MODELING AN ELECTRONIC PORTAL APPLICATION

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Abstract: : At this stage of human society, companies must adapt to the latest information technologies in order to improve customer satisfaction and reduce costs. So I felt that by addressing electronic commerce portals I will be able to make effective demonstration of the new ways of relating to the client. In this paper we proposed first to review the portal concept with specific characteristics, types of portals, and then to put emphasis on the type of e-commerce portal. To achieve the portal we have chosen object oriented methodology, and we stopped the paper at modeling. The application that we intend to model is centered on orderes and customeres management and information about the products. The information collected is transmitted to the transport companies and after billing, to financial management applications that deal with accounting of transactions and payments.

1. INTRODUCTION

In the information society, catalyst factor for achieving those objectives in a short time is in the implementation of applications designed to serve current social and economic system. Today companies are faced with the need to exploit technology changing computer environments, in order to improve customer satisfaction and reduce costs. A successful approach to electronic portals is an effective demonstration of the new ways of relating to the client. Thus, by using e-business (like an efficient use of new information technologies in business, by developing an alternative channel sales, with relatively low costs) is made an individualized approach to client relationships and the IT using establishes relationships with incomparably greater number of clients, than traditional approaches.

2. THE PORTAL CONCEPT

The portal can be defined generally as a search engine that may include varied content or services. In general the portal is understood as a World Wide Web site intended as a starting point for users who connect to the Web or for visitors who intend to visit. Portals, regardless of type, have basically the same functionality, the variation seen between different types is only surface. Although the content, structure and presentation of portals can vary drastically depending on the design and needs,

infrastructure and mechanisms of portals are the same for organization-wide portal, an Internet call center, a B2B portal intranet, a extranet portal or a self-service portal.

Compared with static web pages, portals must provide basic functions such as aggregation, personalization, search, collaboration and security. The exact level of functionality of these basic services needed for a specific port may vary depending on the portal, especially when it comes to security, authentication, collaboration and personalization. Lately, the demarcation line between portals based on functionality begins to fade, becoming multifunctional and multi-purpose portals. The new generation of organization-wide portals will become the center of all-in-one, so, instead of maintaining separate portals with duplicate content and functionality for different user communities (partners, customers, investors, etc..) can reduce costs and complexity by creating a single consolidated portal, but still partitioned.

If the user has significant experience with such Internet sites Yahoo!, MSN or AOL, these sites can be considered public portals. Unlike public portals, open to all users, there are intranet portals, portals of organizations with web-based interface, accessible to the public.

Between public and organization-wide portals, accessible from the Internet, there is a significant boundary, depending on the type of business model. Organization-wide portals are specificto the organization and evolve around the organization they represent. The main mission of a corporate portal that is open to the public is to promote products, services, image and culture of the organization. In contrast, the express purpose of an Internet portal is to provide as much content as possible in order to attract and keep a large number of Web users.

Because public Internet portals cover a wide range of topics and also services of general interest, they are also called horizontal portals, corporate portals become vertical portals, because the purpose is narrow and restricted by the specific purpose of business.

The purpose of business intelligence portals is to allow managers and executives in organizations that are implemented to make timely decisions based on access to the relevant existing data in the organization. In consequence, these types of portals specialize in support for a wide range of types of information based on content indexing, cross-linking and search facilities to facilitate access and analysis. Business intelligence data available in these types of portals include financial data analyzed already, efficient supply chain, sales reports, market analysis, statistics of production, inventory status, trends and analysis of customer relationships for product support. In addition, decision-making and analysis, these portals contain a number of tools for analyzing business intelligence online analytical (OLAP), data mining and report generation. These portals will not remain strictly specialized portals, because corporations are moving even more towards the portals with XML facilities.

The ability to converge to a single portal, strengthened and directed towards many purposes, to be used both by internal users, as well as those outside the organization clearly depends on the organization's ability to maintain a strict division between communities of users.

3. E-COMMERCE PORTAL

E-commerce portals can be business-to-consumer and business-to-business. The term "B2C" stands for "business-to-consumer", a term often associated with e-commerce portals. A more realistic and representative approach would be to associate

B2C portals with all types of business-to-consumer portals, consumers would be the customers / existing consumers and potential ones. This would mean that B2C portals cover public self-service or call center portals. Also here the possibilities of these portals in terms of banks, financial services, travel reservations, utilities, etc might be considered.

