Remoticon Business Plan
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Mission Statement
Remoticon transforms smartphones into a rich guide and remote control for televisions. By harnessing data about TV-watching behavior and preferences collected through users’ phones, we strive to provide a more personalized and engaging experience for TV watchers to watch their favorite networks and discover new shows.

Price
Remoticon’s initial device cost will be $60 in the first two years, and dropping to $40 afterward.

Cost
Remoticon’s 5-year average cost will be $37.46.

Remoticon System Description
Remoticon is a standalone device that enables your smartphone to control any television that receives commands via infrared (IR) signal. It is intended to be a fixture of the room where the television is located. This means that there is just a one-time setup where the user places the Remoticon device in a location where it can communicate with the TV. Thereafter, he only has to turn on the device whenever he wants to watch TV.
The user controls the TV through the Remoticon application that he installs onto his smartphone. On install, the application guides the user through selecting the model of his television device so Remoticon can communicate with it, and the cable provider he subscribes to so the app can provide accurate TV program scheduling and information to the user. It also assists the user to pair his phone with the Remoticon over bluetooth. The phone sends user commands to Remoticon over bluetooth, which the device then relays to the TV via IR signal.

From the Remoticon application, the user can perform all the usual functions typically found on a physical television remote like flipping channels, adjusting volume, or manually jumping to a channel number. The value of the app, however, lies in the additional features it provides to the user that help him accomplish commonly-conducted tasks while watching TV. Within the app, the user can see what’s currently on TV, save and jump to favorited channels, and review analytics about his viewing history and habits.

The Remoticon periodically sends user behavior data to its central web service. This data is processed by servers to provide engaging analytics to each user about their watching habits. In addition, content providers have the option to integrate with Remoticon so that they have access to this data (personally-identifiable information is removed) and can provide customized show suggestions and content to individual users.

**System Architecture**

*Hardware/Communication*

The physical device has three LED lights to inform the user of various system statuses: (1) whether the device is on, (2) whether the device is connected to a smartphone via bluetooth, and (3) whether the device is receiving communication from the phone.

The Remoticon device itself contains three main components: (1) a bluetooth module, (2) an IR LED, and (3) a Teensy microcontroller that controls the first two. The bluetooth module enables communication between the phone and the microcontroller, which translates messages from the phone into infrared signal. The IR LED transmits this signal, and the television’s IR receiver understands the signal and acts appropriately.
When a user first selects the television model that the Remoticon device will control, the phone first sends an encoding of the signals necessary to control that television to Remoticon through a proprietary protocol. Remoticon stores these encodings in the Teensy’s flash memory so they can be looked up when it receives commands from the phone in the future.

Software
On the software side, Remoticon consists of a native Android app that makes calls to a third-party API (currently Rovi) for TV listing information. It also makes calls to our own web service for saving data about users’ TV-watching behavior. The web service performs analytics on all of the data that it receives and returns personalized, interactive content like show suggestions to the Android client.

![Diagram of Remoticon hardware and communication infrastructure.][1]

**Left:** Remoticon’s hardware/communication infrastructure. **Right:** Remoticon’s software infrastructure

**Intended Market**
Remoticon’s target users are frequent TV watchers who subscribe to a cable service and have a smart phone. In the United States, 252 out of 1000 people subscribe to cable TV, which brings the market size of Remoticon in the US alone to approximately 78 million users (Source: [UNESCO UIS data](http://unesco.org)). comScore estimates that 110 million people own smartphones in the US. Assuming that cable subscriptionship and smartphone ownership are independent, then approximately 27 million people in the US have both a smartphone and a cable subscription. All of these people are potential Remoticon customers.
Though the pay-TV industry has seen declines in subscriber numbers since 2010 (Source: WSI), we believe that the market is sufficiently large for the success of Remoticon. In addition, alternatives to pay-TV are cheaper monthly services like Netflix or Hulu Plus, which viewers are still linking to their TVs, and using a remote to operate. Remoticon does not require cable service to work, and can be adapted to provide listing information for any service. Furthermore, such TV alternatives often pair with TV content and would make a logical fit into Remoticon’s content delivery model. A potential use scenario below is applicable regardless of the TV service of the user.

