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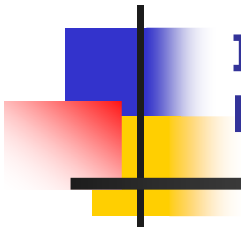

INTEGRATED SOFTWARE SOLUTIONS FOR CUSTOMER RELATIONSHIP MANAGEMENT (CRM)

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Abstract

- Customer relationship management is a strategy with high importance, actively adapted, of an activity field which follows a systematic construction and continuous maintenance of a long and profitable relationship with customers.
- The purpose of the paper is to make an analysis of the management systems of the company and methods by which these systems can be implemented in integrated software solutions, capable to manage the resources and the clients of a multinational company.
- The paper follows the script of the necessity and implementation of such software solutions for a mid-level multinational company whose main activity field is sale of materials and products.

Abstract

- Current development status in company management systems by tracking the level of development and the requirements of a complex management system for a real company today.
- Current stage in developing and implementing CRM customer relationship management / ERP Enterprise Resource Planning solutions.
- Application development of customer relationship management for a multinational company – presents all the stages of the project from the moment when it is taken by the developer. The planning stage is described, with the resources involved, the technologies used, the application structure, meaning the data base scheme, the files structure and the modules structure.

Management system. Structure

- Regardless the specific aspects of a business operation, the management system consists in the following components:
  - Organizational subsystem
  - Decision-making subsystem
  - Informational subsystem
  - Management methods and techniques subsystem
  - Miscellaneous management elements

Management system. Structure

- Management methods and techniques subsystem:
  - Management through objectives (M.T.O)
  - Management on projects (M.O.P.)
  - Management on product (M.O.Pr.)
  - Management through budgets (M.T.B.)
  - Management through exceptions (M.T.E.)
  - Participatory management

ERP solutions support for multinational companies

- The growth and expansion of the company inevitably lead to new markets of selling or purchase and to new geographical areas, each with its specificity. An ERP solution acceptable for such a company has multiple possibilities of multi-currency management and multi-language.
- In case of custom application, the developer must be able to assimilate the information concerning various international business environments.
- A very important feature is the portability between different hardware platforms.
- Methodology *master data management*, that can help ERP system to guarantee the provenance of the data both from within the company as well as from separate units, but also that these data correspond to the local requirements of regulations and it also provides the necessary consistency for distributed transactions in real time, which would lead to an increase in customer satisfaction, until operational efficiency and performance in business.

Integrated GRC Systems (Governance, Risk, and Compliance)

