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Electronic Design Realization - MP3 Player

User-Centered Design

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Proposed Design

To conduct the survey we have selected one of our group members' design of a MP3 player with dual functionality as a power bank (can be used to charge certain devices like mobile phones, mobile accessories, small speakers, etc.). The proposed functionalities, specifications, and design are as follows.

Proposed Specifications

- 9600mAh battery can ensure a longer period of non-interrupted music.
- Songs are stored in a SD card storage.
- 3.5mm Headset Outlet is used to give Sound output.
- USB outlet to charge two devices at the same time.
- 3 Buttons to navigate through songs and control Volume
- OLED display to show the soundtrack number, Volume.
- Micro_USB Inlet to recharge the device

Proposed Design

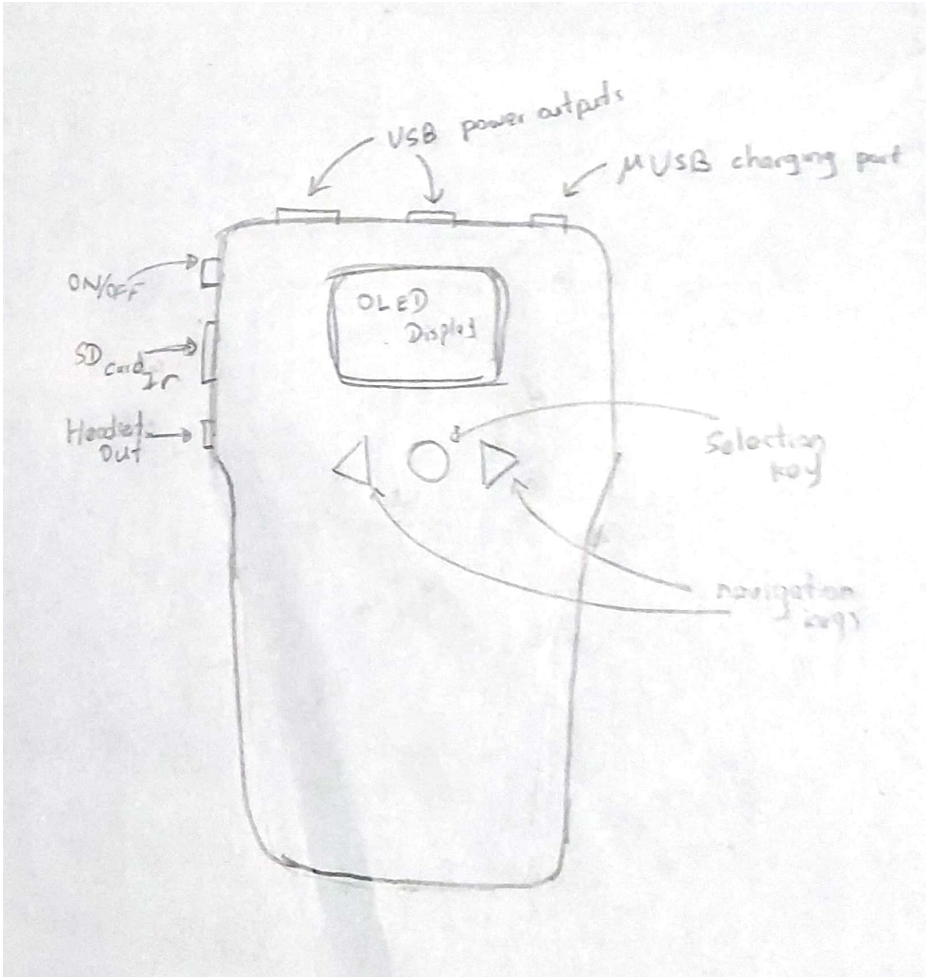

Figure 1: Proposed Design

User survey

With this design, we surveyed some of the other university undergraduates and outside personnel to get diverse user feedback and identify flows, and improvements they might expect. For this, we have created a questionnaire including the following questions.

Questionnaire

1. Your current profession?
2. Will you use or need something like this?
3. At what price point would you like to buy such an item?
4. On a scale of 1-5, how would you rate our product considering other similar products in the market as the midline (Rating 3)
5. What other specifications would you like to add to this design? How can we make this to your likeness?
6. Any other comments on the Product?

We received seven such completed question sets within the allocated period of two hours and the results per each question are summarized below.

