

A DESIGN BASED OF OBJECT PROGRAMMING OF A MODULE OF INTEGRATED ERP SYSTEMS FOR SMALL AND MEDIUM ENTERPRISES

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ABSTRACT. In this paper we present a module of integrated ERP Systems for a Small and Medium Enterprises [7]. Design of this module is based on Object Programming.

1. INTRODUCTION

Considering the requirements of the ERP presented in the first chapter of this essay we considered fit that the designed system should concentrate on the main functions of an enterprise, so it should include the following veining structure: marketing, financial, accountancy, human resources, production, summary (synthetic information for the managers), special functions (regarding the maintenance of the system).

We started with the design of the marketing module, because this is where all the primary documents are being drawn up (see table 1), that supply us with the data for the unique database that is the trait of an ERP [?], so it has a direct connection to all the other compartments of an enterprise.

We considered the following grounds that we thought that should be the basis in the design and concept of a modern computers system:

- The primary data should be collected and should be added to the database where they are obtained (marketing compartment, administration, financier, accountancy, etc).
- The results from the processing of the data would be distributed by the system to those who requested them, so that they could be used directly and as fast as possible.

- The necessity of permanent education of the personnel of an enterprise should be kept in mind, so that they could use the ERP as efficient as possible.

In our presentation we upheld the principles, the notions and the methods of the analysis and design orientated to the object of the computer systems, based on the foremost reference books and articles in this field.

Considering those succinct personal grounds, in the next chapter of this essay we shall present the flaws of the computer system in Comat SA Maramures Baia Mare and the requirements for the new integrated computer system that is being designed, wishing that this pattern that we shape could be applied to as many companies that have the same field of activity (marketing of large quantities of goods).

Keeping in mind the restrictions regarding the size of this article, we shall only present the general diagram of classes (figure 1) as we conceived it.

2. THE ACTIVITIES OF THE MARKETING OFFICE

DOCUMENT	STAGE	WHO	PURPOSE
Invoice (materials input)	creation	Supplier (partner)	Document accompanying the merchandise (materials input)
	processing	Store: clerk	Comparison with actual stocks
	processing	accountancy	transaction (together with the reception bill)
Reception bill	setup 2 copies	Store: clerk	Confirms entries in the system based on the invoice
	processing	Input administration: clerk (1 copy)	change in the current stock (recording of inputs)
	processing	accountancy	(2 copies) (together with the invoice) change in the actual stock
Delivery notice	setup 2 copies	Store: clerk	The invoice is made after this document
	processing	Sales department	(ex1) invoice

	processing	Store: clerk	(2 copies) release of materials (based on the invoice that has been received)
Send out invoice (materials output)	setup 4 copies	Sales department	Document accompanying the merchandise (output of materials) Setup of means of paying: the number of the Proof of payment
	processing	Store: clerk (1 copy)	release of the materials change in the actual stock
	processing	Beneficiary (partner) (2 copies)	Document accompanying the merchandise (materials output)
	processing	accountancy (4 copies)	change in the theoretical stock (recording of outputs)
receipt	setup 2 copies	Petty cash	Proof of payment added to the invoice
	processing	Client (1 copy)	confirmation that the invoice has been paid
	processing	Sales department (2 copies)	the number and the date in written on the invoice
cheque	Fill-in 2 copies	Sales department	(ex1) Proof of payment added to the invoice
	processing	Client	(2 copies - counterfoil) justification of payment
Transfer bill	setup 4 copies	Client's administration: clerk	Transfer of materials to client
	processing	Own administration: clerk (1 copy)	change in the actual stock (recording of the outputs)
	processing	Client's administration: clerk (2 copies)	change in the actual stock (recording of entries)
	processing	accountancy (4 copies)	changes in the theoretical stock (outputs in the giving administration and inputs in the receiving administration)

expenditure voucher	setup 2 copies	Own administration: clerk	Transfer of materials from administration to expenditure
	processing	Own administration: clerk (1 copy)	change in the operative inventory (record of outputs)
	processing	accountancy (2 copies)	change in the theoretical inventory (outputs in the accountancy and input in the production)

Table 1: Circulation of documents in the marketing department

In this paragraph we shall present a description of the movement of the documents related to the office that we are going to design, that is the marketing office.

We chose to present the data in the form of a table that is going to give us a perspective view over the activities and the documents within the compartment:

2.1. The flaws in the current system

- The existence of an interloper -the calculating office
- Batch computer systems
- In the office the employees don't handle the computers directly
- Duplication of information
- Documents are hand-made and then are input on the computer
- Additional source of errors
- The communication in difficult
- Between offices communication is only written
- The communication with business partners is also only written
- The managers find it difficult to keep up-to-date

- Managers cannot get reports on the spot

2.2. Requirements for the new system

Requirements regarding the input/usage of information: information is input where it is produced by the employee/clerk that is in charge of it. The employee must facilitate:

- To avoid information duplication
- On-line validations
- The handler of the information can take immediate decisions according to his attributions
- The information is used by any employee/clerk that is entitled to access/modify it in order to: make decisions (is the quantity of the current product/material available in storage?), processing of synthetic and analytical reports

