Pre-Sales Modules in IT for Analysis & Development

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May,2014

Pre-Sales Modules in IT for Analysis & Development

Major Project

Submitted in partial fulfillment of the requirements for the degree of

Master of Technology in Computer Science and Engineering

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May,2014

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I, Ankur Kudal, Roll. No. 12MICT10, give undertaking that the Major Project entitled "Pre-Sales Modules in IT for Analysis & Development "submitted by me, towards the partial fulfillment of the requirements for the degree of Master of Technology in Computer Science & Engineering(Networking Technologies) of Nirma University, Ahmedabad, is the original work carried out by me and I give assurance that no attempt of plagiarism has been made. I understand that in the event of any similarity found subsequently with any published work or any dissertation work elsewhere; it will result in severe disciplinary action.

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Acknowledgements

It gives me immense pleasure in expressing thanks and profound gratitude to Mr. Sushil Taneja(External Guide) Manager in STMicroelectronics and Prof. Tejal Upadhyay(Internal Guide), Professor, Computer Science Department, Institute of Technology, Nirma University, Ahmedabad for his valuable guidance and continual encouragement throughout this work. The appreciation and continual support he has imparted has been a great motivation to me in reaching a higher goal. His guidance has triggered and nourished my intellectual maturity that I will benefit from, for a long time to come.

My deepest thank you is extended to **Prof. Gaurang Rawal**, PG CSE(NT) - Coordinator, Department of Computer Science and Engineering, Institute of Technology, Nirma University, Ahmedabad for an exceptional support and continual encouragement throughout the Major Project.

It gives me an immense pleasure to thank **Dr. Sanjay Garg**, Hon'ble Head of Computer Science and Engineering Department, Institute of Technology, Nirma University, Ahmedabad for his kind support and providing basic infrastructure and healthy research environment.

A special thank you is expressed wholeheartedly to **Dr K Kotecha**, Hon'ble Director, Institute of Technology, Nirma University, Ahmedabad for the unmentionable motivation he has extended throughout course of this work.

I would also thank the Institution, all faculty members of Computer Engineering Department, Nirma University, and Ahmedabad for their special attention and suggestions towards the project work.

The blessings of God and family members make the way for completion of Project. I am very much grateful to them.

- Ankur Kudal 12MICT10

Abstract

Pre-sales modules plays a major role in the growth of a company. In any big organization they developed there own applications to do analysis of business. So from these applications it is easy to find out the interest of customers for the products of the company.

Using these modules a company can estimates its business as well as targets those customers which are giving frequent business. Some of the modules are used for business analysis like which customer is giving how much amount of business on quarterly basis and these modules also give statistics of business in upcoming years for each customer. This module also calculates how many times a customer is visited in a week and how much business given by them.

These modules can also be used to enhance the business by providing samples of the products. User can order online for free e-samples. This module helps both company and user, user can test the samples before giving order in bulk and company also get benefit by promoting their new products and taking feedbacks on products from the users.

These modules also facilitates the users and the distributers to manage their work more faster and with more accuracy. For an example like from distributor requirement planning(DRP) it is to manage both orders of the customer as well as the production on per site of company.

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Chapter 1

Literature Survey

Each company gives focus to enhance business and for this several approaches can be used. By doing some analysis on data it is possible to know the revenue generated on per product and it is easy to analyze that which product is doing well in market and which product design needs some improvement.

The basic requirement to design these modules is to help in the growth of the company by giving focus on each customer as well as to connect new customers. These modules also provides new design methodology to generate new product design. For an example these modules should design in such a way that gives the details of each customer that how much billing was done in previous and current year and how much amount of goods is available in inventory for shipment on product basis and by doing some analysis on these data it will generate the scope of business in upcoming years with a customer. The basic need of these modules is to find out the current and upcoming statistics of growth of a company as well as to find out each product performance in market.

These all requirements are satisfy by developing pre-sales modules like **Forecasting** to give details of business with each customer, **Customer Visit Report** to maintain the business with channel partners and customers and **E-sample** to know the demand and performance of a product as well as to know the interest of a customer towards the product.

Chapter 2

Project Overview

2.1 Introduction

These pre-sales modules use the existing transaction data and do some analysis on that and extract the core customers that giving frequent business to the organization as well as it also helps to the organization to know that which product is doing well and which needs improvement. Pre-Sales modules are also helps I included two of the major modules in this report on which I am working are:-

2.1.1 E-Sample

It is an online service by which customers can order free samples of the available products at global level. A customer can register itself by providing personal details. These details are validated and provide a link on customers mail id for further process. Then a customer can place order for limited number of free samples and give shipment details for delivery of the samples.

2.1.2 PrismaWeb(Forecasting)

It provides a platform on which it is possible to check which customer gives how much amount of business with product details and how much will be given in upcoming next three years at quarterly level.