User Feedback

1. Our sample of users included a businessman, a School student, a Construction worker, a factory worker, and three undergraduates and one of which was a part-time musician.
2. Most did say that their mobile can play music but since this has an extended battery life and also can charge your mobile phone we received sufficient constructive feedback about the idea.
3. The average scaled rating we got was 4.143 Which is satisfactory.
4. Improvement wise there are a few suggestions which we have used below to improve our device as shown below.
5. Few said that the Mp3 players are a bit outdated and not using them anymore. Hence the market will be low.

User-centered design

With the suggestion of our sample users, we have short-listed the specifications as follows.

Selected specifications

- Bluetooth compatibility to transfer music and connect to wireless earbuds/ headphones
- Battery size can be reduced using a lipo battery and overlaying it with the circuit, hence the whole device size can be reduced.
- Build an inbuilt speaker with quality sounds
- Touch-screen to navigate the system menu.

Rejected specifications

We had to reject a few of the user specifications as those are not necessary and are used by anyone in this kind of device.

- Using a portable USB stick to store songs in addition to the SD card storage.
- Radio functionality

New Design

Following the design cycle specified in the reference, we were able to come up with the following design with the additional features we mentioned above.

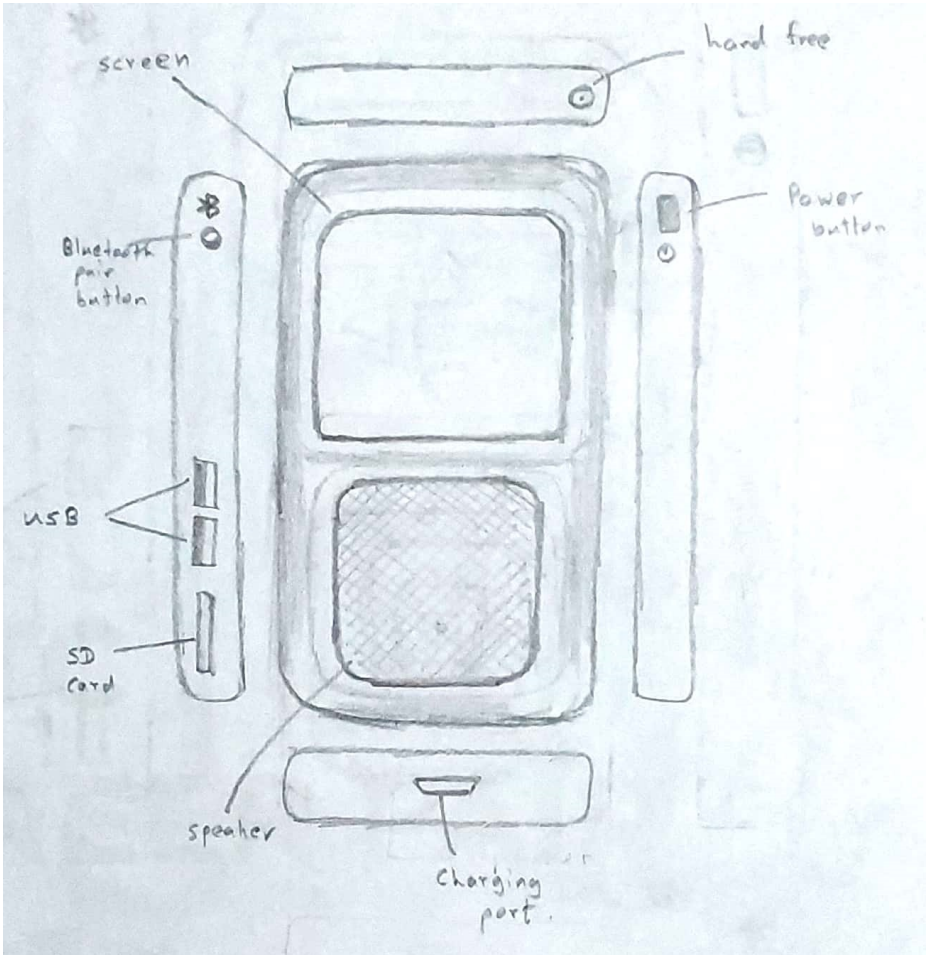

Figure 2: User-Centered Design

Reference

- Article : Inclusive Design Toolkit ,Concept design process, University of Cambridge