**Project Title (50 words or less)**

Medication Assistant

**Project Concept (200 words or less): Provide us with a brief summary of your project.**

**A.Describe your project and the problem it addresses.**

Medication Assistant is supposed to be a smart device designed for the elders who need to take different kinds of medicines every day. To those elder people, they will probably forget to take their medicine on time and in the right dose. What worse is, they may not realize after that, and their doctors may failed to know either. This smart medication assistant device could provide a better way to care the elder’s medication condition. For example, it could prepare the pills and remind the elder people to take their medicine. Also, it could record the patients’ medication-taking history and report to the healthcare professionals.

**Problem (200 words or less): Provide us with a detailed summary of the specific problem you are looking to solve.**

**A.What is the specific problem that your project is going to solve? (e.g. hard to afford/expensive prosthetic devices)**

Elder who need medicine treatment for their chronic diseases often forget to their pills, which cannot been known by their caretakers and physicians. Another trouble for them is, they have so many kinds of medicines that they are unable to remember when and how much dose to take the pills. Consequently, failing to take their medication timely and rightly will do harm to their medical treatment. A worse problem is, taking the wrong pills at a wrong time. This could result into serious adverse drug reactions, which are life-threatening to the elders. Those existing medication reminders do not include adequate functions to solve this serious situation. Elders who need to take medicine regularly to treat their chronic diseases are affected by this problem. Moreover, there are also some non-institutionalized older persons who live alone. This special group particularly need the medical care because their family member cannot know their health condition. Our purpose is to create a medication assistant device to reduce this kind of problem happens.

**Opportunity (800 words or less): Demonstrate your knowledge of the actual opportunity associated with your project. This includes numbers and market research/data on how many people are affected by the problem you stated in Section 1. Clearly discuss any research you conducted, including:**

**A)Data on real-life people/customers you have talked to, interviewed, and/or surveyed who are actually affected by the problem or could benefit from your proposed project solution that you stated in Section 1 (e.g. 10 doctors about a new medical device)**

According to the survey of 2014, there are 46.2 million older people in US. Among people who are age 65 years or older, 90% take at least 1 drug per week, more than 40% take at least 5 different drugs per week, and 12% take 10 or more drugs per week. About 28% (12.5 million) of non-institutionalized older persons live alone (8.8 million women, 3.8 million men). Almost half of older women (46%) age 75+ live alone. Therefore, more than 11 million older people are affected by this problem. Specifically, more than 7.5 million older women and more than 3.4 million older men are affected. For those older people, getting insufficient medical care will directly result in the declining of their health status. According to Karen Dorman Marek and Lisa Antle, more than 11 percent of the alone older adult attributed to medication non-adherence and 10–17 percent related to adverse drug reactions. That is to say, more than 1.38 million older people did not adhere to their medication, and 1.25 million – 2.12 million older people had suffered the adverse drug reactions.

**B) Is there another organization(s) or business (es) doing something similar to your project? If so, who are they and what are they doing similarly?**

The current solution is the automatic pill dispensers, which could set an alarm to remind the older people to take their medicine on time. These dispensers could 1) alarm up to 6 times per day 2)18 aspirin-sized pills per dose.3) runs on 4 AA batteries. Another solution which could remind people to take medicine is the mobile apps. Those apps could set up alarms to remind people when and how much dose to take their medicine. If they failed to take the medicine, app would record this missing medication. Besides, users’ medication status could been seen by designated person (usually are their family members).

But we believe the existing products are not for elder people especially for the very old people. They need a more intelligent and friendly product.

The current solutions do provide some help with elder people for their medication, but not enough. For the pill dispensers, they cannot record the medication status each time, which means its function is single. As for those mobile Apps, they are just play the role of a special alarm. Elder people still need to prepare the pills for themselves.

**C.Online research, numbers, databases and articles you found that supports the need and demand for your project**

Research paper: Real-time feedback for improving medication taking. Author:Matthew L. Lee, et al.

Online Study: Pillbox Gadgets Do Nothing to Improve Rx Adherence. Author: Robert Jasmer.(Hyperlink: http://www.medpagetoday.com/PrimaryCare/GeneralPrimaryCare/63429 )

**D.Why is your project better/different than there’s? (Competitor Analysis)**

According to the research, a better medication care should include a real-time interaction function in the assistant device to realize a combination function medication assistant, not just the dispensers or the remind Apps. Our purpose is to make a human-computer interaction medication assistant device to take care of the elder’s health.

**(800 words or less): Describe the solution you are proposing to the problem you addressed in Section 1. Please support your claims.**

**A) Clearly describe your proposed solution (e.g. low cost prosthetic limbs)**

A smart HCI device which could help the elder people to take their medicine rightly and timely.

**B) How does this specific solution solve the problem you stated above?**

1) This device has a intelligent notifications function, which could remind the patients before the medication time in different ways: text message and voice.

2) It also could be connected to wearable devices, such as smart watch. Even though the patient is not at home, the medication reminding still could be sent to them successfully.

3) If patient failed to take their medicine on time, our device will sent the patient’s caretaker a notice. This is also a reminding.

4) Our product could deal with up to 8 kind of medicines taking. This is a solution for those patients who have the complex medication strategies. It is not their job to prepare the pills because our product has done this for them.

**C) How is your solution new, innovative and/or unique?**

Our device has all the basic and essential functions as a pill reminder. Besides, compared to the existing solutions, our product has the following unique features:

1) Human-like. It could remind the medication by human voice. Also you can see its message on the face-like display. Most time, you will feel it is one of the members in your family instead of a machine.

2) Connect to the healthcare professionals. Patients could talk to doctors directly by video. And, doctors could see patients’ medication history through it.

3) More intelligent. It could answer health-related questions.

**D) How will your solution be sustained over time? Please provide details and be clear. (e.g. Will you work on it after you graduate? Pass it off to someone else? How will your idea continue on in the years to come?)**

1) If possible, we will continue to develop this product once we get enough resource, such as funding, team and potential market.

2) If we failed to obtain sufficient resource, we may consider to join an existing company who is developing the similar product. When different ideas collide, a better solution may be generated.

**E) What stage of development is your project in? (Idea stage, prototyping/testing stage, raising funds stage, ready to launch stage)**

In the idea stage.

**F) Why is your project valuable? What value does your solution provide? To who? (Value Proposition)**

As we all know, once something is linked to the health or life, it is no longer a small matter. Correct and timely medication plays a crucial role in elder people’s life. Therefore, helping the elder patients for taking their medication timely and rightly is important to each family. It is necessary to make a difference for this.

**Resources (500 words or less): Demonstrate why you need funding from the DifferenceMaker Idea Challenge.**

**A) How much funding do you require to implement your project?**

We need $4,500.

**B) How much time will you and your team members commit to your project after the Idea Challenge?**

We will spend 4-month summer as full-time job to continue our project.

**C) How will these DifferenceMaker funds be used to support your project?**

DM funds will be used to team building, deeper customer survey, prototype design, product development and optimization.

**D) Please provide an estimated budget for use of DifferenceMaker funds from May 2017-2018.**

1) Building team, May, $500

2) Customer investigation, May, $500

3) Prototype design, June, $500

4) Product development, July-August, $1,500

5) Product optimization, July-August, $1,500