Hong Kong Institute of Vocational Education (Sha Tin)
Department of Information Technology
HD in Software Engineering

Requirement Specification Report

Date: 28 FEB 2019

Group No. 4

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Abstract

A great company depend on a right management system. As a long history of SLMC, an old management system cannot fulfill the requirement in our industry. Inflexible ordering function, non-comprehensive inventory system, manually work for despatch instruction and complicated invoice system. These problems are commonly finding out from our company.

These struggles become a resistance to improve our company. Stop moving forward and we will fall back. It seems lack of motivation to change all the existing operation on company. But company actually look down the uncountable benefit or profit after upgrading whole system for our company. According to a consultation form consultant, upgrade our computer system become an urgent task.

The new system is introduced for improving our working efficiency on difference aspects. It reduces manual work, simplify documentation, and centralized data control.

It is expected that the new system can make a better use of human resources. By providing a more comprehensive service, our customer can enjoy a better customer service. It brings us more business opportunities. Increase the market share just around the corner.

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Introduction

A brand-new system -- Order Management System.

SLMC(Spare), a company which is assembling and distributing spare parts to its leading parent company - SLMC. Since 1970, SLMC is settle in Peoples' Republic of China (PRC) which have over 50,000 retail stores cover the PRC. As a time go on, after reform and opening-up A big market is raising in China since 1990. SLMC seem cannot afford for the huge demand of orders. Ununified database and manually process put off the whole of the company. By the suggestion of consultant, upgrade the computer system is needed.

Consequently, we now suggest by using a new management system by providing 4 main types of functions (Ordering Process, Inventory, Despatch Process and Invoicing) to replace the old system of SLMC.

Ordering Process

For the old system of SLMC, order function is inflexible. Deals usually not able to answer customer enquiry since the non-transparent file-based system. Also, order keep track by human hand. Delay despatch of order has become a common circumstance. The system provide flexible order function can solve above problems.

Inventory

Inventory function is not comprehensive of SLMC. The old system cannot search the stock record, cannot provide an insufficient alert and replenishment function. It also slows down the whole procedure of replenishment. Many steps need to call by phone for confirming stock record.

The new system provides searching and recording, insufficient stock alert and replenishment function.

Despatch Process

The despatch process of the old system are unorganized and imprecise. Orders' delivery routes are not planned properly. Moreover, there is lack of checking before items deliver to customers. It leads to potential error.

This system groups the order with near destination. Staff can arrange delivery more effectively. Before delivery, the order should be checked by

despatch clerk to reduce the packing mistake.

Invoicing

For the old system, there are six copies of invoice. It wastes time and effort. By this reason, the system provides an electronic invoicing process. System will combine 6 invoices into one electronic invoice for transmission between different department.

Using a new system have several benefits. By using computer, many steps can be skipped. It reduces the workload of labor and the cost of relaying on human work. It cut costs by automating routine tasks and improve streamline business operations. Paper works also can be eliminated by replace paper processes. Data communication also can more effectively by using centralized database. Efficiency must improve.

Even using the greatest system, it must have a disadvantage behind it.

Resistance

In short term, our staff may not adapt well for the new system. We need to spend resource for training our staff to use it. Time is needed for understanding new technology. The habitat of our company is totally reversed. Many works may struggle, or disruption may occur easily. Some running plan may ready for fail if we cannot control the new system well.

2. Problem Findings

2.1 For Back-end Order Processing:

2.1.1 Ineffectiveness on handling chaotic order information

No standard order receiving format

Currently, orders can be received as different methods. There is no standard order form either for issue to dealers or for use as a standard document at SLMC. Hence, data received in different format which wastes a lot of manpower for handling.

Over-night order can only be pended to the next working day

There are many orders placed over the working hours of sales order office. The old system can only pend the orders to the next working day. Delivery of items will delay.

Solution

New System will provide a standardize ordering form for dealers, and they only simply filling the information in specific spaces. Once an order is placed, the system will finish all the recording process immediately. It can reduce the time of data entry and synchronize the data format.

2.1.2 Do not have a clear notice for insufficient stock

Sales Order Office Manager does not get any alert when the stock quantities are under re-order level or danger level. The decision on stock replenishment will delay.

Solution

An alert function is provided when the stock is under the danger level.

