



**GE 401 – INNOVATIVE PRODUCT DESIGN AND DEVELOPMENT I**

# **WI – CHARGER**

## **PRODUCT PROPOSAL REPORT**

### **TEAM 6**

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## INTRODUCTION

Energy is necessary for the maintenance of life and human kind's dependency to the mobility of energy sources is growing with the development of technology. Batteries are one of the main sources for electronic devices whose global problem is necessity for to be charged regularly. This demand of mobile batteries restricts their usage at any time far away from power supply and, hence, limits the mobility of current technology.

## MOTIVATION

Batteries are used in various equipments, from simple toys to laptops yet they are mostly used as an energy source for mobile phones, which last their power in limited time and happen to be nonfunctional at all. That is where the problem emerges for the user. And according to Murphy's laws, they usually last when they are seriously needed in an urgent situation. On the other hand, classical battery charges are problematic and they cannot satisfy some necessities in following conditions:

- It is pretty hard to find power socket everywhere. If we assume that we need power socket in shopping mall, it would be tough to find it. Even if it is found, it is time consuming to wait for the period of charge near to phone.
- Classical chargers are not carried all the time with the user; it is not very easy though. Say that the user is in a café and needs to charge his phone. He has access to power socket in a rough way, but most probably he does not have the charger with him.
- As known since there are numerous mobile phone producers in the world market; they all provide different types of phones to customers. Consequently, there are different types of chargers. If we return to the user in the café, some friendly people who carry their chargers with them may offer him to use their own charger, yet it would not be the suitable charger.
- Because of the rapid change in technology, chargers of the same company or producer could be different from each other.

After facing and observing these common problems, we came up with the idea of "wireless battery charger". We believe that, our idea will at least alleviate some part of these problems and make people's lives easier. When we consider all the possible problems stated above and our dependency to mobile devices, we believe that our product would fill an important gap about these devices. This is why we came up with such an idea.

In order to achieve our goal and make people's lives easier, there are two ways of wireless charging in our minds. They would both use the same physical phenomena, however; their usage areas would be slightly different. Our first idea is wireless charging box, and the second one is wireless charging table.

## SOLUTIONS

### I. WIRELESS CHARGING BOX

Basically it is a box, which the mobile is put inside of it. By the help of electromagnetic field created inside of the box, battery is charged. The user may need to carry a small adapter, which can be carried in a wallet. Also, there would be a possibility that this adapter device is included in cover case or mobile device itself.

To get the energy for electromagnetic field, another specific rechargeable battery for the box is used. It may seem unreasonable to use a battery for battery charger, but it is a solution for the problems stated above:

- As a solution for power socket necessity which is exactly the shopping mall case, there will be a charging station in which the battery is charged. Moreover, even the charging box needs power socket, only one socket would be enough for a unit with plenty of charging boxes.
- In the café case, all stated problems are solved with wireless battery charger, because the charger in café responds all necessities. Cafés may serve pre-charged wireless charging boxes to their customers in their need. In such a case, only one power socket would be enough to charge many “charging boxes” so there would no cables visible.
- In crowded places where it is not possible to find a power socket such as shopping malls, airports and conference centers a commercial version would be used. Commercial version would include a counter on it and charge the mobile phone for a certain amount of time.
- As an extra feature, box shaped charger would have a different aspect. We consider putting an “ultraviolet emitter” inside the box so while your mobile phone is charging, it will be disinfected. [1]

### II. WIRELESS CHARGING TABLE

The name of it may be a bit misleading. Our idea is not to produce a table but a device which will be fitted to a table. This device would be an antenna or equipment fitted under your desk. It will allow mobile phone users without cable and provide a comfortable use. Main features of our product are given below.

- All kind of desks would be suitable for our device. It will be just fitted under table or if it would be an antenna, it will be just put on the desk.
- All mobile phones, which have a suitable receiver adapter, will be charged without any cables around.
- Most of the time there would be plenty cables for charging different devices. Our product will solve this problem and provide a better multimedia environment.
- It will decrease the need of power sockets around. Only one power socket used for the wireless charging device will be enough to charge many devices.

## TARGET CUSTOMER

In either method, target customer is foreseen as all people using mobile phones. Since there is no differentiation between the brand and the model of the phones, every user is in the target range of the charger.

## ROLES OF GROUP MEMBERS

Taha Alper Yoğurt	HW Designer
Niyazi Koray Ertan	HW Designer
Berkay Akyapı	HW Designer – SW Designer
Mehmet Mithat Çınar	Project Manager – Financial Manager
Hazar Orhon	Project Manager – Financial Manager

In our group, since the product does not need to much work on software, all three EE students are defined as HW designers. However, when effort on SW is necessary, Berkay Akyapı is responsible for the SW part of the product.

Additionally, as a result of containing two IE students in the group, they share the work load of Project Manager and Financial manager. They are equally responsible for both roles.

## REFERENCES

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<http://www.engadget.com/2011/06/07/apple-patent-app-sheds-light-on-wireless-charging-dreams-nfmr-l/>

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