**Software Requirements Specification**

***KSU SWE Capstone Project, Spring 2024***

*Smart Evaluation of MRO Supplies (SMROS)*

**Business Requirements**

1. **Streamline** **Sales Process**
   1. The system must decrease company sales turnaround time by automating MRO supplies vendibility evaluation process
2. **Increase Customer Satisfaction**
   1. The system must enhance customer satisfaction by simplifying the process of selecting and implementing CribMaster solutions, leading to increased client retention and referrals.
3. **Brand Reputation**
   1. The system must uphold and enhance the reputation of the CribMaster brand as a trusted provider of industrial-grade vending solutions through its accuracy and reliability.
4. **Business Agility:**
   1. The system must enable CribMaster to quickly adapt to changing market demands and customer preferences by offering flexible and customizable vending solutions.

**Functional Requirements:**

1. **Accept User Input:** *The system must accept item lists in the form of an excel file.* 
   1. *The system front-end must accept item lists in the form of an excel file*
   2. *The system front-end must generate requests to the backend that contain input data*
   3. *The system backend must accept requests containing input data*
   4. *The system backend must load input data into the database for processing.*
      1. *The system must load the* ***SKU*** *for each item into the database*
      2. *The system must load the* ***item description*** *for each item into the database*
      3. *The system must load the* ***manufacturer part #*** *for each item into the database*
      4. *The system must load the* ***point of Use*** *for each item into the database*
      5. *The system must load the* ***demand quantity*** *for each item into the database*
      6. *The system must load the* ***Manufacturer Part #*** *for each item into the database*
      7. *The system must load the* ***Demand Time-Window*** *for each item into the database.*
   5. If the item description field is missing, the system shall return an error indicating the row number
2. **Data Collection:** *The system must collect item data that will be used for processing.*
   1. *The system must generate a unique key for each item based on an incremental counter.*
   2. *The system must collect any item information that was missing from user input.*
   3. *The system must collect manufacturer-related data for each item and store it in the database for processing*
      1. *The system must collect item* ***manufacturer name*** *and store it in the database*
      2. *The system must collect item* ***alternate item ID (SKU)*** *and store it in the database*
      3. *The system must collect item* ***cost*** *and store it in the database*
   4. *The system must collect physical properties of each item and store it in the database for processing*
      1. *The system must collect and store* ***weight*** *in pounds to 2 decimal places.*
      2. *The system must collect and store item* ***width*** *in inches to 2 decimal places.*
      3. *The system must collect and store item* ***length*** *in inches to 2 decimal places.*
      4. *The system must collect and store item* ***weight*** *in pounds to 2 decimal places.*
   5. *The system must collect any other information pertinent to vendibility and store it in the database. This data will be calculated by the system if not found during data collection.* 
      1. *The system must attempt to collect item* ***fragility*** *in Boolean form.*
      2. *The system must attempt to collect item* ***stack-ability*** *in Boolean form.*
      3. *The system must attempt to collect item* ***vertical storage*** *in Boolean form.*
      4. *The system must attempt to collect item* ***image file(s)*** *in URL form.*
3. **Data Analysis:** *The system must conduct vendibility analysis for each individual tool by analyzing the data collected during the data collection phase.* 
   1. *The system must analyze data collected during the data collection phase to generate* ***locker-based*** *vendibility data.*
   2. *The system must analyze data collected during the data collection phase to generate* ***carousel-based*** *vendibility data.*
   3. *The system must analyze data collected during the data collection phase to generate* ***coil-based*** *vendibility data.*
   4. *The system must determine the most appropriate vending method (locker, carousel, or coil-based) based on the generated data.*
   5. *The system must calculate a recommendation on the most appropriate CribMaster solution for specific client needs.*
4. **Display Output:** *The system must display the results of the vendibility analysis process.*
   1. *The system must display individual item information as it is calculated.*
   2. *The system must display the capacity of an individual item for each hardware solution.*
   3. *The system must display the results in a list format.*
   4. *The system must export all information gathered into a formatted .csv file.*
   5. *The system must export information about user-selected items into a formatted .csv file.*
5. **Feedback Mechanism:** *The system must include a mechanism for users to provide feedback on the automated responses.*
6. **Integration with Existing Systems:** *The system must be designed in such a way that it can integrate with existing systems (such as Solution Generator) if necessary.*

**Non-Functional Requirements:**

1. **Scalability:**
   1. *The system must be scalable to accommodate future growth in the number of clients, items, and vending solutions without compromising performance.*
2. **Security:**
   1. *The system must adhere to strict data security standards to protect sensitive client information and ensure compliance with relevant regulations.*
3. **Performance:**
   1. *The system must exhibit the capacity and reliability to handle large volumes of data and user interactions.*
   2. *The system must perform vendibility analysis on a high volume of items under a 12-hour period.*
4. **Usability:**
   1. *The system must be user-friendly and intuitive, with clear interfaces and navigation paths to support efficient usage by clients and sales personnel.*
5. **Support and Maintenance:**
   1. *The system must provide comprehensive training and documentation to ensure functionality and usability.*