Compared with other methods of marketing or direct sales, obtaining a competitive advantage through sophisticated B2C portal is relatively inexpensive, especially when a B2C portal will allow justification to reduce operations at a call center without diminishing consumer satisfaction. Everything depends here only by the innovation and creativity of companies.

In almost all cases, an organization that wants a B2C portal already has a website with information. A B2C portal will evolve from this first page by entering transactions and self-service functions. The need for authentication depends on the vulnerability of information subject to transactions or which are used for transactions.

B2B portals should be the future of electronic commerce and can be used for two different purposes:

1. interaction with existing partners, distributors and suppliers in all mutual aspects of supply chain management and customer relationship management;

2. identify and locate new business opportunities, together with new partners, distributors and suppliers of business.

We can have:

1. B2B portals specific to companies or B2B regions with a organization portal used to manage existing partners or the supply chain is quickly understood, most of the big companies already rely on B2B portals as means of rapid execution, efficiency and cost of business transactions;

2. "Public" B2B portals specific to industry or business, are the equivalent of B2B Internet portals.

B2B portals are used increasingly to provide more controlled access to selected ERP applications, so that partners can share information directly and dynamically updated (records billing, stocks, credit limits, production planning, etc.) without having to contact a representative from the organization to make the data available. Direct access to ERP applications improves productivity on both sides and speeds up the information exchange.

In this paper we aimed at making an e-commerce portal, designed mainly to facilitate access of small and medium companies to new technologies through online sales, namely to a platform that combines facilities to create their own website presentation, online trading, sending the offers, analysis and management processes required in the online environment, without requiring specialized knowledge, without needing large financial resources.

4. OBJECT ORIENTED MODELING OF AN E-COMMERCE PORTAL

4.1. Object Oriented Modeling

In carrying out this work we left the grounds that any system can be described by a set of views, in which each will be a full projection system description, including the particular aspects of the system. Moreover, each particular view will be described by a number of different charts containing information and particular aspects of the system. They are intended to describe the system through the perception of external

actors - users of the system, customized through the charts of the use case (use-case diagrams) and eventualy activity diagram (activity diagrams).

Currently there are several methodologies to achieve the object-oriented systems: Object Modeling Technique (OMT), Object Lifecycle (OL), Object - Oriented Analysis and Design (OOAD), The Fusion Method, Object - Oriented System Development (OOSD), The Moses Method and methodology for achieving information systems based on UML. In the modeling phase of e-commerce portal we used the OMT technology.

Modeling a system is an extensive task and therefore can not be described by a single graph defined entirely unambiguous, simple and understandable so that it will describe the functional aspects through which the structure static and dynamic interactions the related non-functional coordination / synchronization, reliability, location, organizational work-related activity.

In object-oriented modeling, there are three models:

➢ **Static model** describes the data structure on which the dynamic and functional models will be based, operations of the object model correspond to events of the dynamic model and functions of the functional model;

➢ **The dynamic model** describes the structure and highlights the decisions that determine control actions, calling features and change the values of objects;

➢ **The functional model** connects the static and dynamic models affecting attributes of the object model and pointing restrictions.

4.2. Modeling the portal

The application that we intend to model has as focal point of development customers and orders management and information about the commercialized products. The information collected is transmitted to the transport companies and after billing, to financial management applications that deal with accounting of transactions and payments. Sequence diagram overview of the main components of the application translates as illustrated in Figure 1.
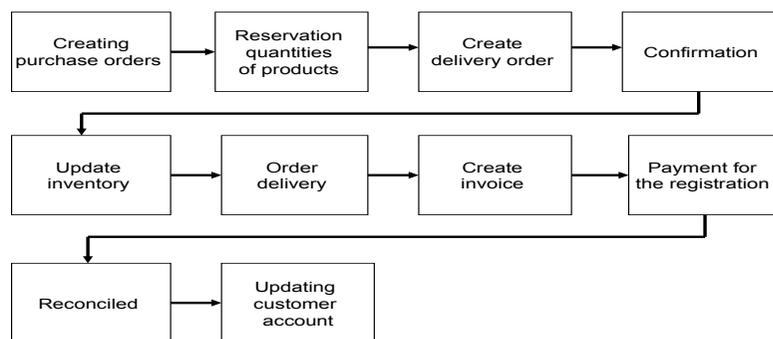

Fig.1. Application sequencing operations

The object model reflects the static structure of the application and its purpose is to reveal objects, object classes, attributes and operations of classes and associations between them. Base concepts of Object model – **object, class of objects and attribute**