These are the vast modules and maintains large amount of data. Hierarchy is maintained for both customer and product level. For example a customer in a customer group belong to a region comes under a field sales engineer which comes under a sales manager.

2.1.3 Distribution Requirement Planning(DRP)

DRP is a process for determining which goods, in what quantity, at which location, and when according to customer demand. DRP provides the platform for integrating this inventory information and physical distribution activities with the Manufacturing Planning and Control System.

DRP application in ST gives us the visibility about the inventory and distribution activities for customers over a given time duration.

Chapter 3

Detailed Study

3.1 E-Sample

3.1.1 Current Working System

- In current System any customer around the world can order samples just by registering on MyST website.
- There is a global distributor for ST who is responsible to deliver samples for these orders.
- ST saves the order details in their central database and check with the distributor that requested product is available on distributor side or not.
- If the product is available ST sends all the order details like order number, order date, ordered quantity etc. to the distributor. All these information are send by generating a xml file.
- Distributor shipped that samples and send the shipping details to ST which is updated in ST's central database.
- Shipment details are also send to customer's mail id if order is accepted by ST.[1]

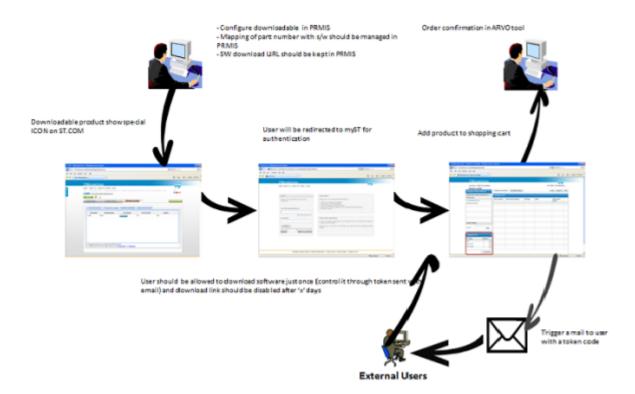


Figure 3.1: E-sample process

3.1.2 Issues in Existing System

- The major issue is it is difficult to manage large number of order request from all over the world with single distributor.
- It takes more time in delivering of the order and also high shipping cost.

3.1.3 Integration Of New Distributor

As the issues mentioned above it was proposed to integrate a new distributor with the existing e-sample system so that both company and customer will get benefit. This integration is designed in such a way so that in future it could be enhanced easily.[1]

Process of Integration

To integrate this new distributor I used web services in java with SOAP protocol and X.509 security standards. The whole process is explained in below mentioned points:-

- The order created by a user on MyST website is stored at both header and item level at front end database and central database.
- After that the order is validated by ST LMU.
- If the order is accepted the shipping country is checked for that order and according to that further process is followed.
- If the shipping country comes under new distributor it creates an interface entry in DB for that order.
- This entry is picked by java batch and call first web service of stock availability at distributor side.

Get Product Web Service: - In this web service I passed product codes as an input to the web service which is ordered by the customer. If the products are available at distributor side it replies with product available or not, if available then gives available stock quantity for that product codes.

- If stock is available java batch marks that entry as success and creates new interface entry in DB for checkout order details web service. If stock is not available then it creates an interface entry for old distributor and fetched and processed as previously.
- Batch pick these newly created entries and call second web service for checking out order details.

Checkout Web Service:- If stock is available at distributor side then order details are to be shared with distributor in second web service. These order details contains customer details, shipping details and order details.

- The checkout web service will return success or failure. If it is success then batch mark as success to that checkout entry created in DB and will create a new entry to get shipment details.
- Batch will pick these newly created entries from DB and call third web service that is shipment web service.

Shipment Web Service: - In this service I just passed the order code so that the distributor gives me shipment details of that order. The shipment details contain order status like Shipped, Backordered, Cancelled or Error. If the order is shipped this web service returns shipment details like carrier code, tracking number, shipped date and shipment details at item level also. If distributor cancels the order then it gives the cancel reason also.

• These shipment details are updated at header and item level tables in DB for that particular order and also creates an entry in DB which is picked by web methods to store these details in central database.[1]

3.1.4 Technical Overview of E-Sample

All the communication is done between ST and distributor by exchanging WSDL files in web services. The reason of using web services is that it provides more secure and fast communication. For security perspective I used https and x.509 certificates and public-key cryptography.