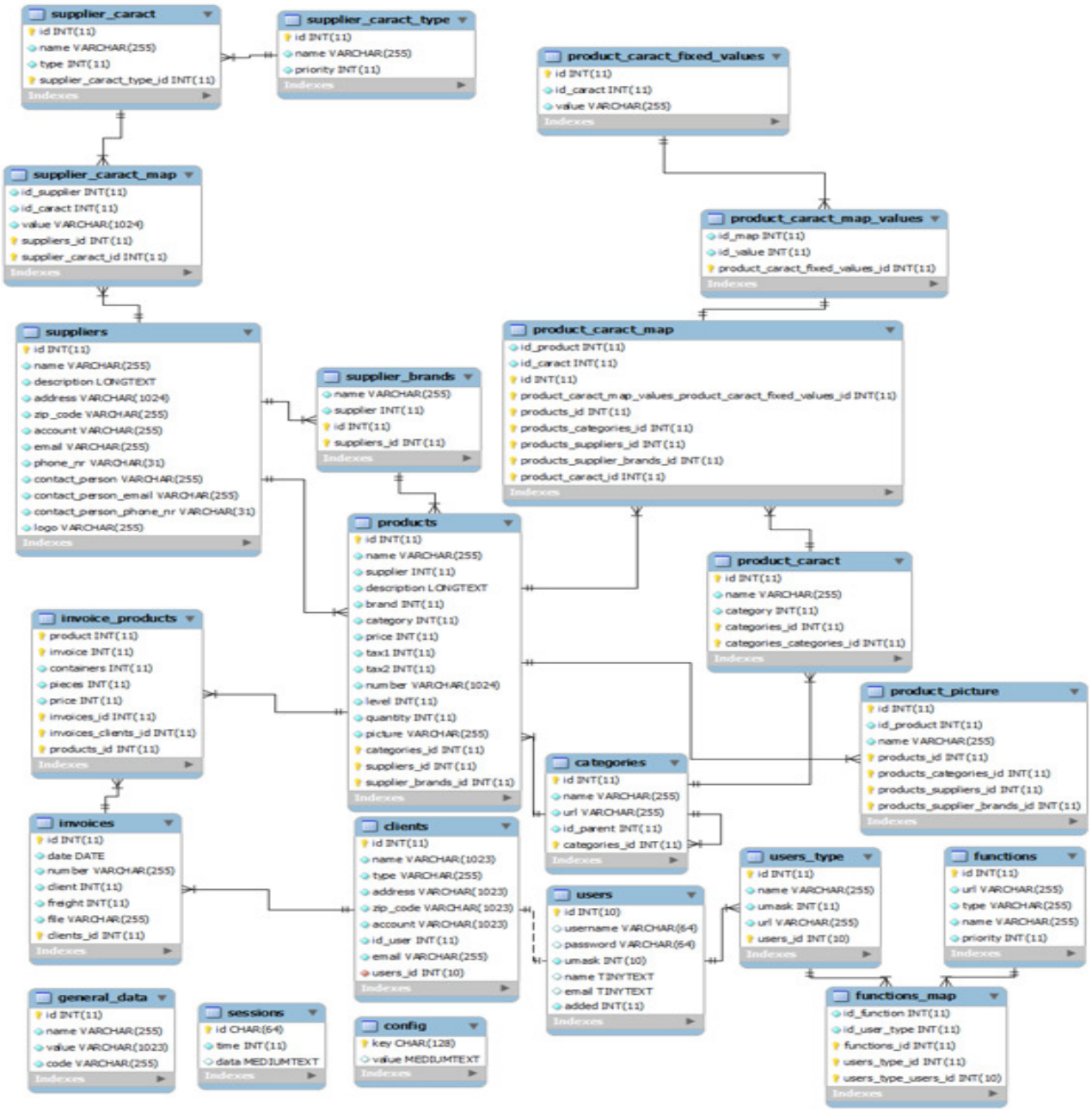
- Effective solutions of the type governance, risk and compliance (GRC), another component of a complex ERP system, help the companies and their employees to stay in compliance and ensures that employees on all levels of the company are aware of the risks associated with non-compliance.
- Auditors', regulators', customers', and last but not least shareholders' expectations are rising considerably in connection with the protection of information against threats of piracy, fraud and sabotage .
- ERP systems control most of the information that could be in danger.

Management application structure

- The following factors were taken into account while designing the template:
  - **Usability:** usability is the most important principle when it comes to designing an application, especially a web application.
  - **Visual balance:** Each web design element (pictures, text, and white space) has a very high visual impact. To create a trial balance from beginning to end as, any Web page must have header and footer section. This creates visual landmarks for the application and facilitates navigation within the application.
  - **Proportions:** Psychology and physiology analysis proved that human perception tends to favour different ratios between length and width.
  - **Web application template** consists in 3 main components that can be found in all the screens of the application:
    - **Header**
    - **Main Section**
    - **Sidebar** -The content of this section is generated dynamically depending on the user who is logged in.

Data base structure

- The database used in the application is MySQL, on InnoDB engine
- This configuration was preferred because of the possibilities given by the InnoDB engine to use foreign keys constraints and cascading delete entries.
- MySQL is a relational database management system.
- It is a database, composed of tables separated to a certain extent, presenting different fields, even if they are part of a database .
- Each table contains entries that are made of fields.
- The design of the database was performed using MySQL Workbench program .