2.1.3 Manually keep track of the outstanding orders

Sales Order Office Manager does not get any notification when there is an outstanding order. Also, when the stock is available on that order, manager will not get any notice. Manager need to monitor a giant amount

of stock record every day to ensure the outstanding orders are dealt with speedily and automatically. It is time consuming and sometime outstanding order cannot be carried out quickly due to considerable effort.

Solution

The system provides Electronic Outstanding Order Process with notification function

2.2 For Front Line Sales:

2.2.1 Not always have enough information answer customer queries

Unable to provide accurate real-time-information to dealers

The old file system from SLMC(Spare) cannot provides an instantly inventories record and order information to dealers. Dealers always need to wait for a period contacting office to sure the stock quantity and order's status. Our customers always waste lot of time on this process, and it totally affects the customer experience of ordering SLMC(Spare)'s products.

Wasting lot of labor resources for answering dealer's enquiry

The Spares sales order officers always spend lot of labor resources to answer dealer's enquiry (including order's status, item quantities, etc.) via telephone. They are unable to answer all of them. Dealers even do not know if the items are available while placing an order, and it always cause a late despatch of items to customers. It affects customers experience and low-efficiency become a burden of SLMC.

Solution

With the aims of reducing unnecessary phone enquiry, reducing cross-department data checking time and providing addition contact method for dealers and sales order office. This system allow dealer to check the basic information regarding stock and order status through centralized database.

2.2.2 Difficulty on providing items' information to place an order

Dealers in SLMC is searching the item manually. Human cannot search the item number accurate as a machine. Error occur easily. It wastes a lot of time to amend the error and waste the human resource. It will slow down the efficiency for the company.

Solution

This system provides a searching engine to substitute searching by human. It totally reduces the amount of error by human. It also enhances the efficiency of the company

2.2.3 Inflexible ordering mechanism

Cannot provide reserving service

There are several organizations selling spares and accessories which can be used on SLMC car. Most of them can almost provide hot sale items immediately (off-the-shelf service) and provide reserving service. However, SLMC cannot provide this service for them. Customers tend to purchase from our competitor.

Difficult to modified after ordering

Orders are hard to be modified. Dealer sometimes need to modify the order instruction to satisfy fickle customer need. They need to notice several departments (include order office, warehouse, despatch department and stock recording department), and confirm by phone call. Order amendment may waste lot of human resources and time.

Solutions

The new system support reserving service. Order information can also edit or cancel.

2.2.4 Difficulty on controlling sales-force only by making regular call

As an area manager, they need to monitor lot of dealers by making regular calls. It is difficult to control sales-force properly.

Solution

This system provides several charts of sales performance overview for area managers, they can understand the sale of their subordinates. It helps managers to monitor their works. In addition, manager can deliver broadcast message via the new system. They can announce the business strategy or target to their subordinates in an effective way.

2.3 For Order Assembly Procedure:

2.3.1 Labor intensive on handling documentation

Scattered despatch instruction

In the current system, each ordered item generates one despatch instruction. There are too many scattered DID need to be handled. Each DID is needed to indicate 'actual quantity despatched' and 'to follow' amount.

Several documents need to work on while stock is insufficient

If an ordered item does not have sufficient stock, storeman create an outstanding order which is sent to order office. They also need to complete several documents for sending re-ordering instructions with different priorities to purchasing department. It creates a lot of manual work of storeman, and record may not correct due to human negligence.

Solution

This system supports electronic ordering process. When an order is placed, system will see if there are any item is not available in stock and create outstanding order. Then, ordered item will add to the order assembly list for simply arrange picking and delivering. After order assembly, system determine if the item stock drop to the danger level.

2.3.2 Lack of clear indication for finding items in bins

In the current system, item's category is the only way for storeman to identify items' located bin. Storeman always need to spend a lot of time walking around the bin to find items.

Solution

For improving, item's located shelf number can be provided in an electronic despatch instruction.

2.4 For Delivery Procedure:

2.4.1 Unorganized delivery routes

In the current system, each ordered item generates one despatch instruction for delivery. These instructions are not organized. The delivery routes are hard to be planned properly. It highly increases the delivery cost and workload of van drivers.

Solution

The system provides an order assembly list for order office to arrange delivery base on orders' weight and deliver district. Item with near destination will load at same van. Van drivers can plan their route easily.