Introduction of SOAP Web Services

- Web services are web application components which can be published, found, and used on the Web.
- SOAP(Simple Object Access Protocol) protocol is used to exchange WSDL files over the internet that contains the data. It is an xml file that describes the web service technically in a machine readable format.
- I used SOAP protocol because it is platform and language independent and only protocol which supports HTTPS.
- The SOAP WSDL file contains :-
 - 1. An Envelope element that identifies the XML document as a SOAP message.
 - 2. A Header element that contains header information.
 - 3. A Body element that contains call and response information.
 - 4. A Fault element containing errors and status information.[3]

3.1.5 Project Glimpse

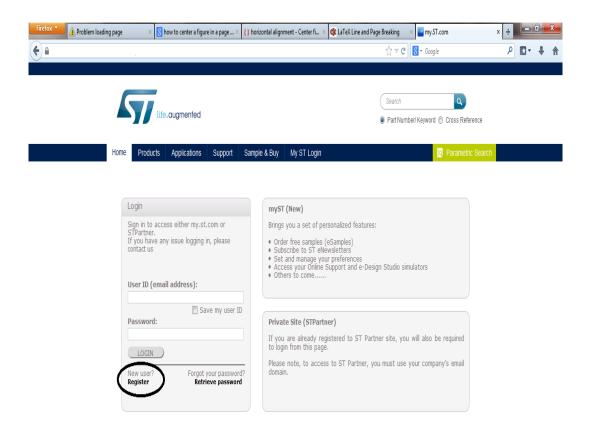


Figure 3.2: Register for new User

This is the first page where the new user can register himself and then allow to login.

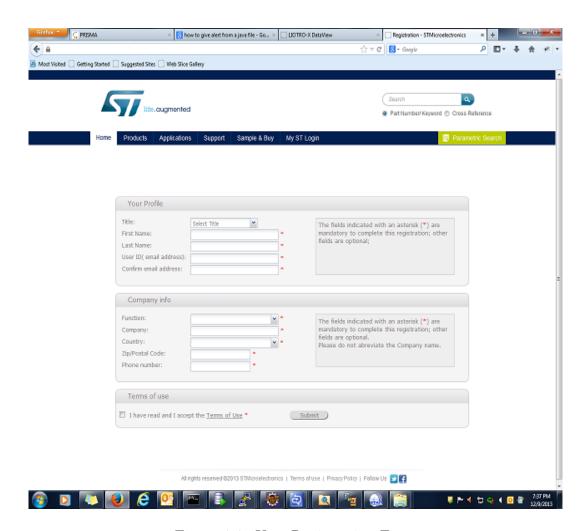


Figure 3.3: User Registration Form

User have to give some information like personal and company details.

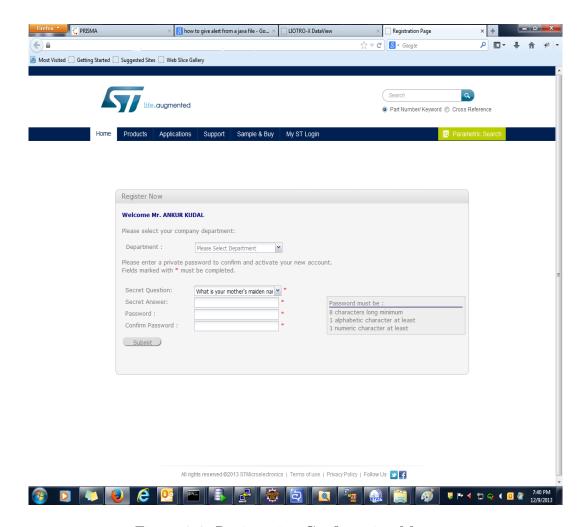


Figure 3.4: Registration Confirmation Message

After registration a mail is send on user's mail id which is given by the user at the time of registration. This mail contains a link which redirects on ST's web page for further registration process.

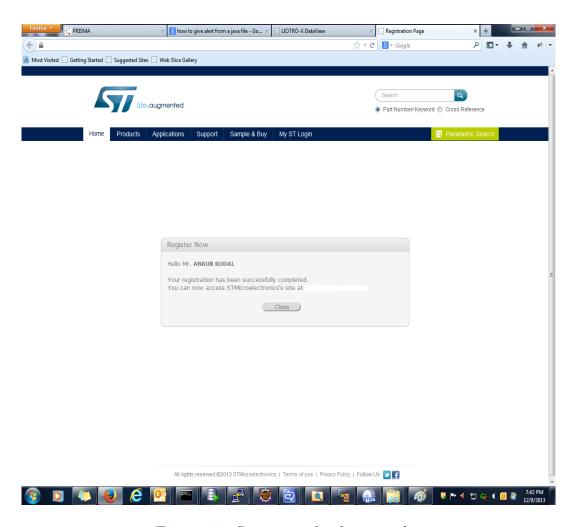


Figure 3.5: Steps to order free samples

This page shows the registration confirmation message for the user.