Application file structure

- The application makes use of a structure of MVC type (Model View Controller). This architecture allows the use of inheritance in object-oriented programming to create functionality from the highest level of generality to the highest degree of particularity, without having to repeat the methods.
- Thus, at the beginning, each HTTP request is redirected to the index.php file in the root of your application, by using a .ht access file. After this, the requests are processed using a controller, which, depending on the url that has been requested, appeals to certain classes and methods.

Application file structure

- The principle of operation is the following: once the file index.php is appealed, it includes multiple files and classes, among which the following:
  - config.php – keeps the connecting data to the database
  - db.class.php – instantiates the class database, creates a connection to it and allows calling to optimized methods to access data.
  - controller.class.php – it's the controller that appeals a certain class and a certain method according to url
  - session.class.php – creates the session, in case it doesn't already exist and allows appealing some methods that can save session variables in database, in the implied session of the respective user.

Application file structure

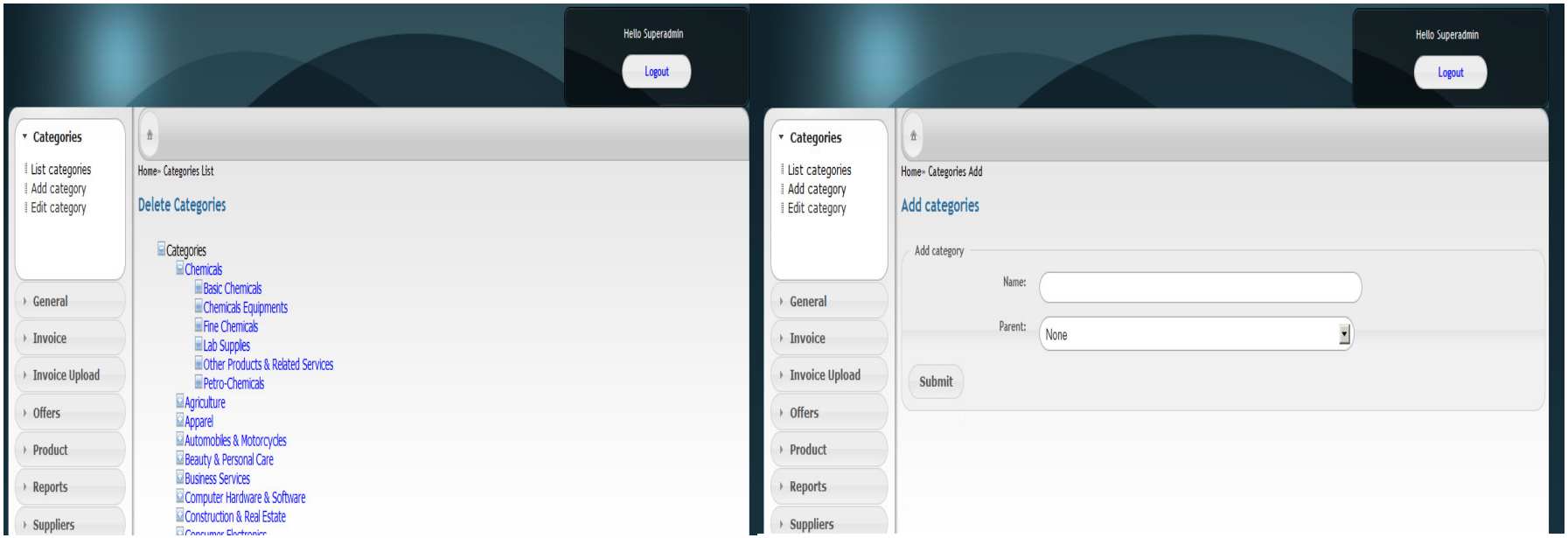
- The controller passes the URL after the "\" character after which it interprets in the following way:
  - If the first particle after the first / after the domain name is a class, then it goes to the respective class in models folder.
  - If this particle does not represent a class, then it is interpreted as a method of the base class *home.class.php*.
  - If the particle is not found as a method either, then notFound() method is used, which returns an error code 404.
  - If the first particle is a class and there is a second particle, then the second is interpreted as a method of the respective class.
  - Once the class and the method established, the rest of the particles are interpreted as parameters of the respective method, simulating in an elegant manner and SEO –friendly sending the parameters through GET.

