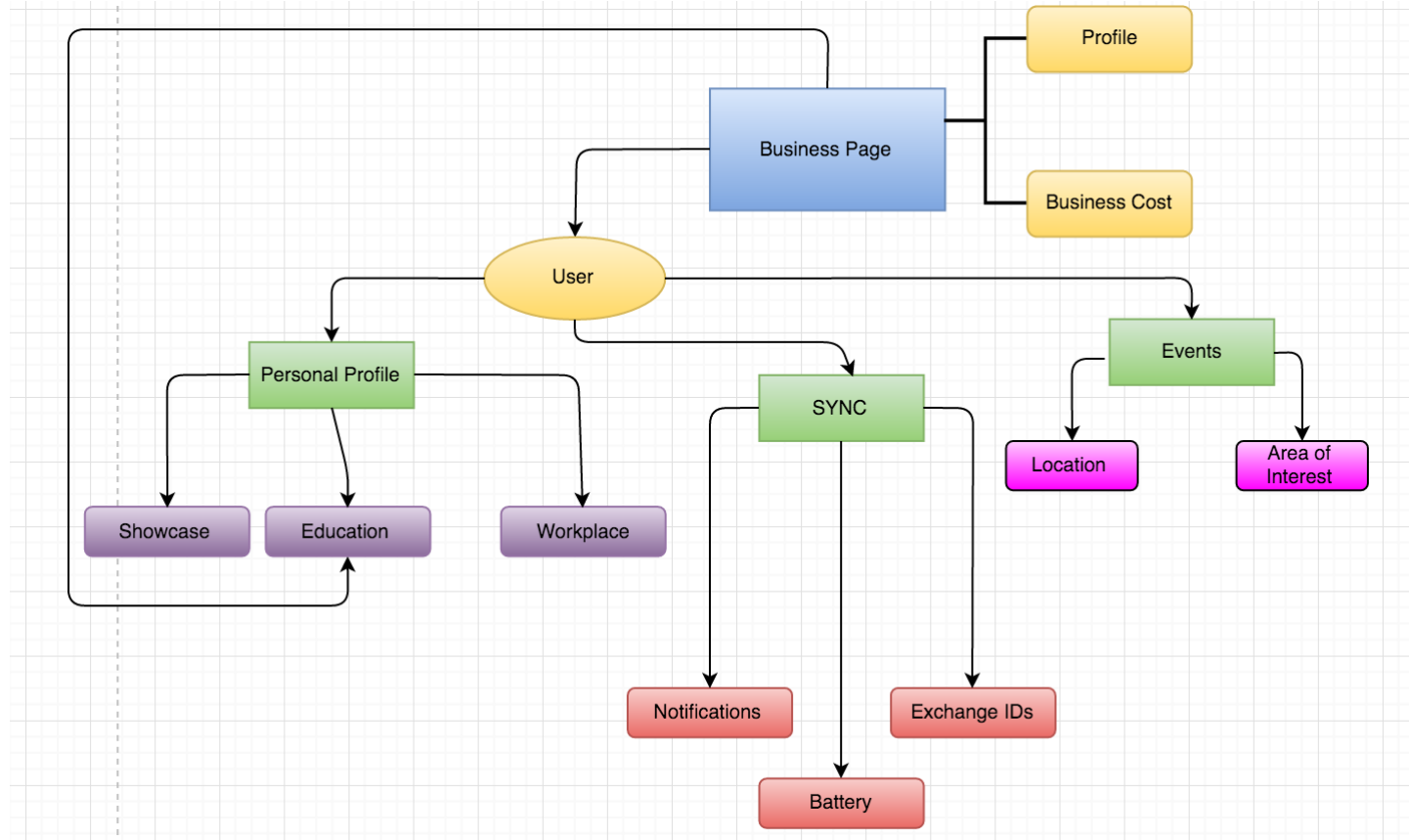
        Reading from data register → I2C protocol

        Reading MMA7455 value from register → smbus

➢ **Vibration Sensor (SW-420) interface**

    Detecting the general vibration → GPIO pin

Software — Application Class Diagram

Software – Design Elements

Software Application

- Interactive User Interface
- Functional Features
  - Profile Creation
    - Work
    - About
    - Company
      - Job Posting
      - Showcase Project
  - Interest Matching
  - Skillset Matching
  - Expected Skillset match
  - Save Profile
  - Event Alerts
  - Request Contact info