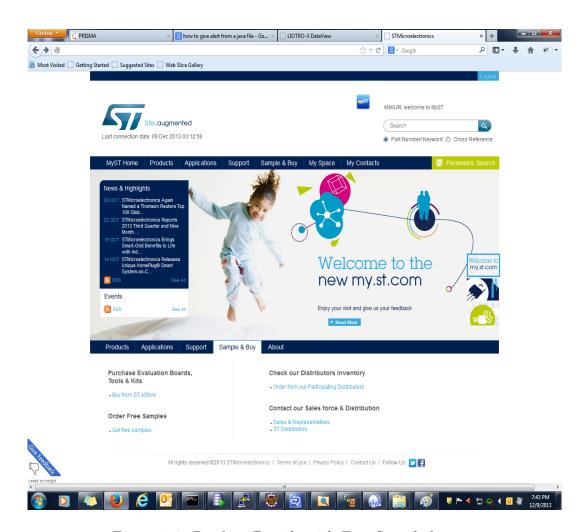


Figure 3.6: Product Details with Free Sample button

Then after login by the user there is a option comes of Sample & Buy from where a user can request for samples.

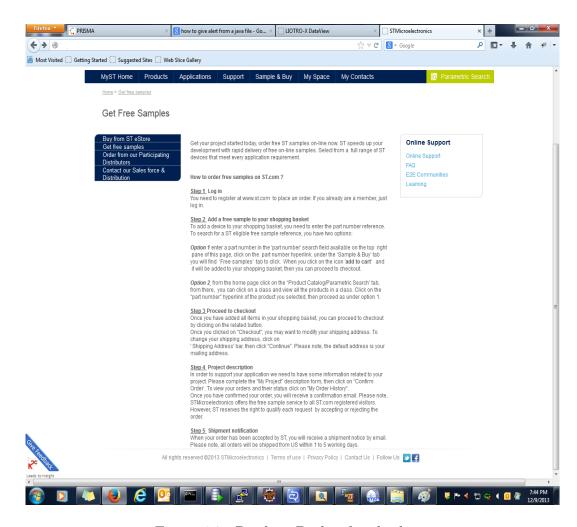


Figure 3.7: Product Basket for checkout

This page shows the steps to order free e-samples.

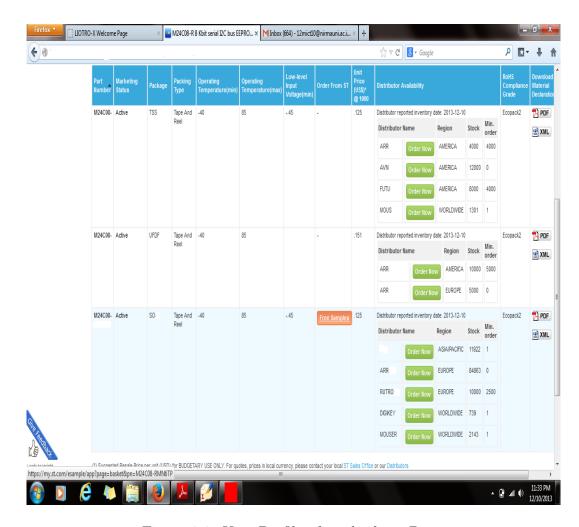


Figure 3.8: User Profile after checkout Done

User can enter the product part number or can search in parametric search for a particular part number. This page shows the details of a part number like part number is currently active or not and some product properties. From this page user can also order the product by clicking on Order Now button according to their region. If Free sample is available for a product there is button of Free Samples comes on screen and by clicking on that user can order free samples for that product. [7]

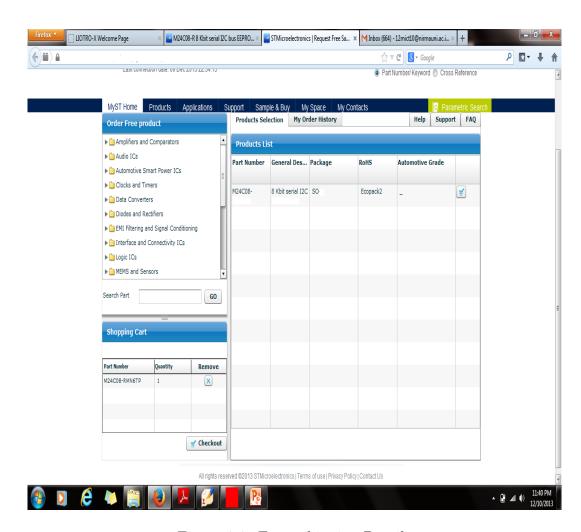


Figure 3.9: Enter shipping Details

After clicking on Free Samples button control redirects to this page where it shows a basket which contains the products for which user order for the free samples and ready for the checkout.[7]