2.4.2 Lack of checking before items delivery

When an order has been assembled, it is passed with its DI set to the Spares Despatch Department. Department will then arrange van driver deliver items refer to the given address. There is no double confirmation of items before delivery. Wrong item or wrong quantities of item is often distributed to clients. It leads to a huge write-off of inventory every year.

Solution

Before items delivery, they should be checked and confirmed by despatch clerk. Spares despatch clerk should re-confirm if the items match with its order before delivery.

2.5 For Invoicing Procedure:

2.5.1 Long time is taken to reconcile the copy of invoice

There are 6 copies for set of invoices. Each copy will be sent to different department for notification, acknowledgement and recordings. Those copies will be finally integrated and be considered as a set of completed invoice. This process takes a long time to reconcile the copy of invoice. This involve a lot of manual work to finalize a set of invoices.

Solution

The system centralized the invoice. Certify invoice should be acknowledge by despatch foreman and dealers with simple steps.

2.5.2 Invoice clearing only by manual collate the invoice paper

One of the invoice copies is send to invoicing section. Invoice is then clearing by Chief Invoice Clerk. Chief Invoice Clerk always search the invoice from huge amount of paper. It wastes a lot of human resources and not effective.

Solution

This system can generate invoice clearing report on a selected date. It can clearly display the invoice by their payment day.

2.6 For Stock Recording Procedure:

2.6.1 Error occur easily due to record rely on human work

For the old system of SLMC, there are many steps need to pass by human hand (Inserting data through despatch instruction and copying data from computer to stock record card), and it occur clerical error easily.

Solution

This system will provide a user interface that help those workers to insert the data in certain format and then store in the centralize database. Repetitive clerical work can be omitted. It helps the data more accurately and minimize the human error.

2.6.2 Current system has no support to warehouse operation

The current system does not support warehouse operation. Storemen need to send email to stock recording clerk to report goods received, actual stock figures and defective items. Inventory record does not frequently be verified tend to a huge write-off.

Solution

Storemen can report actual stock or defective items via the system. It can enhance the correctness of stock record and mechanized warehouse document work.

2.7 For General:

2.7.1 NOT Unified File-based System

Independence File System impel for several problems

A disorder file-based system will limit the company development environment. In each department, there are own file system for each department, and each of the system are not connected. Data in those system lack of coordination and central control. The data format is also non-standardized. It leads the data disorder, data redundancy and data inconsistency.

Limitation of data sharing

Independence computer system limits the data sharing through different departments. Most of the data cannot transfer fluently. They need lot of process and steps to transfer data by different file system. Most of the steps are pasted by human hand (sending and inserting data). Compare with picking data in same system, it increases human errors.

Solution

This system will unify one database management system to store all the data with standard format. It helps the communication of different departments. Highly increase the efficiency of company (Help to communicate with front line salesman, allow users share the same source of data to reduce the time of data transfer, etc.)

2.7.2 Data Transfer insecurely by Email and FTP

An insecurity communication system must harm for a company. As many as famous company with insecurity data transfer always lose important data. SLMC also either using external email system or FTP to transfer important business data and it is extremely insecure for data transfer.

Solution

For storing data in the centralized database, transfer of data is not needed. All user can share the data in the database via the system.

2.7.3 Lack of communication between management and staffs

In the current system, the only communication channel between management and staffs is email. Staffs sometimes are too busy to check email. Moreover, too many emails are received every day. Some management important notices are easily be neglected.

Solution

A broadcast message dialog should be developed for management to announce important information to subordinates.

2.7.4 No convincing data for presenting management decision

In the current system, the trend of commodity circulation, trend of orders and overall or individual sales-performance cannot represent clearly. Many business decisions cannot forecast for the trend of demand of future, and it also not effective for monitoring the performance of each department and subordinates.

Solution

This system provides several charts of sales overview. It offers convincing data for future planning, also monitor each department and staffs.

3. Functional Requirements

3.1 Function for Ordering Process

3.1.1 Create Order

User: Dealers, Sales Order Officers

Aims:

- Standardize data format when receiving order

Features:

- Auto-create Order serial number, DIC and DID
- Filled data should follow certain constraints
- Auto-generate despatch instruction and outstanding order

Description:

Dealers and Sales Order Officers can place an order by filling the electronic form. When an order is placed, system will auto-generate a serial number, despatch instruction cover (DIC) and details (DID). Order officer then arrange for order assembly. If there any insufficient items, outstanding order is created. Sales Order Manager receive a notification for that.