- are used to represent it and the way used for representationis the *Association Classes Diagram – ACD*. It is basically a graph whose nodes are object classes and whose arcs are the links between objects and classes of objects. In figure 2 is represented the association between classes diagram for the electronic portal application, in which can be identified the classes of objects and associations needed to place orders:
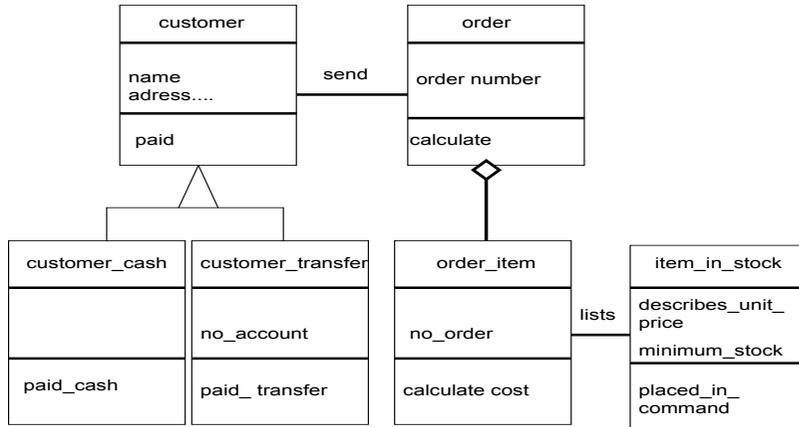

Fig.2. ACD for the placing of orders in the system

The dynamic model describes the aspects of the system that change over time, that sequencing operations and aims to highlight the temporal relations. The sequence of events and objects can be highlighted through the Event Trace Diagram - ETD which is used for the analysis of complex events in a problem statement, namely to represent scenarios showing actors (initiators of events), events and objects. How to read the ETD is from top to bottom and from left to right.

In general events shape between objects (instances of classes). Because an event activates an operationof the receiver object, the event must bear the same name as the operation to be addressed, names must contain a verb. For an event of the application a single scenario can be shaped, called the main scenario, and if the application is a complex event, in addition it can model multiple scenarios. Event trace diagram for example to launch a command through e-commerce portal, is represented in Figure 3.
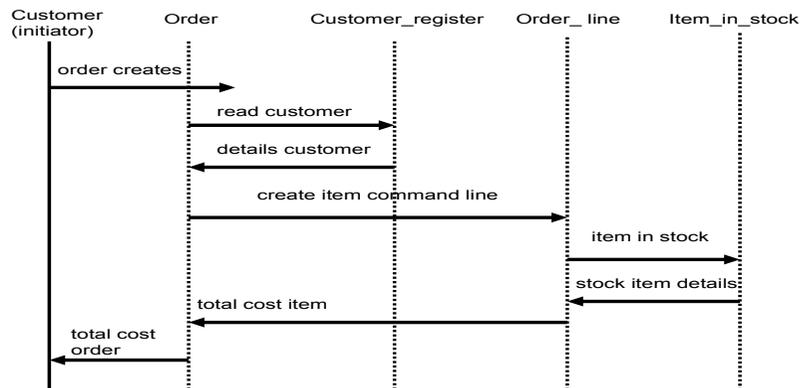

Fig.3. ETD for placing an order

State transition diagrams can be structured to describe complex systems, structuring achieved by generalization and aggregation. Generalization allows states and events structure to be arranged in an hierarchy that allow the inheritance of common structure and behavior, aggregation is equivalent to state competition. A dynamic model is a collection of state transition diagrams that interact with each other through shared events, dynamic model describing the control structure of the system. In the example considered earlier, state transition diagram for the class of objects "item_in_stock" is one of the following figure:
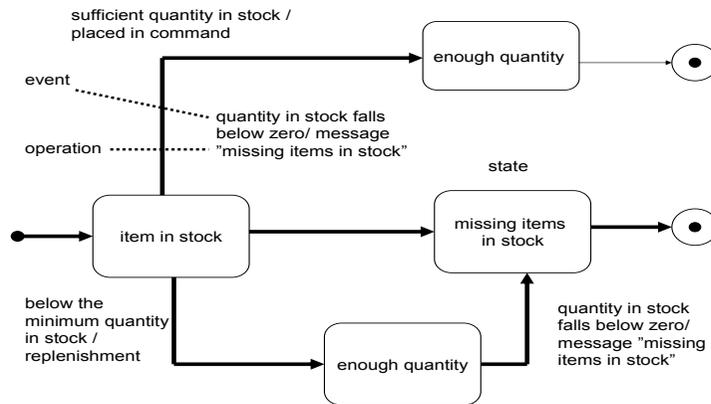
Fig.4. STD class of objects "item_in_stock"

Functional model purpose is to describe the system structure calculation showing how they are obtained based on the inputs and outputs of other intermediate values. Graphical way of representing the functional model is the Data Flow Diagram - DFD.