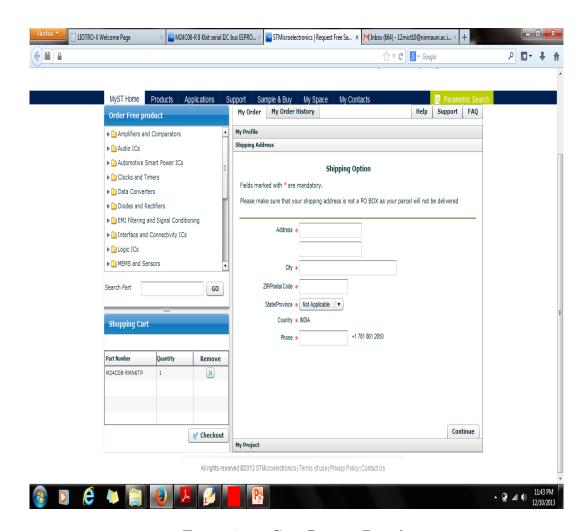


Figure 3.10: Give Project Details

After clicking on checkout shipment option page comes where user have to give the shipping details which can be different from their permanent address.

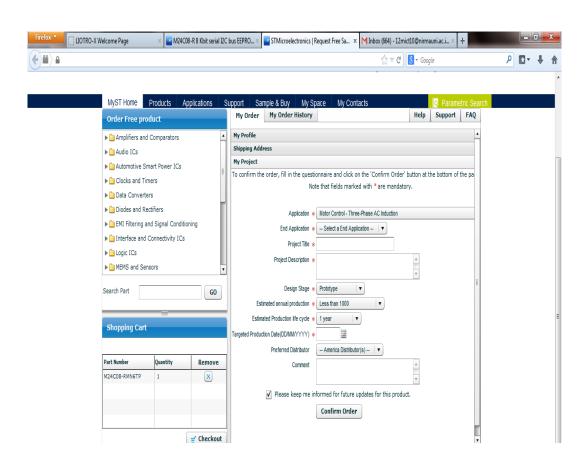


Figure 3.11: Order Confirmation

On this page user have to give some project details in which the user will use the ordered product.[7]

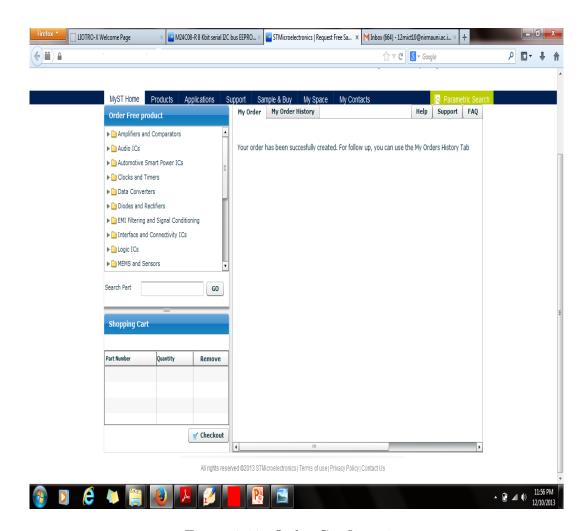


Figure 3.12: Order Confirmation

After giving all the details and clicking on confirm order there is a order confirmation message comes on screen.[7]

3.2 PrismaWeb (Forecasting)

- this module also known as 3 year core customer plan because it shows forecast business of upcoming 3 years of a customer.
- This application gives a platform on which it is easy to check business status for each customer like previous, current and future business by per product.
- To find the current and future status of growth of a company this application plays a major role because from this application they can find out on which customers company should focus more by analyzing their current and future orders on quarterly, yearly or monthly basis.
- From some market analysis and past order details this application shows how much a customer will order in upcoming 3 years. This data is given by I2DM in a file which is loaded in DB.
- This is a vast application here customers are divided into customer groups, products are also divided at group level, division level . This application gives complete information about the status of billing, backlog, opportunity and WIN. [2]

3.2.1 Current Working System

- In current working system data for each customer can be visible for field sales engineer(FSE) or sales manager(SM) level.
- User can see the data at customer group level or for a particular customer or for all customers comes under a FSE or SM.
- It also shows type of the customer like resale customer, OEM, ODM or distributor.
- Data of forecasting is editable user can enter value on quarterly basis for next year for each product and can add new product also.

- Data is fetched from DB for OEM(original equipment manufacturer) or for Distributor or for both.
- User can also add new Product BU and save forecast values for that.
- User can see the data by customer or by product BU using filter there is a proper facility to filter the data.
- If there is large amount of data user can export the data into an excel file.[2]
- Different types of data fetch from DB and display in grid.the types are:-
 - 1. **Billing:-** Billing shows previous year business given by each customer with product details. This gives how much billing was done for a product for each customer.
 - 2. **BIBA:-** BIBA is billing and backlog data that gives the information of amount of products which billing has been already done but yet not shipped.
 - 3. **PLAN:** PLAN gives the information that how much business will be given by each customer with product wise for the upcoming three years.
 - 4. **FORECAST:-** In forecast user can enter the forecast value on quarterly basis for the next year for each customer product wise.
 - 5. **OPPORTUNITY:-** If a new product design created by a customer by combining some design specification then this new design's revenue in upcoming years comes in opportunity data.
 - 6. **WIN:-** WIN gives information about how much revenue will generate in upcoming years for a approved design specification of a product given by a customer.[2]

3.2.2 Delegation in Forecasting

In forecasting users was a problem that suppose a other user is unavailable and it is require to see the data of those customers that comes under that user's FSE or SM. Then it is require to decide a delegatee for that unavailable user so that a delegatee can see the data on behalf of that user.

