CSE 5670

**Software Design Methods**

**Fall 2016**

**Term Project Description**

# Project:

Our text focuses on the NextGen Point of Sale (POS) case study. NextGen’s primary purpose is to process sales in a retail store. For our term project, we will design and partially implement a derivative system called OnlyTheBestVen, a Point of Sale system for a maching that vends gold bars/coins, jewelry, cell phones and other expensive items.

We will base our system on an existing gold vending machine called GOLD To GoTM developed and operated by the German company, Ex Oriente Lux AG. The company website, <http://www.gold-to-go.com/en/>, has an extensive description of the function of the machine. So, we will use the website as our Concept of Operation for determining our requirements.

Some Initial Functional Requirements:

* The user interface allows the following purchase options:
  + Credit card payment at the vending machine.
  + Debit card payment at the vending machine
  + Cash payment at the vending machine with change returned
* The first step in authorizing a purchase is to identify the customer through some form of identification, e.g., country ID (US Driver’s License), Passport.
* To avoid money laundering, a customer is limited to some maximum purchase amount over a specified period of time. These limits are country dependent.
* The customer selects the item to be purchased from a display of available items. Let’s assume one item at a time is to be purchased.
* Authorization to begin shopping occurs when the credit/debit card inserted into the machine has been validated for a specific purchase amount by the appropriate credit card clearing agency; otherwise, the customer inserts some amount of cash against which the purchase may be made.
* The software enables the hardware to begin servicing the customer when authorization to begin has been granted.
* A central site monitors all activities occurring at the user interface.
* A central site provides “hot line” telephone assistance to customers.
* A central site updates the prices of all items at specified intervals, e.g., every 10 minutes.
* A central site monitors the inventory levels in the machine.
* The system keeps a record of the items dispensed, and when the level of inventory for a specific item drops below a specified threshold, the system alerts the central site to replenish the item.
* The system monitors the health of the vending machine and records any downtime.
* When any inventory items are replenished, the software updates the record of the total on-hand.
* A central site produces weekly, monthly, quarterly and annual reports of the sales activity for each vending machine under the control of the central site. This report may be incorporated electronically into regional or national sales reports for the company using the software.

Quality Attributes

* Security –
  + the system must protect credit card information
  + the system must provide continuous camera coverage of the area
  + the system must alert a central site of any perceived malicious activity
* Performance – the customer must not have to wait for more than 15 seconds while the credit card information is being processed
* Safety – the software shall monitor the health and safety of the vending machine. It shall report any hazardous conditions to a central site and to the appropriate emergency office
* Availability – the software shall operate the vending machine for 24 hours per day, 7 days per week with no more than 8 hours of software down-time per year per machine.
* Internationalization – the machines may reside inside any country. The software must accommodate differences in currency, types of inventory, and the natural language at the interface.

Open Questions

* What portion of the software is loaded into the vending machine and what portion should reside in a central site?
* How are new releases of the software applied?
* If the system fails for any reason while servicing a customer, what should happen during recovery?