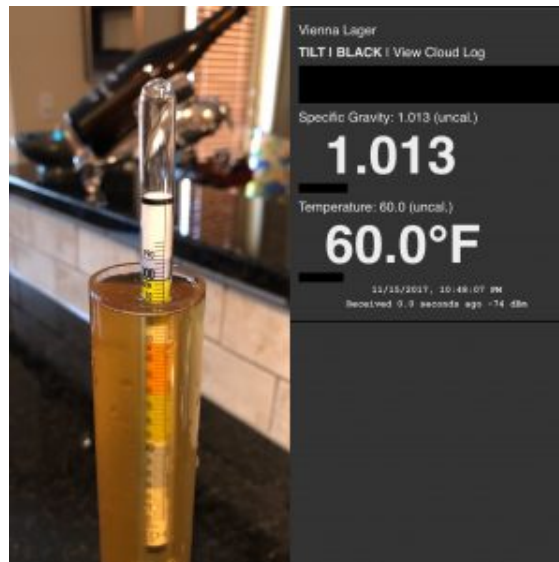


**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING  
THE UNIVERSITY OF TEXAS AT ARLINGTON**

**SYSTEM REQUIREMENTS SPECIFICATION  
CSE 4316: SENIOR DESIGN I  
SUMMER 2020**



**TEAM HYDRO  
BLUETOOTH HYDROMETER**

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## REVISION HISTORY

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# 1 PRODUCT CONCEPT

This section provides a high-level statement of your product concept - what it is intended to do and how it is intended to be used. Include in this header paragraph, a brief synopsis of what is described here. For example, this header paragraph might say something like: "This section describes the purpose, use and intended user audience for the X product. X is a system that performs Y. Users of X will be able to Z..."

## 1.1 PURPOSE AND USE

This is where you describe in a brief, yet clear and concise, manner what your product should do and how you expect it should be used.

## 1.2 INTENDED AUDIENCE

This is where you describe the intended audience(s) of your product. If this product were to be made available publicly or commercially, who would purchase or use it? Is the product designed for a particular customer, or an overall class of customers? Is it intended for general use, or is it a specific component of a more complex system?



Figure 1: X conceptual drawing

## **2 PRODUCT DESCRIPTION**

This section provides a description of your product and defines its primary features and functions. The purpose is to give the document reader/reviewer enough information about the product to allow them to easily follow the specification of requirements found in the remainder of the document. Your header for this section should introduce the section with a brief statement such as: "This section provides the reader with an overview of X. The primary operational aspects of the product, from the perspective of end users, maintainers and administrators, are defined here. The key features and functions found in the product, as well as critical user interactions and user interfaces are described in detail." Using words, and pictures or graphics where possible, specify the following:

### **2.1 FEATURES & FUNCTIONS**

What the product does and does not do. Specify in words what it looks like, referring to a conceptual diagram/graphic (Figure X). Define the principle parts/components of the product. Specify the elements in the diagram/graphic that are part(s) of this product as well as any associated external elements (e.g., the Internet, an external web server, a GPS satellite, etc.)

### **2.2 EXTERNAL INPUTS & OUTPUTS**

Describe critical external data flows. What does your product require/expect to receive from end users or external systems (inputs), and what is expected to be created by your product for consumption by end users or external systems (outputs)? In other words, specify here all data/information to flow into and out of your systems. A table works best here, with rows for each critical data element, and columns for name, description and use.

### **2.3 PRODUCT INTERFACES**

Specify what all operational (visible) interfaces look like to your end-user, administrator, maintainer, etc. Show sample/mock-up screen shots, graphics of buttons, panels, etc. Refer to the critical external inputs and outputs described in the paragraph above.

## 3 CUSTOMER REQUIREMENTS

Include a header paragraph specific to your product here. Customer requirements are those required features and functions specified for and by the intended audience for this product. This section establishes, clearly and concisely, the "look and feel" of the product, what each potential end-user should expect the product do and/or not do. Each requirement specified in this section is associated with a specific customer need that will be satisfied. In general Customer Requirements are the directly observable features and functions of the product that will be encountered by its users. Requirements specified in this section are created with, and must not be changed without, specific agreement of the intended customer/user/sponsor.