- Architecture
  - Classes
  - Data Base (SQL)

- Tools
  - Android Development Studio
  - Java SDK
  - Nexus 4 Simulator

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Software − UI Design

Setting up profile

Showcasing yourself

Filling up background

Software – UI Design

Profile View
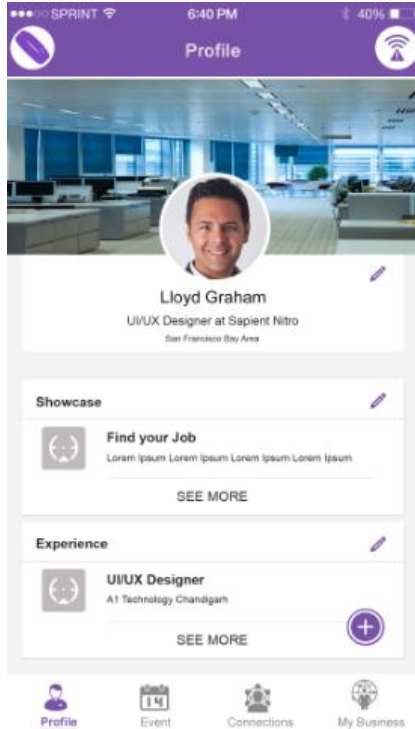
Editing profile
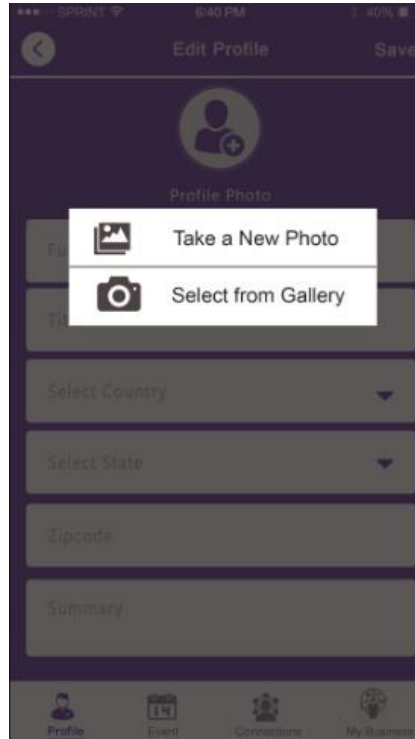
Add Experience

Team allocation

	Gurjot Singh Atwal	Kevin Chang	Masih Amiri	Rajdeep Kaur	Sukhreet Kaur
Documentation	xx	x	xx	xxx	xx
Research	xxx	xxx	xxx	xxx	xxx
Electronics		xxx			xxx
Firmware	x	xxx			xx
Android Application	xxx		xxx	xxx	
Financial budgeting	xxx	xxx			
Communication	xx	x	x	x	xx

Business Case– BMC

KEY PARTNERS
- Networking Event hosts

KEY ACTIVITIES
- Customer Survey
- Product Development
- Marketing

KEY RESOURCES
- Team Members
- Epitome Technologies

VALUE PROPOSITION

Features
- Job Posting
- Showcase Project (etc.)
- Interest Matching
- Skill set Matching
- Expected Skill set match
- Save Profile
- Event Alerts
- Request more info

Gain Creators
- Connecting People
- Ice Breaker
- Entrepreneurs will be able to share their showcase to wider range of people
- Hosts in networking events can conduct a survey and know how they performed

CUSTOMER RELATIONSHIPS
- 24/7 Support
- Video Tutorial

CHANNELS
- Trade Shows
- University Launch
- Website
- Business Directories (YP, Yelp, etc)

CUSTOMERS SEGMENTS

Segments
- Entrepreneurs
- Business man
- Young generation(Students, Employees, Job Seekers)
- Shy People

Pains
- It is hard for many people to start a conversation in any event
- Entrepreneurs cannot make full use of Networking events
- Employers don't know the full extent of potential employee's skill set in networking events

Business Case – BMC

COST STRUCTURE

Fixed Costs:
Software Development
Hardware manufacturing
Marketing (B2C)

Estimated Manufacturing Cost:
Final cost of product= Hardware cost *+ Software development cost**

$$= \$4000000 + \$78000 = \$4078000$$

REVENUE STREAMS

Method:
Subscription Model to networking events (Leasing per year)
Product Sales
Money from Advertisements