A data flow diagram is made of graphs whose nodes are processes and arcs are data flows and control. DFD processes should be implemented as operations of objects. Operations can be specified by mathematical functions, equations between the input and output, tables of correspondence between inputs and outputs, decision tables, structured pseudocode or natural language. An example of data flow diagrams for the application is represented in Figure 5, for registration of a supplier in the system.
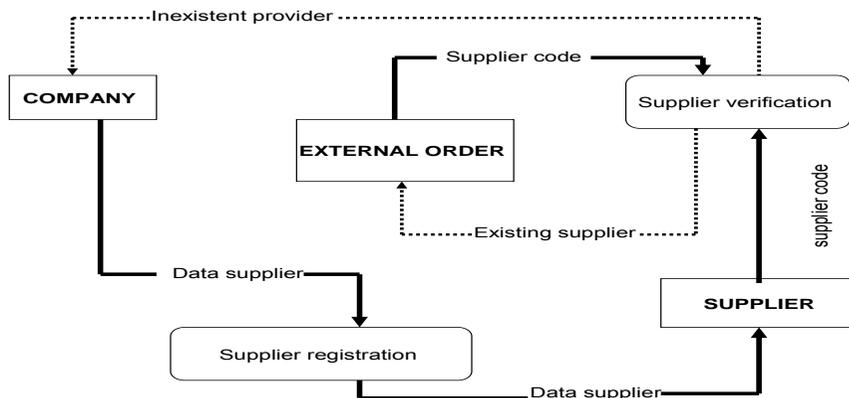
Fig. 5. DFD for registration of a supplier in the system

Application work flow diagrams were constructed with the above considerations, namely object-oriented methodology, development of application service oriented architecture in a distributed environment, a type design pattern MVC (Model-View-Controller) and using scoring conventions exemplified in Figure 6, organized as follows:

Fig.6. Convention marking in the application

In the following we intend to describe the main diagram of a module ordering e-commerce portal.

Diagram of an application launch in the system is made according to the following steps: After start an user is selected that will receive the application, if there is none available it will be automatically rejected. Otherwise, you will receive a notification and record request, then it will notify the user that has two options: either to reject the requests, sending a negative response, whether it will approve sending a positive response, the registred document moves to the next procedural step (Figure 7).
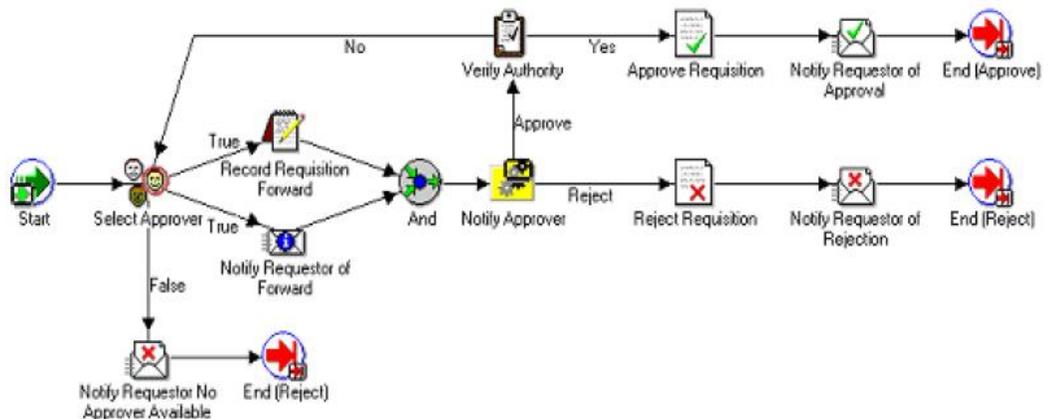

Fig.7. Flow diagram for approval of an application

It consists of the following: initialize attributes, obtaining buyer's name, the provider company, the type of approval required for changes. If the seller approval is not required, the question is: whether approval is necessary at least in terms of planning: if not, proceed to the implementation update and inform users involved in the transaction, if so, then the responsible person seeking to be informed on request. If this is not approved, the application will be rejected, otherwise it will follow the upgrade procedure.