### 3.1 REQUIREMENT NAME

#### 3.1.1 DESCRIPTION

A detailed description of the feature/function that satisfies the requirement. For example: *The box will be slate blue. This specific color is required in order to ensure that the box matches other similar boxes in the Box Systems Premium line of products. Slate blue is specified as #007FFF, using six-digit hexadecimal color specification.* It is acceptable and advisable to include drawings/graphics in the description if it aids understanding of the requirement.

#### 3.1.2 SOURCE

The source of the requirement (e.g. customer, sponsor, specified team member (by name), federal regulation, local laws, CSE Senior Design project specifications, etc.)

#### 3.1.3 CONSTRAINTS

A detailed description of constraints on satisfying the requirement (e.g. one such constraint might be: *The specified color must be commercially available in paint capable of adhering to the material of which the box is manufactured. (See customer requirement 3.x for production material specification.)*

#### 3.1.4 STANDARDS

A detailed description of any specific standards that apply to this requirement (e.g. *NSTM standard xx.xxx.x. color specifications [?].*)

#### 3.1.5 PRIORITY

The priority of this requirement relative to other specified requirements. Use the following priorities:

- Critical (must have or product is a failure)
- High (very important to customer acceptance, desirability)
- Moderate (should have for proper product functionality);
- Low (nice to have, will include if time/resource permits)
- Future (not feasible in this version of the product, but should be considered for a future release).

### 3.2 REQUIREMENT NAME

#### 3.2.1 DESCRIPTION

Detailed requirement description...

#### 3.2.2 SOURCE

Source

### **3.2.3 CONSTRAINTS**

Detailed description of applicable constraints...

### **3.2.4 STANDARDS**

List of applicable standards

### **3.2.5 PRIORITY**

Priority



## **4 PACKAGING REQUIREMENTS**

Include a header paragraph here. Packaging requirements are those requirements that identify how the delivered product will be packaged for delivery to the end-user; or how it will "look" when finished and delivered. For example, you might specify that the software required for operation will be pre-loaded on the hard drive, delivered on CD/DVD, or available via download. Software might be customer installable, or not, etc. Hardware components could be all in a single package, provided as a "bag of parts" to be assembled/installed by the user, painted a certain color, logos affixed, etc. Care should be taken not to duplicate requirements found in other sections of this document.

### **4.1 REQUIREMENT NAME**

#### **4.1.1 DESCRIPTION**

Detailed requirement description...

#### **4.1.2 SOURCE**

Source

#### **4.1.3 CONSTRAINTS**

Detailed description of applicable constraints...

#### **4.1.4 STANDARDS**

List of applicable standards

#### **4.1.5 PRIORITY**

Priority

## **5 PERFORMANCE REQUIREMENTS**

Include a header paragraph specific to your product here. Performance requirements address items such as: how fast specific critical operations must complete; how long it takes to start/stop activities; how long the battery must last; maximum time it must take to set up; etc.

### **5.1 REQUIREMENT NAME**

#### **5.1.1 DESCRIPTION**

Detailed requirement description...

#### **5.1.2 SOURCE**

Source

#### **5.1.3 CONSTRAINTS**

Detailed description of applicable constraints...

#### **5.1.4 STANDARDS**

List of applicable standards

#### **5.1.5 PRIORITY**

Priority

## **6 SAFETY REQUIREMENTS**

Include a header paragraph specific to your product here. Safety requirements might address items specific to your product such as: no exposure to toxic chemicals; lack of sharp edges that could harm a user; no breakable glass in the enclosure; no direct eye exposure to infrared/laser beams; packaging/grounding of electrical connections to avoid shock; etc.

### **6.1 REQUIREMENT NAME**

#### **6.1.1 DESCRIPTION**

Detailed requirement description...