Service Charge:
All-Inclusive (Premium)
Add-on (Basic)

Estimated Revenue:
Sell averagely 200,000 products per year
Cost of each band $45 CAD
Revenue: 9 million revenue per year for first 5 years of the sales

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Hardware cost = manufacturing cost per band*(# bands sold per year)

Software development cost = (# of weeks) * (hours / week);

Where,

 Hourly rate = $40/hours,

 # Team members = 5,

 # Weeks = 13,

 # Hours per week = 30

Budget

Components (Initial Phase)	Unit Cost
2 X Raspberry Pi-B Model	$60
2 X Bluetooth Module	$16
2 X Wi-fi Module	$18
2 X Micro SD Card	$13.2
2 X NFC Controller Board	$55
2 X Adafruit Assembled Pi Cobbler Breakout + cable of Raspberry Pi	$6.5
2 X NFC Bracelet	$3
Hidden Cost	$100
Expected Cost	**$445.3**

Components (Working prototype)	Unit Cost
Raspberry Pi-B Model	$59.99
Bluetooth Module	$15.95
Sensor Components	$47.52
Micro SD Card	$13.19
NFC Controller Board	$32.25
Jumper Wire	$28.91
NFC tag	$12.99
HDMI to VGA adapter	$45.00
Application server	$650
Actual Cost	**$905.8**

Scheduling

Task Name	Start Date	End Date
Hardware Development	02/15/16	04/08/16
Bluetooth	03/07/16	04/08/16
Bluetooth (expected)	02/15/16	03/08/16
NFC	02/15/16	02/22/16
NFC (expected)	03/08/16	03/29/16
SD card	02/15/16	04/08/16
3-axis Accelerometer	02/24/16	03/04/16
Vibration Sensor	03/31/16	04/08/16
Software Development	02/15/16	03/31/16
Design Muck up	02/15/16	02/22/16
Design Muck up (expected)	02/15/16	02/19/16
UI Design	02/23/16	03/07/16
UI Design(expected)	02/23/16	02/29/16
UI/UX Design	03/08/16	03/21/16
UI/UX Design(expected)	03/01/16	03/14/16
BackEnd	03/14/16	03/30/16
API	03/22/16	03/30/16
API (expected)	03/14/16	03/21/16
Data Base	03/22/16	03/30/16
Data Base (expected)	03/14/16	03/21/16
Feature Implementation	03/22/16	03/31/16
Profile	03/22/16	03/31/16
My Business	03/22/16	03/31/16
Event	03/22/16	03/31/16
Connection	03/22/16	03/31/16
Software&Hardware Integration	03/15/16	04/15/16
Bluetooth Connection	03/31/16	04/15/16
Testing	03/15/16	04/15/16

Challenges

- I2C bus acting low after rebooting Raspberry Pi
  - Used another 3-axis accelerometer(MPU6050)
  - Tried different Raspberry Pi

- Server(Raspberry Pi) did not get acknowledgement from client(application)
  - Researched socket level programming
  - Researched server communicate with client
  - Understood each function provided by bluez

- Reading two different IDs in small duration of time

- Exporting information from LinkedIn to application

Learning outcomes

➢Things will go wrong – Keep trying

➢Technical Research

    ➢Java

    ➢Photoshop

➢Hardware Integration

    ➢Learnt Component assembly

    ➢Python

    ➢Socket communication programming

➢Design Changes

Future plans

➢Future Sources

- Epitome Technologies and Stara Enterprise

➢Future development

- Design own CPU: Performance as Cortex- A7 and better power efficiency
- Replace the USB hub by a Lithium Polymer battery
- Design NFC board using UCODE 7 chip
- Build Inductance Rectangular Planar Spiral Inductor
- Employing BLE4.2 technologies instead of pluggable Bluetooth 4.0 adapter

Conclusion

Achieved working prototype

➤ Benefits

        Increasing scope in Networking events

        Expanding professional network

        Replacing conventional info exchange methods

        Efficient way to follow up

➤ Beneficiaries

        Entrepreneurs

        Businessmen

        Job seekers or Employers

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      Soroush Haeri

      Mahssa Abdollahi

      Mona Rahbar

      Hsiu Yang Tseng

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➢ Prof. Michael Schmitt (Psychology Department, SFU Burnaby)

➢ Schneider Electric, Burnaby

      PEng. Peter Angus

      Senior Hardware Engineer: K. Deigo

References

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