Non-functional Requirements for Vending Machine

**R1 Durability**

The vending machine should be durable. For example, if a customer accidentally hits or shakes the vending machine, the components should be able to withstand this and not release items freely for example.

*Rationale: It is reasonable to assume that accidents/negligence could occur regarding the machine so it should be designed to withstand these just in case*

**R1.1 Ease of repair**

Even though the machine should be designed to be as durable as possible, the components should be easy to install/repair.

*Rationale: No matter how durable the machine is, it is reasonable to assume that eventually something will break. When this happens, it is reasonable that the broken component should be easily fixed by a service engineer.*

**R2 Customizable**

The vending machine shall be customizable in a variety of different ways. The food items that are for sale and if the vending machine dispenses water or a different drink of the company’s choice (juice or flavored water for example).

*Rationale: It is reasonable to assume that each client buying the vending machine will have different wants/needs for the machine and what it dispenses. Clients may want to start offering different items at different times.*

**R2.1 Food Item Customization**

The vending machine shall be able to hold a variety of food items instead of being restricted to a specific kind (only being to dispense chocolate bars for example) so that clients can load the machine with whatever items they wish. The client shall also be able to change the items on the display to reflect the items inside of the machine.

*Rationale: As previously stated, the vending machine should be customizable for food items. Making it so each shelf can hold any item (within reason) achieves this. Also, allowing the client to change the display themselves means that they can customize their machine without great inconvenience. It would be very inconvenient for the client to have to call the service company every time they want to change a single food item, for example.*

**R2.2 Liquid Customization**

The client shall be able to put other (non-carbonated) liquids besides water into the liquid dispenser. The client should also be able to set the desired cold temperature of the liquid for the refrigeration unit to know.

*Rationale: It is reasonable to assume that clients may wish to offer a drink other than plain water in their environments. The difference between storing/dispensing water compared to diluted juice is quite negligible for example. The client should not be able to store carbonated beverages as carbonation would make a difference.*

**R2.3 Font Customization**

The client shall be able to change the font and size of the text on the display of the vending machine. The vending machine will have “times new roman” font in size 12 as default.

*Rationale: Each client is different, and some may even have difficulties with sight so the option to make the font clearer or the size bigger helps with accessibility most of all.*

**R3 Security**

The system should not be susceptible to outside attacks/interference from unauthorized third parties.

*Rationale: Sensitive information such as card/bank details are used with the vending machine, so it is important that unwanted parties are not able to retrieve this information.*

**R3.1 Network Security**

When the user “tops up their card” (covered in a different use case) they insert their personal debit/credit card to add money to the company card. When this happens, the machine communicates with an outside server to authorize the payment. This communication should be secure/encrypted so that no unauthorized parties can attain this very sensitive information.

*Rationale: Debit/credit card information is one of the worst things a person could have stolen from them, so it is very important the system does its best to safeguard this information.*

**R3.2 Card Security**

The card that the users to buy items/drinks should be secure to outside tampering. For example, an unauthorized party should not be able to add credit to the card.

*Rationale: It is theoretically possible that somebody could add credit onto their card in scrupulous ways if there are not sufficient security/checks to ensure what credit the card should have.*

**R3.3 Door Security**

The door to the vending machine should only be able to be unlocked by people with the correct key/card.

*Rationale: The document specifies that the door to the vending machine should be accessible by service operators sent by the company who have a service card. However, it is also reasonable to have a physical key to access the vending machine in case of a network/card reading error.*