If, in addition, the approval of the seller is required, the person responsible of the buyer is found, if this doesn't exists and there is no automatically level of approval set, the application will be rejected. The same will happen if there is the person responsible, but will not approve the changes, otherwise proceed to the implementation of the upgrade procedure which consists in verifying the existence of buyer: if any, it will be notified and then will proceed to verify the existence scheduler, which will be informed of the changes and ultimately the buyer will be notified of the outcome.
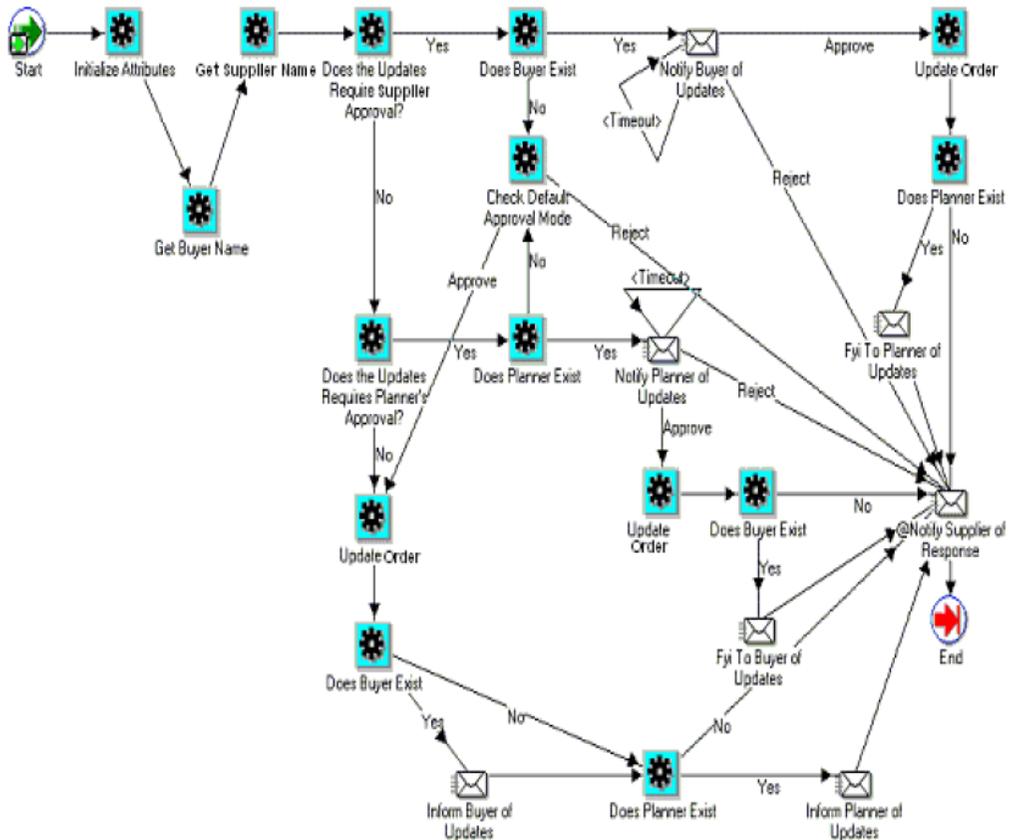

Fig.8. Flow diagram for the placing of orders for purchase

Flow diagrams in Figures 9, 10 and 11 illustrates the execution of the applet in a variety of application workloads. So when receiving a request for amendment and its approval (Figure 9) a notification response will be sent first to the seller, status will

change to request approved and then the details of the changes will be examined, then a response event will be iniatiated, but not before it collected the necessary data.
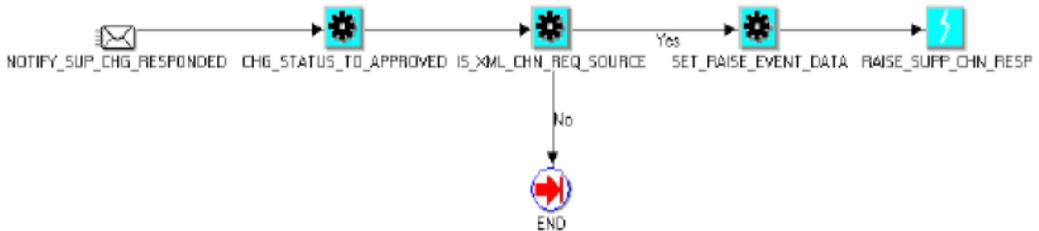

