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Description: Product Description and Overview

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Revision History	
11/05/2021	Document Creation and Initial Draft

Acronyms and Terms	
BGA	Ball Grid Array
FPGA	Field Programmable Gate Array
I2C	Inter Integrated Circuit
LCD	Liquid Crystal Display
MCU	Microcontroller Unit
PCB	Printed Circuit Board
Silkscreen	The designator layer of a PCB with which text can be displayed in the form of ink.
SPI	Serial Peripheral Interface
UART	Universal Asynchronous Receive and Transmit
VIP	Very Important Person

Product Overview and Description

The Electronic Business Card (EBC) Project is meant to attract greater attention than a traditional business card. Traditional business cards are an excellent choice for large volume distribution, such as at a convention; however, an electronic based business card will certainly attract the attention of important clients, employers, or other VIPs.

The EBC originated as the idea of using a display to provide the same information that a traditional business card provides while providing higher visibility and information flexibility. However, after a feasibility analysis, this did not seem to be the best choice because of the price per unit. The current working idea is to create a business card on a PCB, using the silkscreen of the PCB to present the business card related information and design an electronic system to provide the eye catching feature.

The EBC will be the same size as a standard business card, that is 3.5x2 inches. The main eye-catching feature of the EBC will be as a solar powered digital thermometer. The EBC will be solar powered to eliminate the need for a bulky battery thus keeping the product as thin as possible. The product will display the temperature on a screen and optionally provide the user an interface to change the units from Farenheit to Celsius. The general idea is to keep the design isolated to one side of the PCB to allow the other to be used to display information using the silkscreen.

Personal Objectives and Inspiration for Project

The original idea for this project was to create something that would practically bolster my resume as a fresh college graduate. The original idea was that as stated above: a digital business card using a display. On paper this doesn't seem like such a daunting task; however, I wanted to make use of several technologies in the project to increase my experience. Firstly, the design needed to include an FPGA. I took an FPGA course my senior year and it was quite interesting and inspired me to pursue it further. With regards to the FPGA, I wanted to use at least one of the most common communication protocols in embedded systems: I2C, SPI, or UART. Secondly, I wanted to use a custom PCB using BGA packaging on at least one component to give me the experience of routing and soldering the package. Finally, I wanted to use some type of display in conjunction with the FPGA to gain the experience of using the FPGA for such a task. During my senior year, I used a graphical LCD in my senior project, but driven with a MCU.

With these in mind, the original idea was feasible aside from two major drawbacks, the cost with regards to both time and money. Time wise, I wanted the project to be completable within 2 months with roughly 30 hours of work dedicated per week. I also wanted the price per unit in quantities of 10 to be roughly below $25. With these in mind, I decided to scale back the scope of the project to create something that would be quicker, cheaper, but still retain the core objectives of the project.