

## Legal Analysis

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**Team: 6      Project: Snow-weAR Goggles**  
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### Assignment Evaluation:

Item	Score (0-5)	Weight	Points	Notes
<b>Assignment-Specific Items</b>				
Regulatory Analysis		x3		
Analysis of Patent 1		x3		
Analysis of Patent 2		x3		
Analysis of Patent 3		x3		
<b>Writing-Specific Items</b>				
Spelling and Grammar		x2		
Formatting and Citations		x1		
Figures and Graphs		x2		
Technical Writing Style		x3		
<b>Total Score</b>				

**5: Excellent    4: Good    3: Acceptable    2: Poor    1: Very Poor    0: Not attempted**

### Comments:

*Comments from the grader will be inserted here.*

## **1.0 Regulatory Analysis**

### **1.1 Federal Communications Commission (FCC)**

An FCC certification is crucial for the marketability of Snow-weAR goggles. The FCC is an agency that regulates all electronic communications in the United States. All electronic devices must be registered with the FCC and meet compliance standards for electromagnetic noise [1].

There are also standards for specific types of devices that are enforced by the FCC. Radio-frequency devices like Snow-weAR goggles must pass FCC testing and meet specific authorization criteria based on the type of emission. The goggles classify as an intentional radiator, meaning they are intentionally designed to produce radio waves. For this class of device, it must operate at a frequency outside of a list of restricted operation bands. For the radio antenna, the design must be so that no other antenna can be used with the device[2].

### **1.2 Federal Trade Commission (FTC)**

Snow-weAR goggles collect location data of the consumer and must comply with FTC standards for consumer data security. To be a legally marketable product, Snow-weAR will need to present a privacy policy to the user. This policy must include how data is protected, collected, stored, and shared. For Snow-weAR, this privacy policy will outline how the goggles will collect location and movement data, but this data won't be shared anywhere [3].

### **1.3 Safety for AR/VR/MR Devices - UL 8400**

This is a new standard that is currently still in development as one of the world's first standards to address safety of augmented reality, virtual reality, and mixed reality devices. It was announced in November 2019 and will be released soon, possibly before Snow-weAR is a marketable device. Specific details about the standard are unknown but it will target safety of head-mounted displays and virtual reality simulators [4].

### **1.4 General Requirements for Battery-Powered Appliances - UL 2595**

This is a standard that pertains to devices powered by lithium batteries. Snow-weAR goggles will need to pass operational testing to ensure consumer safety. Using a lithium battery has a higher risk than other types of batteries. It is important to certify that the battery is protected, charges properly, and does not overheat to ensure user safety [5].

## 2.0 Legal Liability Analysis

### 2.1 US Patent Application US20170004371 A1

**Title:** “Hybrid orientation system”

**Holder:** RideOn ltd.

**Filing Date:** January 5, 2017

**Abstract:** This patent covers a system that includes a camera, orientation detector, GPS receiver, and processor that are integrated together to process image data. The system calculates current camera orientation and predicts future orientation using object recognition, velocity, and displacement by frame [6].

#### **Potential Infringements:**

The key claims that Snow-weAR potentially infringes are:

- Estimation of current position and velocity using GPS data and a physical model of motion
- Implementation of a physical model using inertial orientation data

The goggles similarly estimate the user’s position and velocity using a GPS. The patent claim specifies the inclusion of a physical model in these calculations which is not a part of the goggles. There is no mention of an accelerometer, which is what the goggles will be using for velocity calculations.

### 2.2 US Patent Application US20120194419 A1

**Title:** “AR glasses with event and user action control of external applications”

**Holder:** Microsoft Technology Licensing, LLC

**Filing Date:** December 30, 2011

**Abstract:** This patent covers a head mounted eyepiece with an-integrated processor and image source. The optical assembly controls external applications and displays content that the wearer looks through to view the surrounding environment [7].

#### **Potential Infringements:**

The key claims that Snow-weAR potentially infringes are:

- User action detection using an external capture device
- Communication facility between the eyepiece and an external device

The goggles will be using external push buttons and switches to allow the user to control the system. This differs from the patent claim, which is for a device where the user input is detected through a separate external device that communicates with the eyepiece. The patent is also for an external application device that is controlled by the eyepiece. For the Snow-weAR goggles, everything is part of the same system.

### 2.3 US Patent 6480152

**Title:** “Integrated GPS/IMU method and microsystem thereof”

**Holder:** American GNC Corporation

**Filing Date:** July 20, 2001

**Abstract:** This patent covers a system that includes a GPS, IMU, MicroSystem, and earth magnetic field detector. The integrated system presents GPS position, velocity, altitude, and temperature. Error estimation and correction for movement data is calculated based on environment temperature to provide higher performance over a range of temperatures.

**Potential Infringements:**

The key claims that Snow-weAR potentially infringes are:

- Controlled position, velocity, and altitude by calculating and removing location drift
- Calculation of thermal error in device readings using temperature sensors and temperature based scheduling

The patent claim is for calculation of positional data using a corrective algorithm based on temperature readings. The GPS and IMU are integrated to provide the system with raw position, velocity, and altitude data. This system uses the same physical components as Snow-weAR, however the steps taken to collect and calculate data are different. For the goggles, velocity is calculated using the IMU acceleration data instead of using the GPS velocity output.

**3.0 Sources Cited:**

[1] [http://transition.fcc.gov/Bureaus/Engineering\\_Technology/Documents/bulletins/oet62/oet62rev.pdf](http://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet62/oet62rev.pdf)

[2] [https://www.ecfr.gov/cgi-bin/text-idx?SID=6364989b04fa0b9aff01659991b0d2f6&mc=true&node=sp47.1.15.c&rgn=div6#se47.1.15\\_1201](https://www.ecfr.gov/cgi-bin/text-idx?SID=6364989b04fa0b9aff01659991b0d2f6&mc=true&node=sp47.1.15.c&rgn=div6#se47.1.15_1201)

[3] <https://www.ftc.gov/site-information/privacy-policy>

[4] <https://www.ul.com/news/ul-pursues-enhanced-safety-augmented-virtual-and-mixed-reality-announcement-ul-8400>

[5] <https://jagg19.github.io/2019/05/mysql-r/>

[6] A. Getz and O. D. Kotek, “Hybrid orientation system,” U.S. Patent 10, 242, 281, March 26, 2019.

[7] R. F. Osterhout et al., “AR glasses with event and user action control of external applications,” U.S. Patent 10, 180, 572, January 15, 2019.

[8] C.F. Lin and D An, “Integrated GPS/IMU method and microsystem thereof,” U.S. Patent 6,480,152, February 21, 2002.