Chapter 1: Introduction.
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Sociometric Badge is a set of wearable social sensors developed by Boston based company named Humanyze. It promises to optimize how people works in office environment. To achieve such goal, it works by constructing physical, real - life, social networks based from social interaction of its wearers. As the name and its goal suggest, social activity defined with multiple correspondents interchange informations both subtle and explicitly. Thus, Sociometric Badge cannot work on its own. The deal usually comes with a set of Sociometric Badges and its supporting environment (an application to extract data, as well as web client).

Although, Sociometric Badge primarily intended to be used in office environment, there are requests come from social scientists as well. Traditionally, social scientists use interview, observation, and survey to get social data. In the recent day, there are technologies to leverage interview and survey. For example, with Skype people can conduct interview over the Internet and there are web based applications like Google Form or Survey Monkey to help people to make online survey. However, there are no latent technologies that can be used to help social observation just yet. Sociometric Badge can be the answer for such problem, as it can help social scientists to do social observation and give additional parameters to interview and survey.

The highlight of this project is about a misfit principle between social scientists and the Sociometric Badge itself. The Sociometric Badge started from a sequence of similar researches and products. The original inspiration was from 1992's Active Badge by Olivetti Research. Between Active Badge to the Sociometric Badge, there are others similar projects. These projects led into the development of the Sociometric Badge in 2008. However, after 2008, there are little to no information of the Sociometric Badge. Until, it then re - appeared as a commercial product. As the nature of common commercial products, the Sociometric Badge became a close - ended product. There are neither hardware and software development kit for the newest version of the Sociometric Badge. This is a bummer for the social scientists if modifications are necessary. Additionally, as the time this paper is written, the only way to buy the Sociometric Badge is with an email form in the bottom of the company's website (https://www.humanyze.com/contact.html). There is no obvious "Buy Now" button as it is usually in e - commerce based website. I tried to contact them to ask for informations regarding the Sociometric Badge, however there are no reply. These problems are what make the Sociometric Badge is not accessible to use for research purposes.

Aside from the Sociometric Badge itself, recently, there is Rhythm Open Badge. Rhythm Open Badge is an open source project with MIT License and has its repository hosted within GitHub (https://github.com/HumanDynamics/openbadge/). Known from its homepage (http://www.rhythm.mit.edu/open-badge/), this project offers cheap solution to help people with interaction studies. At some senses, most of it, Rhythm Open Badge is similar to the Sociometric

Badge. Rhythm Open Badge project started on 21st January 2016. At the time this paper is written it is still under development. Hence, the documentation is not yet complete. From this point, one could make Rhythm Open Badge with downloading schematics, fabricating the board, attaching the electronic components, then uploading the codes.

I define myself as someone who do programming more than making electronics. In my personal view doing and learning programming is more "portable" and has little to no risk compared to learning and making electronics. It is hard to make a choice on which electronics development kit to develop with, when there are many to choose, yet the differences are just pin layout and the programming. Additionally, in these recent days, electronics development kits depreciate faster than before due to new solutions come every months. Hence, I want to set this project to make an alternative device to the Sociometric Badge that is in higher level than the Rhythm Open Badge, with low - risk, easy to make and modify approaches and with more codes and less about electronics.

Overall, this paper is about detailed progress on my attempt to create aforementioned device which is the alternative to the Sociometric Badge. This paper starts a chapter about previous projects and products as implementations. The idea of this chapter is to define what are the features for current iteration (the result from this project) and the features for future iterations. After knowing what could be the possibilities, user groups will be determined. From this chapter, it is known that the primary user group will be the social scientists. However, there will be discussions on whom else could benefit from any informations come from this project. Next is about Limitations and Requirements. Limitations are defined as project and technical limitations. The purpose of Limitations and Requirements is to define Design Principles and Design Goals. Principle in general is used as a track, so the project will not go outside its context. The difference between Project Requirements and Design Goals is that Requirements are points that I need to do as the only doer of this project. Whereas Design Goals are objective that the deliverables from this project need to achieve. After all of these, there will be tests. The tests will be usability testing and implementation test. This paper then ended with Conclusion. In Conclusion, there will be Advices for future similar projects and Possible Implementations.