Problem Tackling:

- 2.1.1 Ineffectiveness on handling chaotic order information

3.1.2 Create Reserving Instruction

User: Dealers, Sales Order Officers

Aims:

- Support reserving service

Features:

- Auto-generate reserveID
- Filled data should follow certain constraints

Description:

Dealers and Sales Order Officers can place reserving instruction by filling the electronic form.

Problem Tackling:

- 2.2.3 Inflexible ordering mechanism

3.1.3 Validate Reserving Instruction

User: Dealers

Aims:

- Simplify the use of reserving function

Description:

Dealers can validate reserving instruction by clicking a button. When placing reserving instruction, "Reserving due date" should be provided. If the instruction validated by dealers on time, the reserving instruction will enter the ordering procedure. Otherwise it will be obsoleted.

3.1.4 Update Order Status

Aims:

- Provide indicator for monitoring order process

Description:

There are several order statuses. Different order statuses can be updated by specific users.

Order status	Description	Updated by
"Reserved"	The items are reserved. It has not entered the ordering procedure.	System Created
"Cancelled"	The order is cancelled.	Dealer
"Processing"	The order is waiting to enter ordering procedure	System Created
"Assembled"	The order is assembled	Sales Order Officer
"Packing"	Storemen have received the instruction. The order is under packing procedure.	Storemen
"Delivering"	Storemen have finished packing.	Despatch Clerk

	The order is under delivery procedure.	
"Completed"	The order process is completed.	System

3.1.5 Search Order record

User: Area Managers, Dealers, Sales Order Manager, Sales Order Officers

Aims:

- Reduce labor resources spend on cross-department data checking

Features:

- Each department share the same source of information
- Provide instance order and reserve information (including order status)
- Several accessibilities on user role *(refer to 3.7.1 Login with access right)*

Description:

After the system receive an order or reserving instruction, information is then saved into database. Users can search their information by entering order created date or order number.

Information Type:	
Basic:	orderID, itemID, item name, quantities, order date
Seller:	dealerID, dealer's name, dealer's address
Status:	order status
Invoice:	invoiceID, item, quantities, price
Pricing:	Payment amount
Delivery:	Receiver, Delivery address, Prefer Item receiving date

	Accessible Information Type
Sales View	All. But only accessible to their own orders
Sales Team View	All. But only accessible to their sales teams' orders
Officer View	All
Logistic View	Basic & Seller & Delivery

Problem Tackling:

- 2.2.1 Not always have enough information to answer customer queries

3.1.6 Modify Order

User: Dealers, Sales Order Officers, Sales Order Manager

Aims:

- Satisfy fickle situation of making deals

Description:

Orders and reserving instruction are able to edit and cancel by dealers and sales order officers in specific order status.

Order status	Information can be modified	Allow Cancel[1]?
"Processing"	All order information	Yes
"Assembled"	Delivery information	No
"Packing"	Delivery information	No
"Delivering"	None	No
"Completed"	None	No

Problem Tackling:

- 2.2.3 Inflexible ordering mechanism

3.1.7 Notify replenishment of Outstanding Order

User: Sales Order Office Manager

Aims:

- Improve efficiency on handling outstanding order

Features:

- Auto-generate outstanding orders on insufficient items
- Outstanding order notification
- The order enters normal ordering process when stock is available

Description:

After order is placed, system will identify if there any insufficient items. For the insufficient ordered items, system generate an outstanding order and notice Sales Order Office Manager for replenishment. Once the item is available, the outstanding order will enter the normal ordering process.

[1] Order status change to "Cancelled".

Problem Tackling:

- 2.1.3 Manually keep track of the outstanding orders

3.1.8 Assemble Order

User: Sales Order Officer

Aims:

- Reduce delivery cost

Features:

- Ordered items list immediately updated while placing an order
- Sort by district of deliver address, unify items' delivery routes
- Outstanding Orders' items is highlighted
- Available stock auto-update when the assembly is confirmed
- Part-completed invoice is generated after assembly

Description:

Order assembly list is an ordered items list sort by district of deliver address. After an order is created, its ordered item will add on the list.

Sales Order Officer can refer to the item weight displayed on the list. By matching items' weight to arrange assembly. When the assembly is arranged, the order status change from "Processing" to "Assembled". After that, despatch instruction (DIC & DID) send to storeman. Then, the available stock of item will be updated automatically. Part-completed invoice is generated and enter the invoice procedure.