#### **6.1.2 SOURCE**

Source

#### **6.1.3 CONSTRAINTS**

Detailed description of applicable constraints...

#### **6.1.4 STANDARDS**

List of applicable standards

#### **6.1.5 PRIORITY**

Priority

## **7 MAINTENANCE & SUPPORT REQUIREMENTS**

There should be a portal for the customers to leave suggestions and feedback and report problems. There also need to be an RMA, so customers can return the product if it's defective or they simply don't want it for a refund.

### **7.1 USERS SHALL BE ABLE TO GET SUPPORT ON ANY ISSUES**

#### **7.1.1 DESCRIPTION**

There must be a website with a portal where customers can create a profile if they wish. Customers aren't required to have a profile if they preferred not to have a profile. Customer can also either leave a suggestion or a feedback for the app through the website or through the Google Play store. The portal on the website should have an FAQ section for questions that customers generally have about the app and the hydrometer.

There should be a community section where customers can discuss among themselves, the producers of the product, and the developers of the app about any issues, concerns, or questions. The customers should also be able to report any issues directly to us through the website and we should be able to address it with them if they wish. Customers should also be able to contact customer support through email or a hot line in case they have any issues, concerns, or questions.

We must be able to create an RMA (Return Merchandise Authorization) with any customers that have issues with their product. The RMA allows the customer to send the product back if it's having issues so we can repair it and send it back to them or we can send them another one. Each customer has a full one-year warranty coverage on the product. The warranty policy will cover the cost of repairing or replacing the product if the product fails within the one-year period due to manufacturer defect.

Customers also have the option to return the product for a full refund within 30 days if whether the product failed or if the product failed to perform what the customers expected or even if the customers simply doesn't want the product.

#### **7.1.2 SOURCE**

The source is from my own understanding of customer and technical support.

#### **7.1.3 CONSTRAINTS**

The warranty will not cover repair or replacement cost of products if it becomes defective one-year after it had been shipped. The warranty will not cover damages that aren't caused by manufacturer defect.

If a customer wanted to return a product for a full refund just because they don't want it and that the customer couldn't provide us any proof of manufacturer defect or why the product doesn't perform as the customer expected. Then the customer will be required to pay a restocking fee for return the product.

#### **7.1.4 STANDARDS**

This product is governed by Consumer Protection.

#### **7.1.5 PRIORITY**

This requirement is somewhat important. It is not something we shall worry too much about, but it's important when the products failed to perform what the customers expected.

## 8 OTHER REQUIREMENTS

Include a header paragraph specific to your product here. In this section specify anything else that is required for the product to be deemed complete. Include requirements related to customer setup and configuration if not specified in a previous requirement. Add any known requirements related to product architecture/design, such as modularity, extensibility (for future enhancements), or adaptation for a specific programming language. Consider requirements such as portability of your source code to various platforms (Windows, Linux, Unix Mac OS, etc.).

### 8.1 REQUIREMENT NAME

#### 8.1.1 DESCRIPTION

Detailed requirement description...

#### 8.1.2 SOURCE

Source

#### 8.1.3 CONSTRAINTS

Detailed description of applicable constraints...

#### 8.1.4 STANDARDS

List of applicable standards

#### 8.1.5 PRIORITY

Priority

## **9 FUTURE ITEMS**

In this last section, you will reiterate all requirements that are listed as priority 5. This is repetitive, but necessary as a concise statement of features/functions that were considered/discussed and documented herein, but will NOT be addressed in the prototype version of the product due to constraints of budget, time, skills, technology, feasibility analysis, etc. Use the following format for this section.

### **9.1 REQUIREMENT NAME**

#### **9.1.1 DESCRIPTION**

Detailed requirement description...

#### **9.1.2 SOURCE**

Source

#### **9.1.3 CONSTRAINTS**

Detailed description of applicable constraints...

#### **9.1.4 STANDARDS**

List of applicable standards

#### **9.1.5 PRIORITY**

Priority