**Supplementary Specification**

Revision History

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| --- | --- | --- | --- |
| Version | Data | Description | Author |
| Inception draft | 2016-2-16 | First draft. To be primarily during elaboration. | Team |
| Final modification | 2016-2-28 | Fixed wrong space, difference in text size, font style. | Jungwoo Jang |

**Introduction**

This document is repository of all unattended gas ATM requirements not captured in the use cases.

**Functionality**

Functionality could be found in use cases.

**Logging and Error Handling**

Log all errors to persistent outside storage.

**Pluggable Rules**

At various scenario points of several use cases (to be defined) support the ability to customize the functionality of the system with a set of arbitrary rules that execute at that point or event.

**Security**

All usage requires user authentication.

Alert notification connects to local 911.

**Usability**

The system is user friendly and self-explanatory.

Since all users are familiar with the general usage of browsers, no specific training is required.

**Human Factors**

The customer will be able to see a large-monitor display of the POS. Therefore:

* Text should be easily visible from 1 meter.
* Avoid colors associated with common forms of color blindness.

Speed, ease, and error-free processing are paramount in sales processing, as the buyer wishes to leave quickly, or they perceive the purchasing experience (and seller) as less positive.

Notification to the cashier to attend in case of customer with disability.

Sound notification for each step.

**Reliability**

The system should secure user's valuable information from others.

The system should stay up 99.9 % of time.

**Recoverability**

If there is failure to use external services (payment authorizer, accounting system, ...) try to solve with a local solution (e.g., store and forward) in order to still complete a sale. Much more analysis is needed here...

**Performance**

As mentioned under human factors, buyers want to complete sales processing *very* quickly. One bottleneck is external payment authorization. Our goal: authorization in less than1 minute, 90% of the time.

**Availability**

The system could reach 99.99% availability, which means the system has only 60 minutes of outreach per year.

**Supportability**

The system designers shall take in to considerations the following supportability and technical limitations.

The maintenance of the system shall be done as per the maintenance contract.

The member balance amount that will be calculated and sent to the billing system shall be compatible with the data types and design constraints of the billing system.

**Adaptability**

Different customers of the unattended gas ATM have unique business rule and processing needs while processing a sale. There for, pluggable business rule will be enabled when new sales is initiated, when a new line item is added.

**Configurability**

The model could appropriate configurability for different network vendors, so as to satisfy different requirements for network Service Providers.

**Implementation Constraints**

The model assumes that the language of clients is English only, we do not provide language packages for different countries.

All processes about payment with bank system rely on public API from bank, we don't develop other function for payment system.

**Purchased Components**

Tax calculator. Must support pluggable calculators for different countries.

**Free Open Source Components**

In general, we recommend maximizing the user of free Java technology open source components on this project.

Although it is premature to definitively design and choose components, we suggest the following as likely candidates:

- OVal

- Broadleaf

**Interfaces**

**User Interfaces**

* Java Swing graphical user interface,
* System preauthorizes card's information
* System displays "swipe your card"
* System stores the card information and displays the "credit or debit" message
* Customer pick an option
* System asks either pin or zip code of their card.
* System preauthorizes the card
* System displays "lift up the nozzle and press a fuel grade"
* System finishes the transaction and displays "receipt or no receipt" message.
* System displays "Thank you" message

**Communications Interfaces**

* meter is connected directly to, and drives, the computer through by mechanical linkage.
* In the case of electronic digital computers the computer receives its information in form of an electrical signal (pulse) from the pulsing mechanism (pulser) which is mechanically driven by the mete

**Noteworthy Hardware and Interfaces**

* **Display and keypad**
* **Credit/Debit card reader**
* **Receipt print**

**Software Interfaces**

For most external collaborating system, such as tax calculator, account, inventory, we need to be able to plug in varying system and thus varying interfaces.

**Application-Specific Domain (Business) Rules**

|  |  |  |  |
| --- | --- | --- | --- |
| ID | Rule | Changeability | Source |
| RULE1 | Customer discount rules. Examples:  7 centcents discount per gallon. | High.  Each month might have different discount values. | Gas station policy. |
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|  |  |  |  |

**Legal Issues**

We recommend some open source components if their licensing restrictions can be resolved to allow resale of products that include open source software.

All tax rules must, by law, be applied during sales. Note that these can change frequently.

**Information in Domains of Interest**

***Pricing***

In addition to the pricing rules described in the domain rules section, note that products have an *original price*, and optionally a *permanent markdown price*. A product's price (before further discounts) is the permanent markdown price, if present. Organizations maintain the original price even if there is a permanent markdown price, for accounting and tax reasons.

***Credit and Debit Payment Handling***

When an electronic credit or debit payment is approved by a payment authorization service, they are responsible for paying the seller, not the buyer. Consequently, for each payment, the seller needs to record monies owing in their accounts receivable, from the authorization service. Usually on a nightly basis, the authorization service will perform an electronic funds transfer to the seller's account for the daily total owing, less a (small) per transaction fee that the service charges.

***Sales Tax***

Sales tax calculations can be very complex, and regularly change in response to legislation at all levels of government. Therefore, delegating tax calculations to third-party calculator software (of which there are several available) is advisable. Tax may be owing to city, region, state, and national bodies. Some items may be tax exempt without qualification, or exempt depending on the buyer or target recipient (for example, a farmer or a child).