Problem Tackling:

- 2.4.1 Unorganized delivery routes

3.2 Function for Inventory

3.2.1 Search Item Information

User: Dealers, Area Manager, Sales Order Officers, Sales Order Manager, Stock Records Clerks, Storemens, Despatch Clerks

Aims:

- Reduce labor resources spend on cross-department item information checking

Features:

- Each department share the same source of information
- Provide instance items information
- Several views for different users *(refer to 3.7.1 Login with access right)*

Description:

Users can search for item information by their item ID, item name or category. They can retrieve information from the system without departmental boundaries. Different user gets different accessibility to the stock information.

Information Type:	
Basic:	itemID, item name, item description
Sales:	available stock, selling price
Stock:	actual stock, item located shelf
Restricted:	purchase price

	Accessible Information Type
General View	Basic & Sales
Warehouse View	Basic & Stock
Administration View	All

Problem Tackling:

- 2.2.1 Not always have enough information to answer customer queries
- 2.2.2 Difficulty on providing items' information during placing an order
- 2.3.2 Lack of clear indication for finding items in bins

3.2.2 Add Item

User: Stock records clerks

Description:

Stock records clerks can add new item to the database. Item information should contain itemID, item name, item description, purchase price, selling price, etc.

3.2.3 Modify Item Information

User: Stock records clerks

Description:

Stock records clerks can modify item information in the database. Modifiable information includes item name, item description, purchase price, selling price, etc.

3.2.4 Update Stock Record

User: Stock records clerks,

Aims:

- Centralize and mechanize the stock recording process

Features:

- Stock record auto-update after order assembly and delivery
- Allow manually update stock record

Description:

Stock records clerks can update stock record manually when they receive the report of actual stock figures or defective items. *(refers to 3.2.7 Report Actual Stock Figures & 3.2.8 Report Defective Items)*

Problem Tackling:

- 2.6.1 Error occur easily due to recording process rely on human work

3.2.5 Generate Goods Received Confirmation

User: Stock records clerks

Aims:

- Centralize and mechanize the stock recording process

Description:

Stock records clerks can input the data of Goods Received notes (GRN) to the system. Then, system will send an goods received acknowledgement to storemen.

3.2.6 Confirm Goods Received

User: Storemen

Aims:

- Centralize and mechanize the stock recording process

Description:

The system generates goods received confirmation *(refers to 3.2.5 Generate Goods Received Confirmation)*. After storemen perform checking of new goods, they can confirm the receive. Then, stock record update.

3.2.7 Report Actual Stock Figures

User: Storemen

Aims:

- Enhance the correctness of stock record

Features:

- Storemen can report actual stock figures
- System auto-record last inventory checking date

Description:

Storemen can report the actual stock figures after perform inventory check. After the actual stock figures are updated, system will record the last inventory checking date.

Problem Tackling:

- 2.6.2 Current system has no support to warehouse operation

3.2.8 Report Defective Items

User: **Storemen**

Aims:

- Mechanized warehouse document work

Description:

Storemen can report defective items through the system when they discovered.

3.2.9 Alert for Insufficient Stock

User: Sales Order Manager

Aims:

- Ensure sufficient inventory to support the selling force

Description:

If item's available stock is under danger line, an alert message is prompted while Sales Order Manager login to the system. It is an urgent reminder of items replenishment.

Problem Tackling:

- 2.1.2 Do not have a clear notice for insufficient stock

3.2.10 Amend Re-order Line and Danger Line

User: Spare Parts Controller

Aims:

- Ensure the stock amount can keep on a suitable level at most of the time

Description:

Spare Parts Controller can update the re-order line and danger line of an item refer to their selling trend of the current situation.

3.2.11 Replenish Stock

User: Sales Order Manager, Spare Parts Controller, Storemen

Aims:

- Mechanized documentation on replenishment

Features:

- Auto-filled replenishment instruction list
- Edit and insert replenishment instruction list
- Send instruction to purchasing department

Description:

Items with available stocks under danger line or re-order line is automatically insert to the replenishment list. Their danger level and re-order level are also noted. Users are able to edit and insert other items to the list. While the list is confirmed by user, it will send to purchasing department.

