



# Product Requirements Document Template

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# General Product Details

When specifying a new hardware product it is generally best to break it up into three core parts: the electronics, the software, and the mechanical enclosure.

Then you should specify each of these separately trying to especially keep in mind the differences between hardware and software features.

**Please provide a brief description of your product. Focus on the technical aspects and required functionality of the product, not on the market or the need for the product. No need to specify every detail here, and this should be no more than a page:**

## **How many separate devices make your total product?**

For example, if your product consists of a transmitter device and a separate receiver device, then that is a total of two devices.

Note: You should try to limit your product to a single device if at all possible. This is because a product consisting of two separate devices is in most ways the same as developing two products.

That means developments costs will be at least double for a single product. One product is hard enough to bring to market, and two products is nearly twice as hard.

## **Please provide links to similar products on the market:**

If there are no products that are similar to your product, find and share examples of the closest matches. This is critical research for you to do so as to understand the competition.

These links are also very helpful for the developers when first accessing your product requirements, and for see how others have already solved similar problems. There is no point in reinventing the wheel.

**Have you built a Proof-of-Concept prototype using development kits like Arduino or Raspberry Pi? If so, list all of components with part numbers and links:**

**Target retail price:**

**What countries will the product be sold in?:**

**Approximate product size dimensions:**

**Operating environment (indoors, outdoors, extreme cold, etc.):**

**Operating temperature range:**

**How critical is small size for your product:**

- Extremely critical (wearables, etc.)
- Very critical
- Moderately critical
- Not very critical
- Not all critical

**What type of retail package will be required:**

- Retail blister pack
- Retail clamshell
- Retail box
- No retail packaging required

**Please describe the retail packaging requirements in further detail:**

Does the package need to be full color? If so, does it need to be photo quality? If using a retail box will a custom plastic insert be needed to hold the various individual components?

# Electronics:

For the electronics we will separate things even further depending on the electronic functions.

## Wireless Communication Requirements:

If your product requires wireless communication then complete below:

**Does your product need to communicate with a smartphone?**

**Wireless protocol(s) required:**

- Bluetooth
- WiFi
- Cellular (LTE, GSM, etc.)
- ZigBee
- Z-Wave
- Near-Field Communication (NFC)
- RFID
- Other \_\_\_\_\_

**Data type being transmitted:**

- Simple
- Complex
- Streaming audio
- Streaming video
- Other \_\_\_\_\_

**Operating range desired:**

- Short (< 10 m)
- Moderately short (< 30 m)
- Moderately long (< 100 m)
- Long (< 500 m)
- Very long (> 500 m)

# Audio Requirements:

What type of audio capabilities does your product require?:

- Audio recording
- Low-fidelity audio playback
- High-fidelity audio playback
- Streaming audio
- Voice recognition (simple word/phrase commands)
- Voice recognition (complex like Alexa/Google/Siri)
- Other \_\_\_\_\_

Is the audio mono or stereo?:

If audio playback capabilities are required what is the estimated power (wattage) required?:

Please explain the audio requirements in more detail:

# Video Requirements:

**What type of video capabilities does your product require?:**

- Display
- Touchscreen
- Camera (images only)
- Camera (images & video)
- Streaming video
- HDMI input/output
- Facial recognition
- Other \_\_\_\_\_

**If a display is required, what are the specifications?:**

- Technology (LCD, LCD-TFT, LED, OLED) \_\_\_\_\_
- Resolution \_\_\_\_\_
- Environment (indoors or outdoors) \_\_\_\_\_
- Display size dimensions \_\_\_\_\_
- Display color capability (B/W, grayscale, colors, full color)
- Other \_\_\_\_\_

**If a camera is required, what are the specifications?:**

- Resolution: low, 720p, 1080p, 3MP+ \_\_\_\_\_
- Still images or video: \_\_\_\_\_
- Auto/Manual focus: \_\_\_\_\_

**Please explain the video requirements in more detail:**



# Sensor Requirements:

What type of sensors does your product require?:

- GPS
- Accelerometer
- Gyroscope
- Magnetometer (compass)
- Temperature sensor
- Humidity sensor
- Pressure sensor
- Motion sensor (PIR)
- Heartrate sensor
- Fingerprint sensor
- Magnetic field sensor
- Touch sensor
- Other sensors \_\_\_\_\_

Please explain the sensor requirements in more detail:

# Power Management Requirements:

**How is your product powered?:**

- Rechargeable battery (charged in place)
- Replaceable batteries (AA, AAA, coin cells, etc.)
- External DC power source
- AC power
- Other \_\_\_\_\_

**If powered from a battery what is the target battery life (hours):**

- \_\_\_\_\_

**If powered from a rechargeable battery what is the method of charging:**

- USB port + external wall adapter
- Barrel plug + external wall adapter
- AC outlet
- Solar charging
- Other power harvesting
- Wireless (inductive) charging

**What is the input voltage range?**

**Are there any specified voltage supplies required?**

**Are any of the voltage supplies output on a pin to power external devices? If so, what are the voltage/current requirements?**

# Other Electronics Requirements:

What other functions does your product require?:

- USB data communication
- SD memory card
- Solenoid control
- Motor control
- Vibration
- High-voltage AC
- Power metering
- Haptic feedback
- Precise clock/timer
- Machine learning
- Other \_\_\_\_\_

Please explain any other requirements in more detail:

# Software:

**Does your product require a custom mobile app?**

**If so, for what mobile operating system(s):** Android, iOS, or both

**If so, how sophisticated of a mobile app do you require?:**

- Not very sophisticated
- Moderately sophisticated
- Very sophisticated (graphics, animations, etc.)
- Other \_\_\_\_\_

**Does your mobile app require complex processing algorithms?**

**Does your product require any custom desktop computer software?**

**Do you have any sketches showing the various screens/function for the mobile app or desktop software?**

**If desktop software is required please describe the requirements:**

**Does the firmware require any advanced processing capabilities such as facial recognition, machine learning, voice recognition, etc. If so, please describe in detail:**

# Mechanical:

**Estimated overall dimensions:**

**Preferred material (plastic, sheet metal, cast metal, etc.):**

**How critical is appearance for the product?**

- Extremely critical (wearables, etc.)
- Very critical
- Moderately critical
- Not very critical
- Not all critical

**If appearance is critical please describe what aspects of the appearance are most important:**

**How critical is durability for the product?**

- Extremely critical
- Very critical
- Moderately critical
- Not very critical
- Not all critical

**If durability is critical please describe the requirements further:**

For example, will the product be commonly dropped on a hard floor, or be exposed to extreme weather or temperatures?

**Does the product need to be waterproof? If so, to what [Ingress Protection \(IP\)](#) level (IP67, IP68, etc.)?**

**Does your product require overmolding? If so, explain:**

Overmolding is when a single part is made from two or more different materials used together. For example, a part consisting of rubber and hard plastic together.

**Does the product only require a static enclosure or does it also have moving parts and/or mechanical systems requiring motors, gears, springs, valves, etc.?**

**If there are more advanced mechanical requirements beyond just the static enclosure please describe here:**