

Date: May 7, 2018  
To: Roger Goodell  
Chief Executive of the National Football League (NFL)  
NFL Headquarters  
From: Akbar Haider, Production Manager.  
Manosh Paul, Computer Scientist.  
Michael Pena, Financial Analyst.  
Imon Singha, Computer Scientist.  
Cindy Weng Zhu, Civil Engineer.  
Subject: Proposal for the portable muscle scanner, Musso.

### **Summary**

Football is one of the dangerous sports out there where injuries occur almost too often. Therefore, we have decided to develop a new form of technology that will provide our athletes with the best medical support. The portable device that will change the medical industry is called Musso, the portable muscle scanner. The team consists of Cindy Weng, Civil Engineer, Manosh Paul & Imon Singha, Programmers, Michael Pena, Financial Analyst, and Akbar Haider, Production Manager. Every member of the team earned their Bachelor of Engineering from prestigious institutions. They worked for well known companies such as: AECOM, QlikView, Crompton Light Bulb and Apple.. They will work diligently to make sure the product is efficient.

In 2017 per game day the number of injured athletes were up to seven (“NFL injuries 2017,” 2018). Most of those injuries are longtime injuries. To prevent the lengthy recovery, Musso will help tremendously. It will scan the injured muscle quickly and give quicker treatment methods. In this way, athletes will be able to recover from injuries quicker than ever.

To solve this problem, we have a series of proposed task. First, we will acquire the approval from the medical staff to use our equipment on NFL teams during game time. Then, we will research the basic understanding of x-rays in the medical field. We also acknowledge and describe on the device that there might be some risks and cautions that the user must know

before applying the device. Fourthly, we will order the materials we will need to assemble our gadget. As soon as we get all the materials we need, we will start putting them together.

Meanwhile, our computer scientist will be programming the applications that will come with Musso (file deletion, storage, and circulation). After everything is done, we will test our gadget and improve it.

In order to successfully obtain all the acquisitions to manufacture this product we will need funding. Creating a high quality technological device such as Musso will take a good amount of time and will require us to use many resources.

### **Introduction**

Athletes have always been the most influential idols to our society. Therefore, we have decided to develop a new form of technology to provide our athletes the best support in the medical department.

Athletes always risked their bodies to play their best and provide the rest of the world with entertainment. Injury is every athlete's nightmare. Injuries can lead up to a career ending situation. There are also situations where athletes hide their injuries for fear of not participating in future games. This happens frequently in the NFL (National Football League), where injuries occur too often. The sport itself, is heavily dependent on physical contact. From misjudgements and mistimings, things go wrong and players injure themselves. And they do not have access to advanced technology such as CT (Computed Tomography) scan right on the spot. So, many players could miss that game for lack of treatment.

To avoid this situation, we have built a portable device called Musso, the portable muscle scanner. It scans the injured muscle and provides with suggestions on how to treat it instantly.

Since, it is portable, it will deliver fast treatment suggestions right on the spot and send the information to the main medical facility. If the injury is small, with the treatment suggestion from Musso, the player will be able to return to its current game. It will allow the team and player to stay mentally and physically strong.

On the following sections we provide with information of its background, proposed programs, and its budget. We also provide our qualifications and references.

### **Background**

If you are a sports fan especially the American Football one, you probably heard of the word injury way too often. This should not be a surprise since NFL is among the most dangerous sports league that are out there. In 2017 per game day the number of injured athletes were up to seven (“NFL injuries 2017,” 2018). This includes strains, sprains, bruises, fractures, dislocations, and concussions. Severe injuries and lengthy recovery time are the reason why most athletes do not want to participate in this sport.

The average recovery time can take 4 to 6 months (“Common NFL injuries and unrealistic recovery time,” 2017). That is almost half of the season and this can really hurt athletes’ future and their team. This is when our device, Musso, will be helpful. Our device, Musso, has the ability to scan the injured muscle and provides with suggestions instantly. This could boost the team's morale for their upcoming games since it can lead to faster recovery. Our device will not make the sports any less dangerous because it will not change any rules, however, it should make the recoveries faster. Therefore, Musso could make the game more entertaining than ever because it will recover the injured athletes faster.

## **Proposed Program**

### ***Task 1. Acquire approval to test innovation with medical staff during NFL game time.***

Although our target is for everyone in the public, we will specify our audience to be NFL team players. During games, these players get injured the most because they are faced with a lot of physical contact between each other and other objects.

### ***Task 2. Research basic understanding of the medical use of x-rays.***

Musso works like a computed tomography (CT) scan. It will emit x-rays with a maximum of one foot of coverage throughout the injured muscle. The National Institute of Biomedical Imaging and Bioengineering (2017) described that when emitting the x-rays, the atoms in tissues such as bones and muscles will absorb the light and it creates a contrast.

Harris (2002) explains the tissue in muscles reacts very low towards the x-rays that a CT scan uses, which primarily scans bones, Musso has a different electromagnetic wavelength radiation that can match the atoms of a muscle and thus successfully identify the injured muscle.

