

DEVELOPING A CIRCULAR SMARTPHONE

INTRODUCTION

With inspiration that grew from the bulkiness of rectangular phones, the founders of dTOOR decided to disrupt the industry through circular smartphones.

Their Cyrcle prototype utilized the RePhone Kit, the world's first open source modular phone kit, which encourages people to “redesign” and “remake” a unique phone of their very own.



Figure 1. Cyrcle Phone

PURPOSE

To develop a circular smartphone that would be convenient to operate and carry with a price of less than \$200 through careful component selection and sourcing.

SYSTEM DESCRIPTION

The multi-board phone consists of:

- The 4D Systems capacitive touch display
- A MediaTek board with ARM processors
- Our custom interfacing printed circuit board

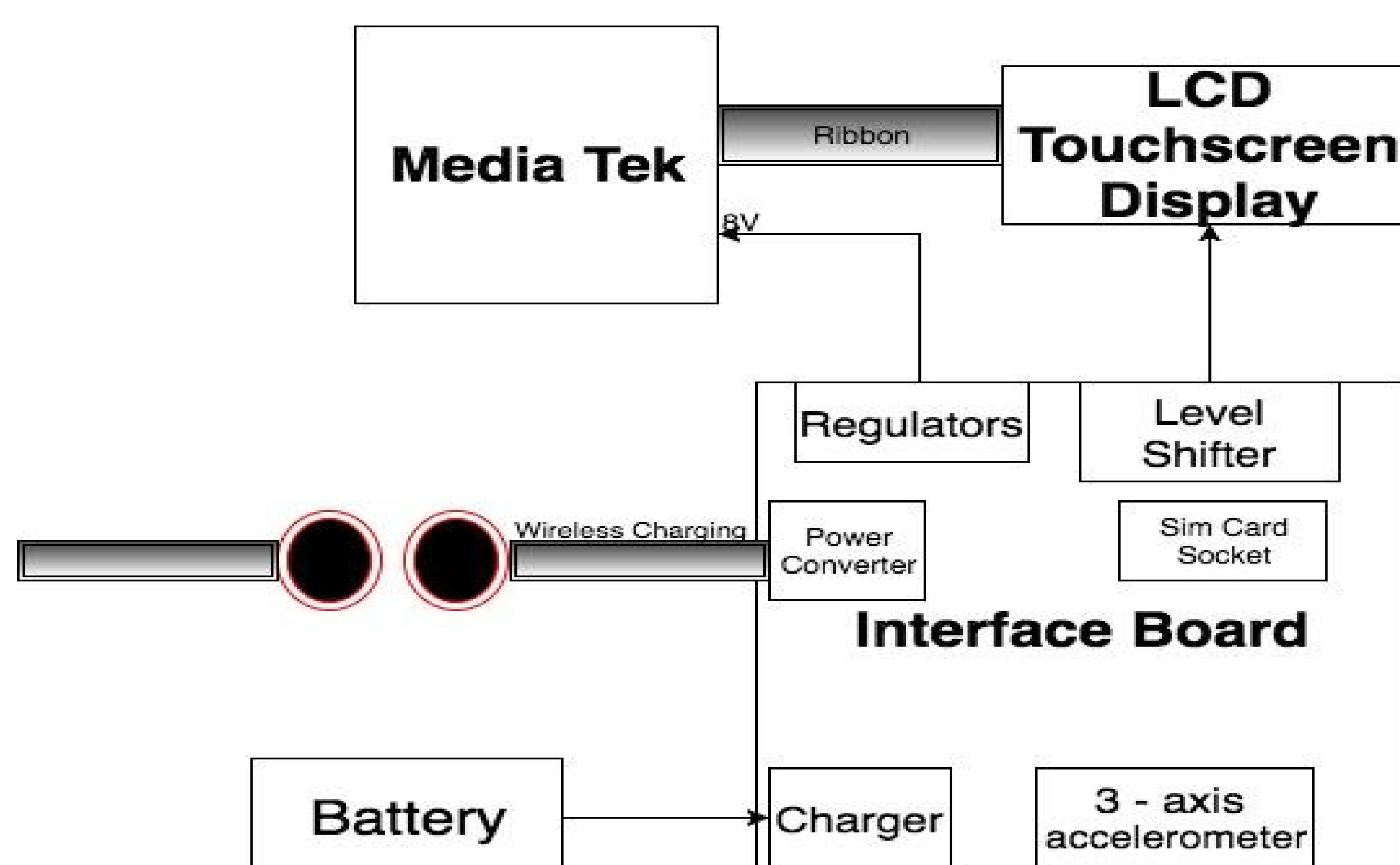


Figure 2. High-Level System Block Diagram

HARDWARE



Figure 3. 4D Systems Display and MediaTek Board

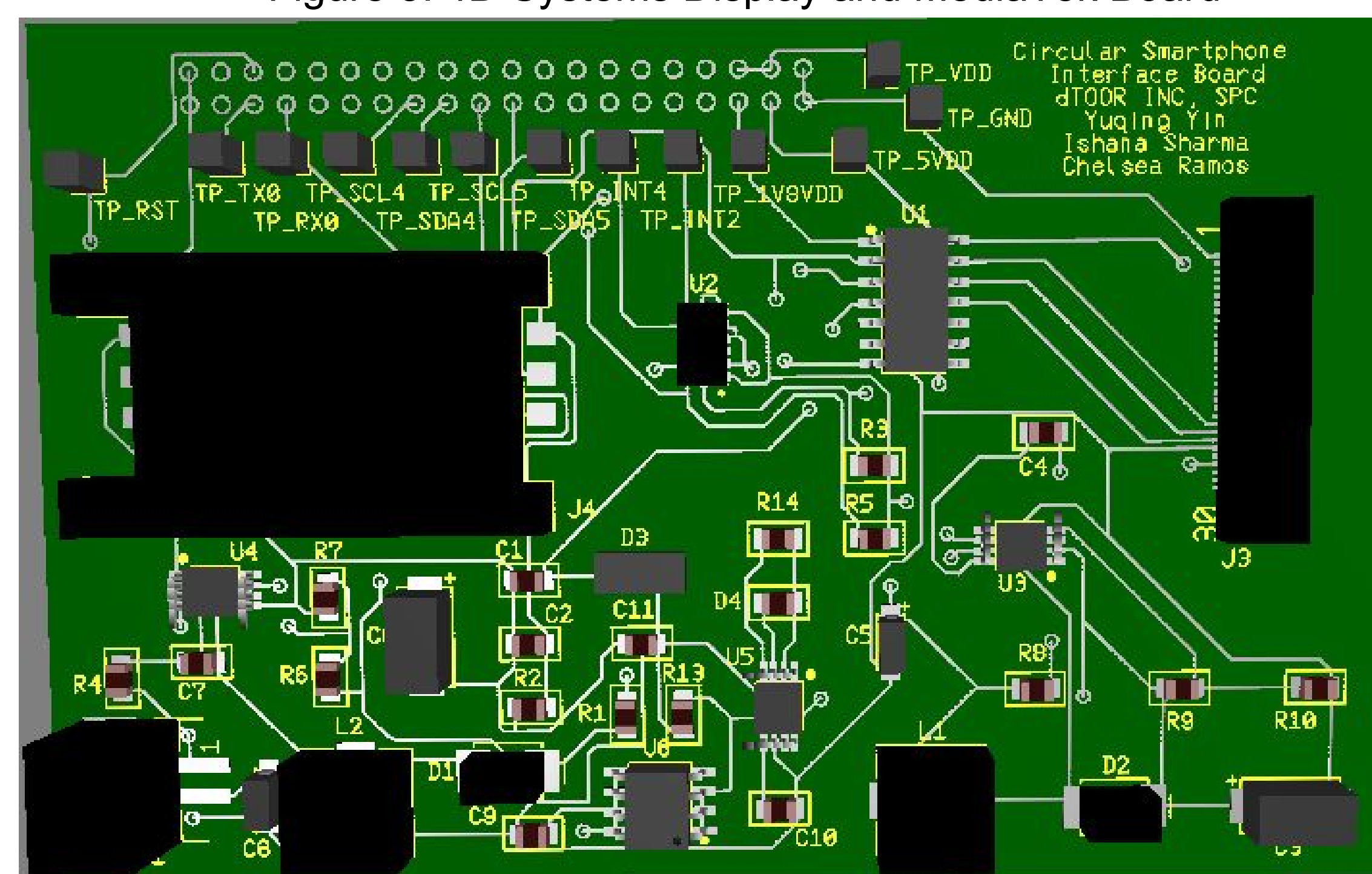


Figure 4. 3D view of our Interface Board PCB Layout on Ultiboard

SOFTWARE

- OS: Ubuntu 14.04 to run Android 6.0
- IDE: Terminal and Eclipse
- Language: C/C++



Figure 5. Android Development through Eclipse

ROADBLOCKS AND SOLUTIONS

- Communication between different boards of the phone → Use of similar firmware platforms for all modules
- Lack of current availability of 4G radio chipsets → Complete switch to WiFi for calling and texting

CONCLUSION

Development of this prototype has introduced the following features:

- Complete lack of ports and buttons that enable waterproofing
- Smaller overall size compared to the rectangular phones
- Ease of fit into small pockets

Overall, this phone would offer users a completely different phone option

FUTURE IMPROVEMENTS

- Current multi-board prototype is thicker than other smartphones and can be compacted
- Android interface can be customized to support the circular screen, including the alphanumeric keyboard

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