**Potential Use Scenario**

Chloe is a 28-year-old consultant for an urban planning firm in San Francisco. She’s not much of a nightlife person, and prefers to cozy up at home after work and on the weekends. She has grown up with the TV on at dinnertime, and coming home to her favorite cartoons after school, and this has not changed as an adult. She has a TV and subscribes to Direct TV. She follows a few series regularly, and channel surfs when nothing else is on.

Chloe gets home from a long day at the office and turns on Remoticon. After connecting to the device on her phone, she first navigates to the “Favorites” tab of the app, where she has saved her frequently-watched channels. The app allows her to jump to her favorite channels quickly. She settles on an episode of *Cupcake Wars* that she’s already seen before on the Food Network.

She turns to the “Guide” tab to peruse what other channels are broadcasting right now. The Remoticon app allows her to do this on the phone without detracting from her viewing experience on the show. Her coworkers had mentioned a new show called *Once Upon a Time* today during lunch, and the guide shows that it’s showing on ABC in half an hour. She clicks on the show title to get more details. The app shows her rich information about shows, from episode descriptions to future airings. Chloe reads the description and decides that it probably isn’t her cup of tea.

When *Cupcake Wars* is over, Chloe is eager to watch another episode but Guy Fieri’s *Diners, Drive-ins, and Dives* is on, which she abhors. She taps the “Explore” tab of the Remoticon app to find something similar to Cupcake Wars to watch now. In the time that she was watching the show, the app has uploaded data to the Remoticon server and generated suggestions for other shows she may want to watch, based on the fact that she watched *Cupcake Wars* for a significant
period time, as well as her previous watching history. The “Explore” screen presents her with a suggestion for *Splash of Color* on HGTV, which she has seen once before and remembers enjoying. After an hour of that show, it’s about time to turn in. She turns off Remoticon, and is off to bed.

**Manufacturing Product Costs**

Following a standard formula, we calculate our amortized manufacturing costs for a single product to be:

\[
D/N + T/N + M + L + P + O
\]

Where:

- **D** = Design and development costs
- **T** = Tooling costs
- **N** = Number of devices sold over the life of the product
- **M** = Material costs per product
- **L** = Labor costs per product for operating machines, assembly, and packaging
- **P** = Production costs per product
- **O** = Overhead costs (rental space, computers, telephone, electricity)

The 5-year cost we calculated (averaging costs over the next 5 years) is:

\[
(563,200 + 39,800) / 73,000 + 25.20 + 0.75 + 0 + 2.72 = \text{\$37.46}
\]

Each individual component is explained in detail below, and in the attached spreadsheet at the end of this document.

**Design and Development Cost**

Design and development encapsulates time spent designing both the hardware and electronics, time spent on software development, and general time for ideation and iteration. Our initial prototype was completed 9 weeks after initial project conception, so averaging 10 hours of work a week, and a rate of $40/hour, our time spent on the prototype would have cost roughly $7200. In the future, we would not have the free access to prototyping machines present in our lab, nor the free assistance and expertise of our professors and lab managers. The two designers of Remoticon are both software developers, so further Remoticon hardware development would be benefited by the hiring or contracting of skilled CAD and PCB designers. An estimated 100 hours of labor would be required to evaluate the existing prototype mechanically.
and electrically and develop a second prototype. During that same time, the two current Remoticon members would continue to focus on software development. After the first year, we plan on hiring at least 1 or 2 more software developers to build out our back-end infrastructure. Assuming $40/hour for all employees, the total cost for design and development then sums to $23200 to reach the next prototype, and then around $120000 to cover salary for 3 employees in the following years.

**Tooling Costs**

We expect the Remoticon chassis to differ greatly on its path toward its second iteration. Nevertheless, given the existing prototype, we can make some rough estimates. With the help of custompartnet.com, and following the number of products sold determined in the “most likely” scenario, we have a tooling cost of approximately $9.75/part, averaged over all 5 years.

**Number of Devices Sold**

We project a first year sales of 1000 units, with slow growth until our third year, at which point we aim to have established a number of partnerships and launched marketing campaigns. This third year we expect to sell 10,000 units, allowing us to become profitable.