Problem Tackling:

- 2.3.1 Labor intensive on handling documentation

3.3 Function for Despatch Process

3.3.1 Auto-generate Despatch Instruction

Aims:

- Speed up order packing process by provide clear instruction
- Minimize documentation work of storemen

Features:

- All items in DID should be in stock
- Items' located shelf number is displayed on the DID

Description:

After an order is placed, system will generate DIC and DID. DIC include order date, invoice name and address, delivery address and expected delivery date. DID include item ID, quantities and located shelf number. DI set send to spare parts store after Sales Order Officer arrange the order assembly.

3.3.2 Receive Despatch Instruction

User: Storemen

Description:

Storemen in the spare parts store receive DIC and DID then follow the instruction for packing after order assembly by Sales Order Officer. In this stage, order status change to "Packing".

Problem Tackling:

- 2.3.1 Labor intensive on handling documentation
- 2.3.2 Lack of clear indication for finding items in bins

3.3.3 Confirm Despatch Instruction

User: Despatch clerk

Aims:

- Reduce error on orders packing

Features:

- Re-confirm the items before delivery

- Item received acknowledgement
- Actual stock record auto-update after delivery

Description:

The despatch instruction passed to spares despatch department. Spares despatch clerk can simply click the 'Confirmed' button to state that they have confirmed the items are match with its order. The order status change to "Delivery". Despatch clerk then arrange van driver deliver items refer to the orders' delivery address.

Problem Tackling:

- 2.4.2 Lack of checking before items delivery

3.3.4 Acknowledge order received

User: Dealers

Aims:

- Ensure the data correctness of inventory

Description:

After delivery, system send an acknowledgement to dealer. After dealer acknowledge to received, the actual stock record will be updated. System will update the order status to "Completed".

3.4 Function for Invoicing

3.4.1 Auto-generate part-completed Invoice

Aims:

- Reduce manual work for creating invoice
- Unify invoice with central control

Description:

After order assembly, a new part-completed invoice is generated. The part-completed invoice consists information of orderID, itemID, quantity, price, dealerID, invoice address and delivery address.

Problem Tackling:

2.5.1 Long time is taken to reconcile the copy of invoice

3.4.2 Acknowledged Invoice

User: Spares Despatch Clerk, Dealers, Despatch foreman

Aims:

- Improve effectiveness for deliver and acknowledge invoice

Features:

- Invoice certificate with simple steps

Description:

To certify the part-completed invoice, it should be acknowledged by despatch foreman after order packed. It also needs to confirm by dealers after order delivered. The date of invoice is then updated.

Problem Tackling:

- 2.5.1 Long time is taken to reconcile the copy of invoice

3.4.3 Download Invoice

User: Dealers, Area Managers

Description:

Dealers can download the completed invoice as PDF file from the system. They have an alternative to print it out or keep a soft-copy by themselves.

3.4.4 View Invoice Detail

User: Area Managers, Dealers, Sales Order Manager, Sales Order Officers

Aims:

- Provide clear view on an invoice
- Easy to keep track ordered items

Description:

After an invoice is certified, it will save under its order record. User can check the invoice by searching the above order record. Therefore, user can easily identify which item have completed the deal already.

Problem Tackling:

- 2.2.1 Not always have enough information answer customer queries

3.4.5 Generate Invoice Clearing Report

User: Chief Invoice Clerk

Aims:

- Assist invoice reconciliation

Description:

System sort the invoice with their payment date. Chief invoice clerks are able to select the date to generate an invoice report on that date. User can use this data to match the transaction on business account.

Problem Tackling:

- 2.5.2 Invoice clearing only by manual collate the invoice paper

3.5 Function for Management

3.5.1 Create Broadcast Message

User: Sales Manager, Area Manager, Sales Order Office Manager

Aims:

- Enforce the communication of management and employee

Features:

- Allow posting, editing and delete broadcast announcement
- Announcement posted on the message dialog when staff login

Description:

A message box is provided for manager deliver broadcast message (e.g. monthly target, team notice, business strategies, etc.) to their subordinate. User can choose to save the message to draft, deliver instantly, or deliver at an arranged time.

The message will be posted on the message dialog that every users or specific group of users can see after login.

Problem Tackling:

- 2.7.3 Lack of communication between management and staffs
- 2.2.4 Difficulty on controlling sales-force only by making regular call

3.5.2 Modify Broadcast Message

User: Sales Manager, Area Manager, Sales Order Office Manager

Description:

The broadcast message created by user themselves are able to edit.