- For delegation we had taken a new table that contains the record for customer, customer group, sales manager, field sales engineer, activity status code and software user.
- There is a unique software user id for each user. We used this value to assign a delegatee for unavailable user.
- After assigning the delegatee forecast data of all the customers is fetched from tables for that absentee user by first at region level.
- If region is unavailable then data is fetched by SM or FSE.

3.2.3 Integration of CustomerVisitReport

Customer visit report is a new module added in Prisma Web.Customer visit report contains the record of how many times a customer/distributor is visited by a FSE in a week. This report gives information of how many times a FSE visited to the customer per day. FSE can visit to the customer maximum 3 times per day. This report also shows the POS and POP value of current quarter and next quarter. [2]

Features of CustomerVisitReport

- Users can see the visit report for current week and two previous weeks also.
- Users can add a new customer also with the existing customers.
- Here a FSE can see his core customers separately and can update their values also.

- Report also contains the distributor which is associated with a particular customer. User can also select or update the distributor for a customer from the combo.
- POS(point of sale) is a value that shows amount of products sale by a customer/distributor in current quarter and will sale in next quarter.

 POP(point of purchase) is a value that shows amount of products purchase by a customer/distributor in current quarter and in next quarter.[2]

3.2.4 Integration of Cross Region Visibility with PrismaWeb

- By Cross Region Visibility each FSE can evaluate the business of each of his customer who is in different customer group also.
- It shows all type of read only data like Billing, Plan, Forecast, WIN & OPP of previous, current and next year for each customer.
- User can further filter the customers by Sales Unit or by FSE if same customer group comes under different sales unit or FSE.
- User can also filter data by region wise and export data in excel sheets if required.[2]

3.2.5 Diff between FSE Dashboard & Cross Region Visibility

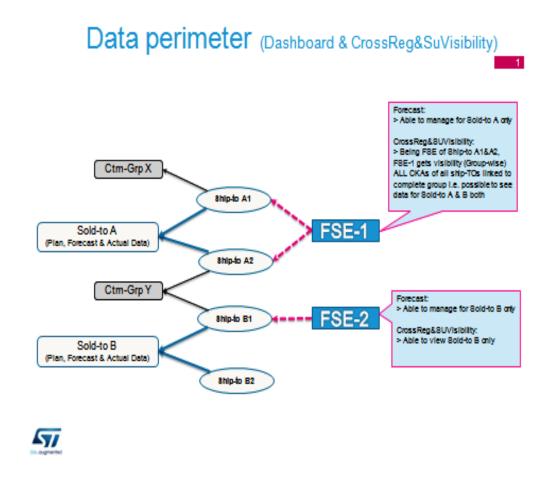


Figure 3.13: Diff between FSE Dashboard & Cross Region Visibility

3.2.6 Super User Functionality

An additional Super User Panel is added if a FSE/SM is configured as a delegate to give more search options.

• Provide additional search filter by sales unit, sales manager and FSE. if user is configured as a delegatee by region, sm, fse or by sales unit.

- Filters are interdependent with intelligent search so that no need to write full name or code it will start searching by just entering more than 2 characters.
- User can see data of other FSEs customers also.[2]

3.2.7 Integration of Distributor Cost Pricing List(DCPL) with PRISMA

- This module basically decides on what price product should available to the distributor.
- From this module a creater can suggests the new price for a product to the gatekeeper for a specific region according to the market condition in that particular region.
- Then a gatekeeper approves the request of creater for the new price of a product in that region.
- Basically this module is migrated from SAP-CRM to java web application to reduce the cost of SAP license.[7]

3.2.8 Technical Overview for PrismaWeb

For PrismaWeb the designing of web pages were done in ExtJS and Liotro-x framework with java script and CSS. For back end we used oracle sql10g.ExtJS is used because it is a open source framework with lots of new widgets and tools.

Introduction of ExtJS

- ExtJS is a Client-side, JavaScript framework for building web applications.
- ExtJS is Asynchronous and supports multiple languages.
- Extis has many widgets like message box, grid, window etc.