Fig.9. Flow diagram for notification of receipt and registration of an application

In Figure 10 the structure observed is followed for registration changes: changes to planning records are registered, the buyer is notified and if he agrees with them, his account will be changed accordingly, then the response process will be started and if not agreed, the execution is terminated. The changes upgrade procedure (Figure 11) consists of checking its approval and then the seller will be notified upon them, if necessary, if not proceed directly to the change itself and event execution in response to changes (notice).
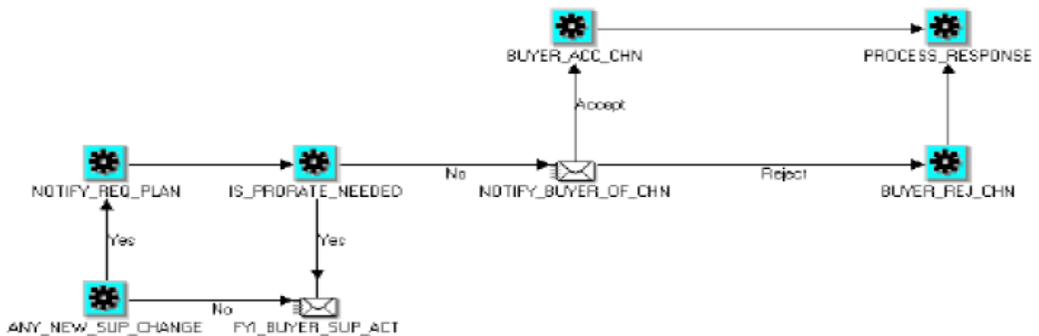

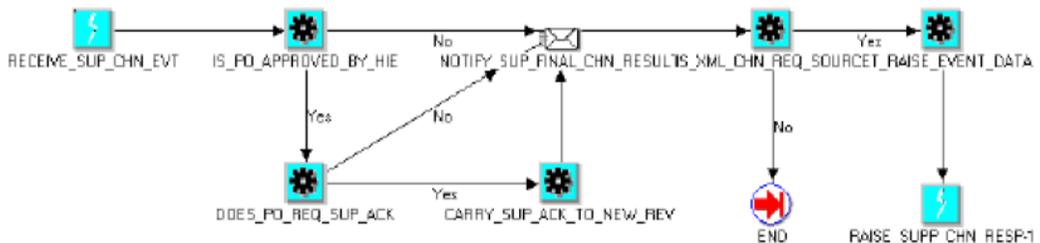**Fig.10. Flow diagram for requesting the change of the order**

Fig.11. Flow diagram for updating the command changes

In figure 12 is illustrated the flow diagram for the updating procedure of the delivery capacity, which consists in performing the following actions: initialize attributes, obtaining buyer's name, the planners, the type of approval required for changes.
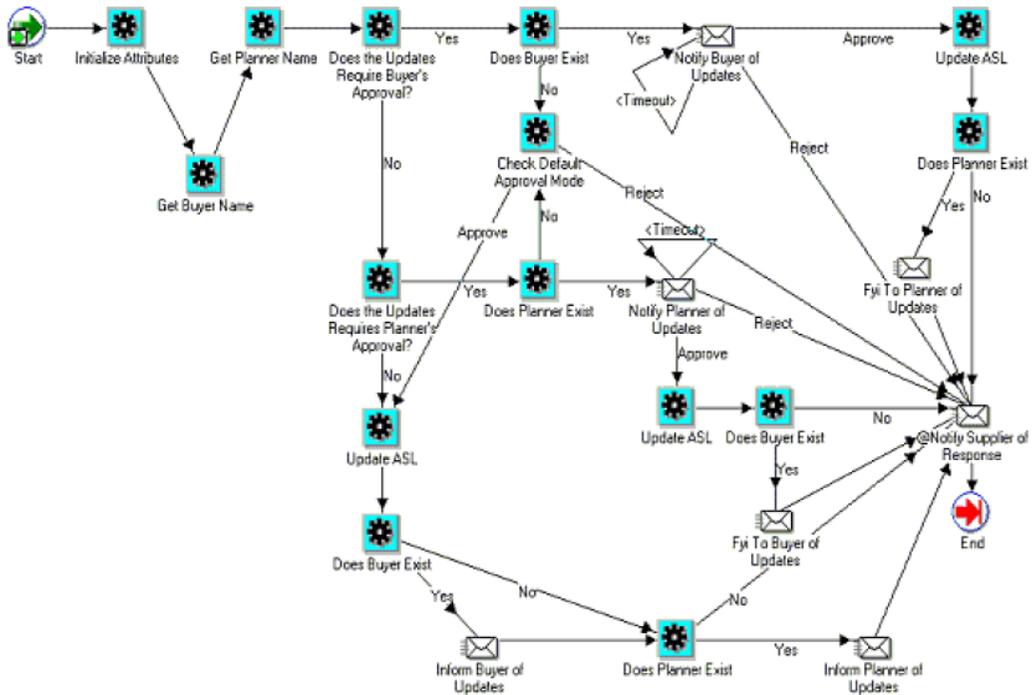
Fig.12. Flow diagram for updating the delivery capacity