3.5.3 Delete Broadcast Message

User: Sales Manager, Area Manager, Sales Order Office Manager

Description:

The broadcast message created by user themselves are able to delete.

3.5.4 Sales Overview

User: Sales Manager, Area Manager

Aims:

- Providing convincing data for presenting management decision

Features:

- Generate Sales Growth Chart, Sales Target Graph
- Generate Area Sales Revenue List

Description:

Generate Sales Growth Chart

It's a fact that by tracking the growth of sales team, also track the growth of company. This could be a sign to reassess the sales performance in your team.

Generate Sales Target Graph

This graph shows whether you are on track regarding your sales targets. This metric lets you know whether your team is doing what they should, if they need help or if the whole strategy should be changed.

Generate Area Sales Revenue List

For helping the manager put on company resources effectively such as promotion expenses and retail location, it is crucial to understand which district of customers are more favorable on the spare parts market. Area sales revenue list shows the monthly sales revenue in each area in descending order.

Problem Tackling:

- 2.2.4 Difficulty on controlling sales-force only by making regular call
- 2.7.4 No convincing data for presenting management decision

3.6 Function for User Maintain

3.6.1 Create New Staff Account

User: System Administrator

Aims:

- Support company to hire new staff

Description:

System administrator can add new user. New users should be created with their staff information and assigned with their department, team and position.

3.6.2 Update User Information and status

Users: System Administrator

Aims:

- Support human affair

Brief Description:

Users can update their personal information by themselves or by system administrator. System administrator can update the group of the user, also update staff status to “Disable” when the staff is no longer a member of the company.

3.7 Function for General

3.7.1 Login with access right

Aims:

- Protect information by controlling access right
- System can fit the job routine in different position more effectively

Features:

- Use can only use the function related to their job
- Different roles have different permission to access the database

Brief description:

When user login to the system, the functions they can use and the information they can access are relevant to their role. Every user can share the latest information in the centralized database management system under control.

	Order	**Item**	**Invoice**
Sales Manager	Officers View	Administrator View	Accessible
Dealer	Sales View	General View	Accessible
Area Manager	Sales Team View	General View	Accessible
Sales Order Office	Officers View	General View	Accessible
Stock Recording Clerk	Not accessible	Administrator View	Not accessible
Storemen	Logistic View	Warehouse View	Not accessible
Despatch Clerk	Logistic View	Not accessible	Not accessible

4. Non-Functional Requirements

4.1 Operational

4.1.1 Architect Centralize Database Management System

Aims:

- Synchronize all the data file (stock, order and items) in one database system
- Reduce the frequency of data inconsistency

Description:

- Sharing data for multiuser allow many users to access the same data at the same time
- This access is achieved through Description called “concurrency control strategies”.

4.1.2 Auto-backup Data

Aims:

- Restore the data for prepare the failure of information.

Description:

- The system will back-up per day for the preparation of information loss and can be recovered when if there any incident occurred

4.1.3 Compatible with the current hardware and software

Description:

- Increase the compatibility of the system by developing and testing the system on a general personal computer.

4.2 Security

4.2.1 Protected by Firewall

Aims:

- Ensure incoming information integrity.

Description:

- Determine security rule and create filters for small chunk of data for trapping the incoming data.

4.2.2 Install Anti-virus

Aims:

- Protect the data from malicious attack or data. (CryptoLocker, MyDoom...etc)

Description:

- Malware detection and removal.
- Extracted file itself to check the safety of data.

4.2.3 Encrypt data

Aims:

- Encoding message or information that only a specific authorized or person can access it.

Description:

- By using asymmetric cryptography to generate a pair of unpredictable keys to ensure security of the message.

4.2.4 Operating on private network

Aims:

- Protects data from cyberattack.

Description:

- System will be built on cloud / data center.
- Only accessible to private network of company.

4.3 Interface design

4.3.1 Simple interface design

Aims:

- Make the user's interaction as simple and efficient as possible
- Minimize user's effort in using new system

Description:

- User Acceptance Testing will take before the new system is operated

4.3.2 Font

Aims:

- Show the content to user more comfortable and clearly with softer, fuller curves and more open counters.

Description:

- By using "Line" font with softer, fuller curves and more open counters, it can capable for most of the system.

4.3.3 Font Size

Aims:

- Show the data clearly

Description:

- 22px for word size ,15px to fitting the size of heading and sub-heading of each choice will be bold to show the content

4.3.4 Symbol

Aims:

- More user friendly and eye-catching for user.