Requirements regarding the system:

- client-server design
- data server- continuous data
- client workstations for each department
- graphical interfaces for the clients

Advantages:

- comfort, ergonomics
- pleasant view
- enhanced functionality
- on-demand reports
- access rights for the users

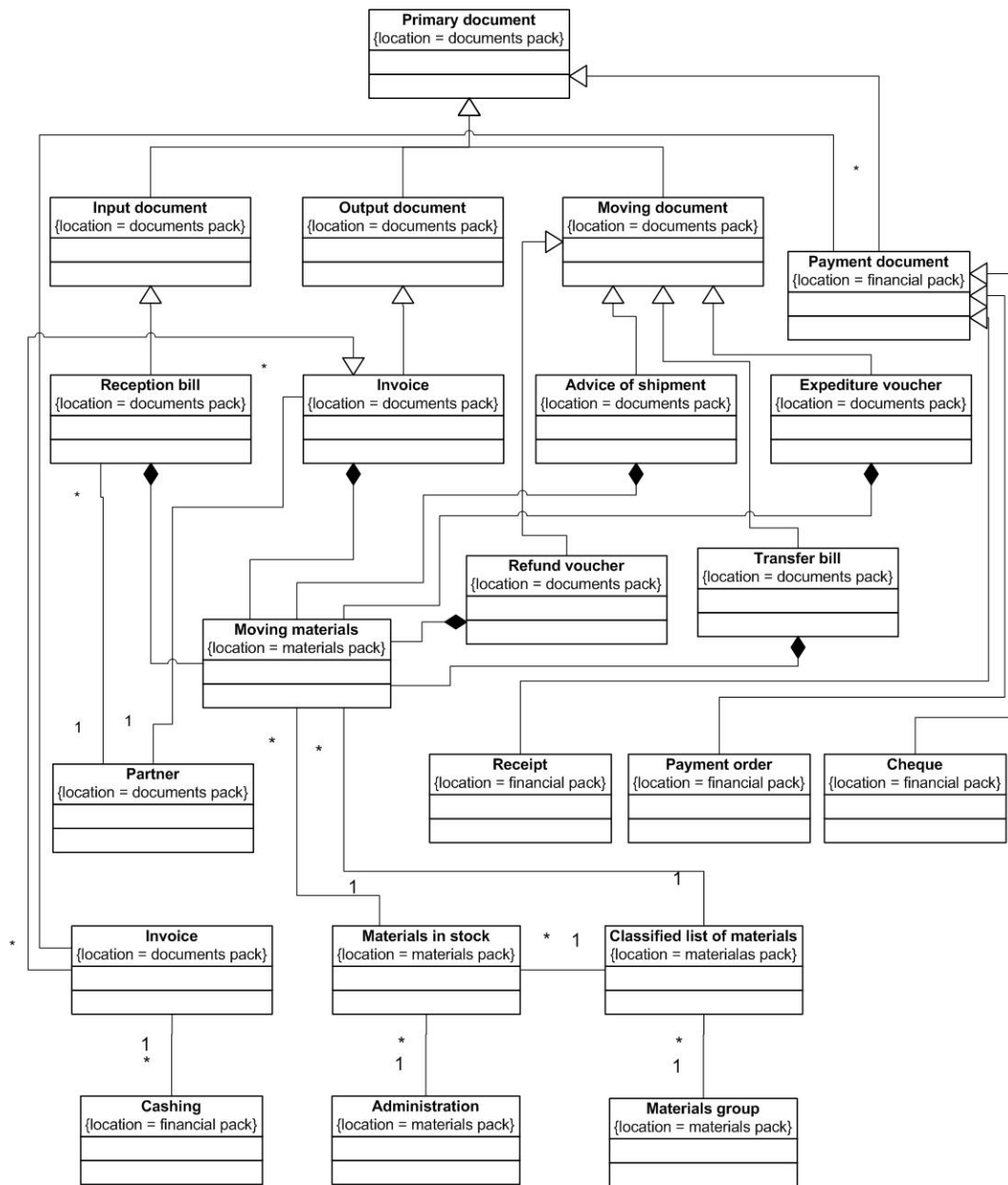


Figure 1: General diagram of classes

- roles, activities and rights in accessing and modifying the information
- mapping of users according on their roles
- passwords for each user

Examples of roles: accountant, marketing clerk, casheer

Requirements about the usage of information:

- increased efficiency
- less feed-back time
- less errors

Rules regarding the change of duties of the calculating office:

- the same duties, except: input of data, processing reports
- new duties:
 - maintenance of the network
 - install and upgrade of all programs on the client workstations
 - management of the database on the server
 - integrate the existing applications in the new structure
 - the training of regular users

CONCLUSIONS AND FUTURE WORKS

This diagram presents the marketing subsystem of an enterprise, in order that all the other diagrams that represent OP (financial, accountancy, personnel - human resources, production, synthetic report) will be presented in other articles.

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