If approval from seller or planner is not required it will proceed to the actual update, and if any exists they will be informed of its making, ultimately the seller will be notified of the answer.

If the approval of the buyer is required, the person responsible is found, if this doesn't exists and there is no automatically level of approval set, the application will be rejected. Otherwise either the person exists, whether a level of approval is set automatically, after it is proceeded to the actual update and notification of the planner, buyer and then the seller on the response.

If, in addition, the approval of the planner is required, and if there is no automatically level of approval set, the application will be rejected. Otherwise a notice will be sent and it will proceed to the actual update and will notify the buyer and seller on the final answer.

Approval or rejection notifications diagrams for customer requested changes are illustrated in Figures 13 and 14, the same structure is used for all notifications in the application: so after obtaining the name of the buyer it will be notified of changes in the system or cancellation of registration changes required then, if there is no other buyer to be informed, the procedure ends. In figure 13 is shown what happens if the changes were approved, and in Figure 14 is illustrated the case of rejection of amendments and therefore the cancellation of the request.
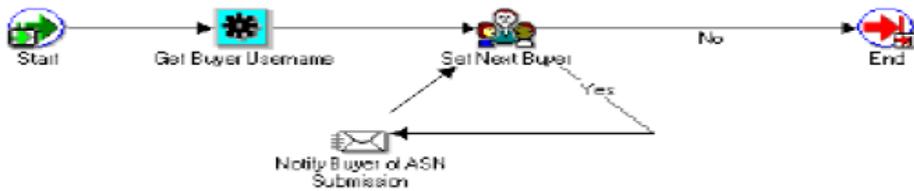
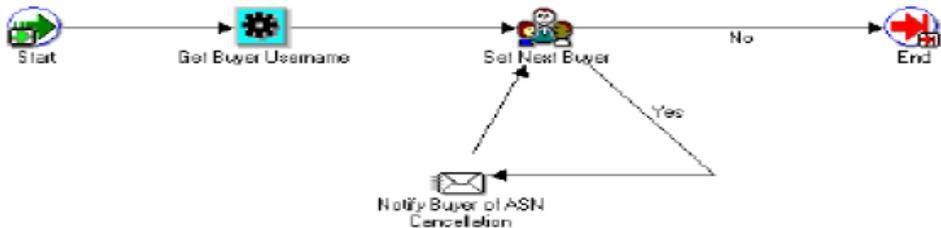**Fig.13. Flow diagram for client notification of approval**

Fig.14. Flow diagram for customer rejection notification

5. CONCLUSIONS

An e-commerce portal is specifically designed to provide the highest quality in online sales. In the long term we propose the following objectives:

- customer satisfaction and turning them into loyal customers;
- offering complete online commercialization services, including advice in this area, to be sure that that best suited product is purchased;
- strengthening the position on the e-commerce market;
- providing a team of professionals who treat each transaction with maximum efficiency and timely.

We believe in achieving a close and lasting partnership, and we are guided by a set of values that help us come to meet customer demands:

Customer orientation, the most important success is to have satisfied customers;

Professionalism - treating each partnership with customers and suppliers with utmost seriousness and professionalism;

Perseverance - offering the best service;

Morality - treating each client with respect, integrity, honor and dedication to make sure customers are satisfied with the services provided.

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