Description:

- Using "*" symbol to remind user to insert data to compulsory selection.

-Some selection will use radio box or check box to replace question dialogs.

-Dialog box will add a sample to remind user how to use it.

4.3.5 Color

Aims:

- More attractive for decorating with sharp and monochromatic color.

Description:

-Decorating with monochromatic color allows for a greater range of contrasting tone that can be used to attract attention.

-Using gray color as background color can show to the user more comfortable.

-The heading of the form will use dark gray with line shape to fit the background color and it can sublimate for the whole interface.

4.4 Culture

4.4.1 Simplified Chinese and English version are provided

Aims:

- To show the content in a clearly way.

Description:

- Provide simplified Chinese and English version

4.4.2 RMB as the default currency

Aims:

- Make transaction more convenient for PRC customers
- Reduce the step of convert USD to RMB.

Description:

- Set the default currency of current price as RMB.

4.5 Company Restriction

4.5.1 Follow the standard lead time of order

Aims:

- The ordering time must follow the standard lead time.

Description:

- Set the lead time forcefully.

4.5.2 Primary key in database should follow the current format

Aims:

- Reduce data disorder and ununified data format.

Description:

- Part number consists of the category letter (A for Sheet Metal; B for Major Assemblies; C for Light Components; D for Accessories) plus a 5-digit number.
- Dealer's code number is in 3-digit.
- Invoice coding is currently 2 alphas and 6 numeric
- Original orders are files by SLMC serial number within dealer
- The SLMC serial order consists of 8 digits

5. Conclusion

That is the analyzes from problems finding. Demonstrating and illustrated for the solutions, functional requirement, non-functional requirement.

The new system thoroughly improves our working efficiency by difference aspects. It provides flexible function to fit and help for our daily work. By mean of the new system, it reduces lot of manually problems. It helps human to finish repeating work that is wasting lot of time and saving human resources. Monitor all the process in our company. Reduce the chance of data inserting error. Provide the most updated information to our staffs and answer the queries from our customers instantly.

In short term, customer can enjoy a better purchase experience. In long term, it helps our company to gain better reputation.

It seems a minor improvement for our system. But it actually changes the whole habitat of our company.

Like rowing a boat, if we stop moving forward we fall back.

A new Management System is needed.

Reference

1. **Dennis, A. (2012). Systems Analysis & Design, 5th edition.**
   Hardcover: 592 pages
   Publisher: Wiley; 5 edition (January 18, 2012)
   Language: English
   ISBN-10: 1118057627
   ISBN-13: 978-1118057629

2. **Chinese Government Official Website:**
   http://www.gov.cn/

3. **Chinese government official website: Article 9 of the cybersecurity law (7th November 16)**
   http://www.gov.cn/xinwen/2016-11/07/content_5129723.html

4. **ICP License of China:**
   a. Chinese government official website: ICP license of China
      http://www.gov.cn/zwgk/2008-05/19/content_982801.htm
   b. Wikipedia: ICP License
      https://en.wikipedia.org/wiki/ICP_license

5. **The DataPin:**
   10 Sales Graphs and Charts You Should Have To Measure The Heartbeat Of Your Business
   https://www.datapine.com/blog/sales-graphs-and-charts-for-managers/

6. **Arial vs. Helvetica:**
   https://www.fonts.com/content/learning/fyti/typefaces/arial-vs-helvetica

7. **Important.io:**
   What is data, and why is it important?
   https://www.import.io/post/what-is-data-and-why-is-it-important/

8. **BullGuard**
   How does a firewall work?
   https://www.bullguard.com/zh-tw/bullguard-security-center/pc-security/computer-security-resources/how-does-a-firewall-work.aspx

9. **Info300:**
Different Antivirus Software Detection Methods
http://info300.net/alai2/Brief1.html

10. **AgileData:**
Introduction to Database Concurrency Control
http://www.agiledata.org/essays/concurrencyControl.html

11. **English Font:**
https://www.behance.net/gallery/18588437/Thin-Line-Font

12. **NIBusiness:**
Business benefits of new software
https://www.nibusinessinfo.co.uk/content/business-benefits-new-software

13. **HR GAZETTE:**
How to OverCome Employee Resistance to New Technology
https://hr-gazette.com/overcoming-employee-resistance-new-technology/