- It can interacts with the user and browser via EventManager, responding to the users keystrokes, mouse clicks, and monitoring events in a browser such as a window resize, or font size changes.
- In Extjs it is easy to Communicate with the server in the background without the need to refresh the page.[4]

Liotro-x Framework

- It is an Object Oriented component-based application framework which is used to create dynamic and powerful web applications.
- Liotro-x framework supports JSP/Servlet, Java 1.3 (since LX 4.4.x) and Java 5, JavaScript 1.3, HTML 4, CSS XML and Extjs.
- Litro-x supports the three tier architecture which is require for almost all web applications of ST.[5]

3.3 Distribution Requirement Planning(DRP)

DRP application is the DATA MODEL, which is used for configuring the full product network for a given customer of ST. The data model is explained in detail in next section:-.

3.3.1 DRP Process Flow

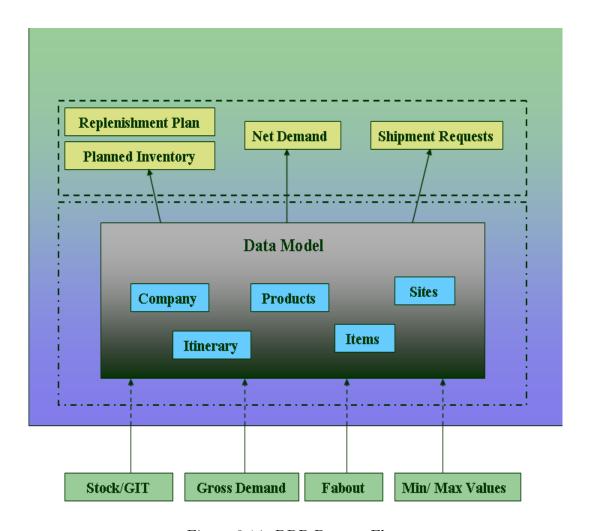


Figure 3.14: DRP Process Flow

The gross demand coming in from the customers is fed into the DRP system. Apart from the gross demand, the following information is also required by the DRP application for processing:

- Min/Max parameters (Targets Stocks)
- Stock/ GIT Information
- Fab Out from the production

The DRP application processes the above information and calculates the Net Demand. The Net demand, thus calculated, is sent to the Backlog Management (BM) system for further processing.

Also, the DRP application provides us with the visibility of the planned shipments from the supply location to the demand locations.[9]

3.3.2 Features of DRP Application

The DRP Application has the following features:

- Demand Netting over the Distribution Network
- Automatic Shipment Plan computation
- Projected Inventory level monitoring
- Shipments generation
- Min-Max computation
- Reply to Customer

3.3.3 Configurator Screen in DRP

Configurator page is designed to manage the configuration inside DRP. It facilitates users to define configuration dynamically. User introduce configuration dynamically and manage the configuration for product and site from Configurator Page. The major components of configurator are:-

- 1. Product Selector:- This is basically used to select the products.
 - User can select multiple products or can use various filters to filter the products.
 - It also gives options to the user to select his preferred products or all products.
 - User can also check which products are in allocation and which are marked as critical.
- 2. Company Id:- This is a drop down button which will display the list of companies (in case of super user it will display multiple companies otherwise it will display single company). On selection of company the list of products and sites will be populated based on the company.
- 3. Site Selector:- this is used to select various sites of company.no filtration available here.

4. Grid:-

- Grid will highlight existence of configuration in Yellow (Company), Green(Site), Red(Product) and Blue(Product/Site).
- On right click upon these cells user will get Delete and Open options.
- Delete will delete configuration for selected category and level after user configuration and reset configurator and Grid.
- Open will open configuration new window for selected category having Company/Product/Site in header.
- Export feature is also available on Grid.
- 5. Configurator:-This section is available to add/Edit data. In case of single selection It display corresponding data for editing.
 - Category/Sub category is displayed in tabs.

- Configurations will be provided as input items (Textbox/Combobox/Checkbox/Complex controls).
- On tab change Company tab expansion and Grid will change.
- While Ajax calls (Load/Search/Save/Delete/Grid Refresh) in progress entire screen will be disabled.
- Fields level has information icon besides which provides description on mouse over.[9]