### ***Task 3. Order necessary materials for Musso and assemble it.***

We will order the materials that are necessary to make Musso effective. Upon arrival of the materials, our team will start working on forming Musso. Our programmers (Manosh Paul and Imon Singha) will be in charge of the applications that Musso will have. Our builders (Akbar Haider and Cindy Weng Zhu) will be in charge of the manufacture of Musso and make sure the parts work together as one. While our financial analyst (Michael Pena) will be in charge of the monetary aspects that Musso will be having.

***Task 4. File storage, circulation, and deletion. (Applications)***

After we get the approval to work together with a medical staff of a sports team, we will program the equipment to be connected with the storage of the main facilities of the medical staff so athletes who get wounded can have further assistance if the medical staff on-set decides they need it.

The equipment will automatically save the file of the scanned muscle. The panel in the right side of the scanner will serve as an option of choosing the file, send it to the main facilities, and delete it.

To identify the file that the user wants, Musso will save the scanned muscle with the name of the date and time it was successfully scanned. For example, if the muscle was successfully scanned by Musso on April 15, 2018 at 4:14 PM, then the file will be saved as 041520181614. The last four numbers 1614 indicate the hour and minute the muscle was scanned. This numbering is to avoid the confusion between the times of AM and PM.

***Task 5. Acknowledge and describe the risks and cautions when using the portable muscle scanner.***

According to the U.S. Food & Drug Administration (2018), there are risks concerning the use of radiation. When the human body is confronted with radiation, it can have effects on the DNA. Because of this, we will lower the use of the portable muscle scanner. Musso can only be used per person for ten minutes. Once the injured muscle has been detected by the device, it will show on a panel on its right side the name of the muscle and suggestions to decrease the pain until further assistance can be used and then

the scanning will stop. If the damaged muscle cannot be found within those ten minutes, the device will shut off automatically and it can only be used after 20 minutes.

In addition, we will describe this instructions both on the box and the device itself. Other instructions and cautions may include but are not limited:

- Do not place the device near eyes.
- Do not place the device around children.

***Task 6. Test prototype and improve it.***

After assembling Musso and describing its instructions and risks, we will test our prototype on each of our team members.

### Schedule

Figure 1 is a schedule of the tasks we would complete for this project.

Tasks	Date of Tasks				
Task 1: Acquire approval					
Task 2: Research x-ray and other methods					
Task 3: Research materials					
Task 4: Create model					
Task 5: Set criterias					

Task 6: Test Musso based on criterias					
	1	10	20	15	1
	July			August	September

**Figure 1. Schedule of Proposed Tasks.**

### Budget

Following is an itemized budget for our proposed project.

Cost of Employees:

Employees	Amount of hours weekly	Hourly pay	Cost (USD)
Akbar Haider	60	32	1,920
Michael Pena	60	32	1,920
Cindy Weng	60	40	2,400
Manosh Paul	60	32	1,920

Imon Singha	60	32	1,920
<b>Total</b>			<b>\$10,080</b>

The Product:

<b>Equipment</b>	<b>Cost (USD)</b>
Musso *(32 NFL Teams)	\$15,500
Materials	\$120,000
<b>Total</b>	<b>\$508,000</b>

Total direct cost including both salaries and equipment: \$568,480

### **Qualifications**

- **Cindy Weng**, Civil Engineer. She acquired her BE in Civil Engineering from City College of New York. She served as project manager for AECOM for three years. During her time at AECOM, she designed a pen with multiple points. Also, she was the one that proposed a solution to CCNY President about sharing a campus with HSMSE. The college students found it difficult to find space in the cafe due to the high schoolers but after Ms. Weng's solution the two schools were able to solve the issue by creating a new cafe for HSMSE.
- **Manosh Paul & Imon Singha**, Computer Scientists, are the programmers in this group. They earned their BE in Computer Science from Stony Brook. Manosh Paul worked for Google for four years and help improve the cloud storage. Imon Singha worked for QlikView for about two years and helped Anderson Corporation revamp their business



model. Manosh Paul help design a micro electric fan that will run on any smart-phones by using its' charge. Imon Singha worked with CCNY President to develop a security system for the new parking lot they are planning to build.

- **Michael Pena**, Financial Analyst, is the senior analyst in our company. He earned his Bachelor in Business from Columbia University. He worked for Apple as financial manager for about six years. In his previous job, he developed long term company goals for Apple and healthy investment strategy. He also worked for Etrade as a risk manager and helped regular individuals make smart investment choices.
- **Akbar Haider**, Production Manager, is responsible for overseeing the manufacturing process in the company. He received his BE in Electrical Engineering from City College of New York. He worked in Crompton light bulb company where he reviewed designs for new machines to make light bulbs and reviewed the process of creating a lightbulb closely to make sure everything worked fine

### **Planned model**

Figure 2 shows the a draw prototype of Musso.

DRAWING DESK 

**Figure 2. Drawn prototype of Musso. Designed by Cindy Weng Zhu on April 30, 2018**

### References

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