**Idea Plan**

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

|  |
| --- |
| Smoke Insight. |

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

1. Describe your project and the problem it addresses.

|  |
| --- |
| Design a wearable device can understand smoking behavior to help people quit smoke. |

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

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

|  |
| --- |
| Smoking is a cause of real and serious diseases, cancer, particularly cancer of the lung, stroke, heart  attack, and respiratory disease such as bronchitis and emphysema. In U.S, according to CDC estimate, cigarette smoking kill 44.000 people and smoking illness related cost $96 in medical cost each year. But not only in U.S, cigarettes smoking is serious problem in the world, especially in developing country. According to WHO, the cigarette smoking people reach 1 billion people, 80% of those are in low and middle income countries cause 6 million death every year. Although the greatest reduction in people smoking are in high income company, the smoking still increase in many middle and low income country. Most of these countries are located in Southern and Central Asia, Eastern Europe, and Africa. If the current smoking pattern continues, smoking will kill 1 billion people in 21th century. |

**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:**

1. 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)
2. 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?
3. Online research, numbers, databases and articles you found that supports the need and demand for your project
4. Why is your project better/different than there’s? (Competitor Analysis)

|  |
| --- |
| Smoker want to stop. In many countries, most current smoker would like to give up smoking. CDC report in 2015 show that about 15 of every 100 U.S. adults aged 18 years or older (15.1%) currently\* smoked cigarettes. This means an estimated 36.5 million adults in the United States currently smoke cigarettes. 85% (more than 20 million) smoker say they have tried to quit at least one in their life time. The Tobaccos Atlas, a WHO report, show that in almost high smoker rate country about 70% current smoker intent to quit and nearly 50% of smoker attempt to quit. So more than 700 million people have demand to quit and 500 million attempt to quit at least one time.  The risk of developing smoking-related diseases can be greatly reduced by quitting smoking. However quitting smoking is difficult as it is often associated with withdrawal symptoms and “triggers” which may stimulate a person’s urge to smoke. Researcher suggest that personal behaviors are responsible for over 50% of smoking issue. Behavior change is great significant in improve smoking cessation success rate. However, influence behavior change is challenge for heal care system. To effective it is vital to initialize and maintain health behavior chance. New health behavior is seldom to maintain, high rate of relapse observed for smoking cessation.  Digital therapeutics are health or social care interventions delivered either wholly or significantly through a smartphone or a laptop. Digital therapeutics have the ability to inculcate behavioral changes. Various digital therapeutics can improve a chronic patient’s condition by inducing a behavioral change. For instance, it was evident from a study that patients using “Prevent”, a diabetes prevention program offered by Omada Health (U.S.), lost an average 5% of their weight within 16-25 weeks after the commencement of the program, and nearly 85% patients successfully completed the program. Similarly, Sleepio, a digital therapeutic program for insomnia provided by Sleepio Ltd. (U.K.) was proved to be significantly more effective (76%) as compared to placebo and conventional treatment groups in clinical trials. Digital therapeutics thus offer immense prospects for patient engagement and inculcating substantial behavior change.  “Digital Therapeutics Markets global forecast to 2021” of MarketsAndMarkets ([www.marketsandmarkets.com](http://www.marketsandmarkets.com)) show that: Total market revenue for Digital Therapeutics market will growth from 134.8 Million USD in 2016 to 457.9 million USD by 2021. Digital Therapeutics for smoking cessation will growth from 11.4 million from 2016 to 82.9 million by 2021. A research in The American Journal of Drug and Alcohol Abuse show that currently, there are over 400 smoking cessation smartphone apps available, downloaded an estimated 780,000 times per month. The report also show that two most used features are View Quit Plan Overview and Tracked Smoking. All current smoking cessation require user tracking smoking habit by hand. This may lead to non-accurate data when people forgot to input data. Our solution can help by automatic detect user smoking behavior and provide accurate data for quit smoking app. It will make the success rate of behavior therapy via mobile app will be higher. |

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

1. Clearly describe your proposed solution (e.g. low cost prosthetic limbs)
2. How does this specific solution solve the problem you stated above?
3. How is your solution new, innovative and/or unique?
4. 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?)
5. What stage of development is your project in? (Idea stage, prototyping/testing stage, raising funds stage, ready to launch stage)
6. Why is your project valuable? What value does your solution provide? To who? (Value Proposition)

|  |
| --- |
| Our solution help people gain insight information of smoking behavior by using Electromyography (EMG) censor for evaluating and recording the electrical activity produced by skeletal muscles. Electrical produce by Skeletal muscles is related to user movement so we can protect movement base on that signal. Beyond movement, electrical is related to nerve system so we can detect more useful information such as how the electrical signal change when people desire to smoking. Our solution will include three parts: First, censing part. That part will sense the electric muscles and record data, we will use MYO EMG sensor(([www.myo.com](http://www.myo.com)) to record and extract muscle electric data. The data will send periodically to computer or mobile phone to run analyst program. Second, segment part, our program to analyses signal and segment signal into different part. For example, to detect smoking behavior, the electrical will start from normal values to different values when hand move during smoke section and return to normal values. Third, Behavior Recognition part, base one segment data we will develop Machine Learning program to recognize features and detect behavior. For example, we can detect a session of various distinct movement to recognize smoking session or can recognize pattern to identified desire smoke session.  There are current researches to develop smoking detector base on motion gesture track. We believed that EMG track will be improve against current motion-based smoking detection that has many false alarms because of similar gestures. Beyond that. We hope EMG can detect more information relate to smoking such as desire to smoke session, which will be very helpful information for behavior therapy program. |

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

1. How much funding do you require to implement your project?
2. How much time will you and your team members commit to your project after the Idea Challenge?
3. How will these DifferenceMaker funds be used to support your project?
4. Please provide an estimated budget for use of DifferenceMaker funds from May 2015-2016.

|  |
| --- |
| Our solution is in idea phase, we need to make prototype to proof of concept. In order to make prototype, we need to buy censor, organize experiment and develop software to protect behavior.  The proof of concept phase estimate take 3 month and we need following resource:  - EMG censor device: 10 \* 200 USD = 2000 USD  - Experiment: 2000 USD (we plan call for volunteer from UML student so we do not need to hire people, the cost here is used for organizing the experiment activities such as location and other logistic related cost. |