3.4 Project Glimpse

3.4.1 PrismaWeb(Forecasting)

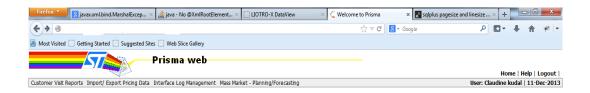






Figure 3.15: Home Page of Prisma web

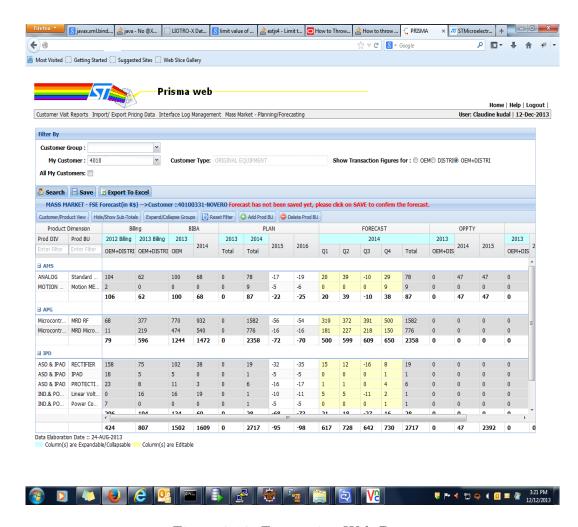


Figure 3.16: Forecasting Web Page

This is the main page for Forecasting which shows data of a customer. So after selecting a customer group or customer or both from the drop down list and clicking on search data of all type(billing, BIBA, PLAN, WIN, OPP and FORECAST) is fetched from the database and shows in Liotro-x grid. Here columns which are in yellow are editable to update forecast data for the next year for a customer. [7]

3.4.2 PrismaWeb(Customer Visit Report)

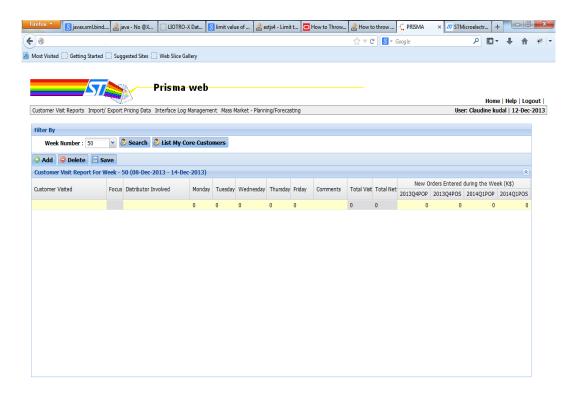




Figure 3.17: Customer Visit Report page

This page shows the number of visit(max 3 per day) by a FSE to the customer in a week with POS and POP values for current quarter and next quarter. Here FSE can add new customer and enter the details for that as well as can see the detail and update the details for the their core customers also.[7]

3.4.3 DCPL Home Page:-

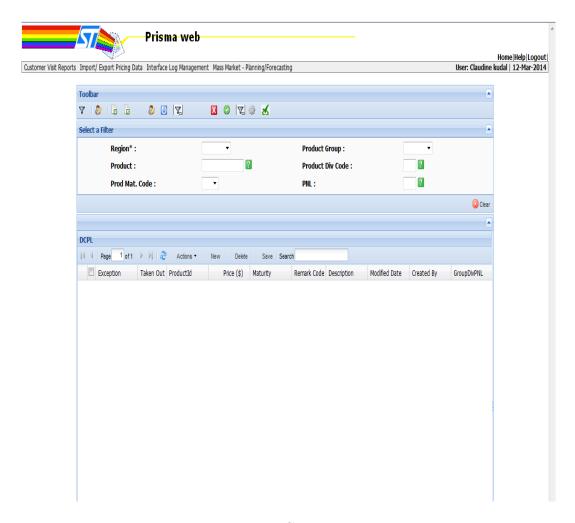


Figure 3.18: DCPL Main Page

3.4.4 GateKeeper window:-

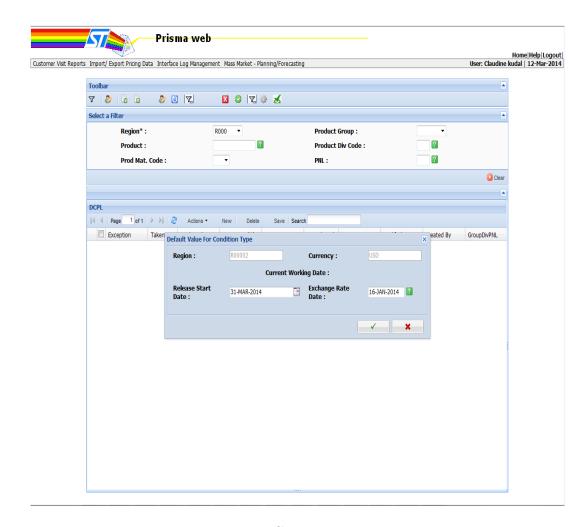


Figure 3.19: GateKeeper window

Chapter 4

Conclusion and Future Scope

4.1 Conclusion

At the end I would like to conclude that these modules plays a major role in the growth of the company. From these modules a company can find out which customer is giving frequent business and on which customer we should give more focus and also possible to check the demand of each product in market like which product is purchased more and which product design need some improvement. As well as it is possible make a transparency between, distributer and the customer.

4.2 Future Scope

Though the system is completed for the current requirements but its open for future extension. The future extensions are listed as below:-

- These applications could be more interactive and user friendly.
- Provide these platforms to non key customers also to gain more business from them.
- Performance of these applications can be improved by upgrading them on latest technologies like hibernate.spring,extJS5.

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