**Material Costs per Product**

The raw material costs for low volume production are as follows:

- $2.40 - Plastic case
- $16 - Teensy 2.0
- $10 - Bluetooth RS232
- $2 - PCB
- $7 - Electronic Components (not purchased in bulk)

This comes to an initial cost of $37.40 / unit for initial devices, though we project those costs to drop by over 50% once high-volume production begins.

**Labor Costs**

All components are to be purchased from external suppliers, with the molded parts outsourced overseas. Assembly will be performed manually, while production value is still low, at a cost of $15/hour. Assembly requires the soldering of components to the PCB, screwing in of parts to the case, and the addition of acrylic pieces. This also will be followed by software installation and testing, and the entire procedure can be expected to take 30 minutes. This leads to a labor cost
of $7.50/unit.

**Production Costs**
Production costs are zero, as all production will be outsourced.

**Overhead Costs**
Assuming (rent + utilities)/month comes out to $3300, we have a yearly overhead cost of $39600.

**Operational Costs**
Operational costs can be split into marketing costs, legal costs, as well as miscellaneous accounting, travel, etc. Marketing costs will be taken to be 13% of net sales, which will cover the costs of hiring a new employee to focus on marketing and establishing partnerships. Remoticon’s core focus is highly dependent on a successful content delivery service, which incorporates a number of potential legal hazards. Costs allocated to handling legal problems as well as consulting will be around 8%. Finally, remaining miscellaneous operational costs will be covered by around 3% of sales.

**Profit Model (Most Likely Scenario)**
The target market for Remoticon is an enormous one: roughly 27 million people. The market is also heavily competitive, with many minimum-functionality products available. It will require a large effort in marketing and partnerships in order for Remoticon to make itself known. By targeting early adopters and technical innovators first, we believe Remoticon should be able to reach at least 1000 sales during its first year. This is not enough to be profitable, but given a second year during which we launch marketing campaigns based on initial sales, we project a growth rate that will allow us to be profitable during our third year, in which we aim to sell 10000 units.

**The Remoticon Corporation**
Remoticon’s success hinges on the establishment of fruitful partnerships with large companies. As a result, Remoticon will need to ensure a consistent business front externally, while maintaining internal organizational layouts and methods to vet potential partners as well as avenues for development. Remoticon was born out of an engineering project, by two engineers,
and until now, has operated largely in startup fashion, iterating quickly and pivoting as needed. This culture has allowed it to work quickly and efficiently, though Remoticon will need to allow business roles to take a much larger role in the shaping of future development.

Remoticon’s two founders will remain largely in charge of technical development, overseeing any work in hardware areas while actively continuing software development. A CFO/CMO will need to be brought on board relatively soon, with equal say in company proceedings. This new employee will be in charge not only of partnerships and marketing outreach, but also of growing the business side of Remoticon as needed.

**Competitive Landscape**

On its consumer-facing side, Remoticon straddles two emerging markets of products, both of which contain a significant number of competitors, but also lack clear market leaders or high adoption rates. The first market of competitors consists of consumer devices that emulate basic Remoticon hardware, i.e. devices that control a user’s tv, generally through a smart-device. The majority of these devices are made by small companies, generally come with an associated iOS or Android application, and begin at $40 for basic, low-power versions. The other end of the price range begins to cross into the second market of competitors, consisting of products such as Logitech’s Harmony Link, which similarly provides viewing analytics as well as advanced device controls. As a consumer-facing product, Remoticon is on-par in terms of the physical device and its capabilities, though our plans to develop a content database that is not tv-specific nor subscription-specific make Remoticon more competitive.

On the content-provider side, Remoticon competes with content-providers themselves, as well as companies such as Nielsen which provide reports on queried consumer behavior. Of course, Remoticon also must compete against companies such as Logitech and Blinq, which aim to transform TV-watching by linking it to the web. Remoticon is sure to have a clear benefit over services such as Nielsen, though it faces the same barriers to entry that have prohibited Logitech, Blinq, and others from becoming household names. The key hurdle for Remoticon is to build a service superior to what content providers are currently offering or are aiming to offer.
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<td>Other (@ 11% net sales)</td>
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<td>-$180,950.00</td>
<td>-$142,300.00</td>
<td>$99,300.00</td>
<td>$83,900.00</td>
<td>$318,900.00</td>
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