Application module structure

- Drop-down menu (located in the side-bar on the left) can be accessed by all users of your application, with a different set of features, depending on the role assigned to the users. We shall briefly present the role of the main functionalities.
- The menu consists in the following links:
  - General
  - Categories
  - Invoice
  - Invoice upload
  - Offers
  - Product

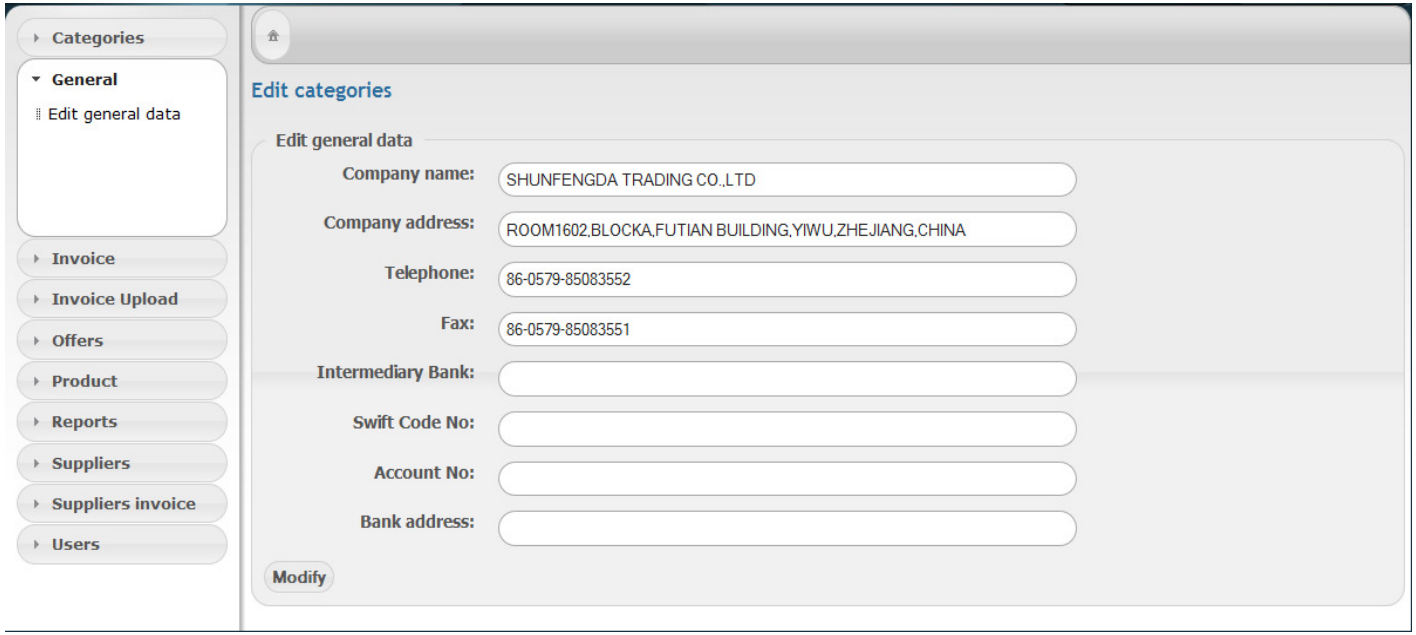
Module Categories

- This module allows you to add, edit, and delete categories of the products. The application allows you to create an unlimited number of categories in a tree-like structure, on an unlimited number of levels.



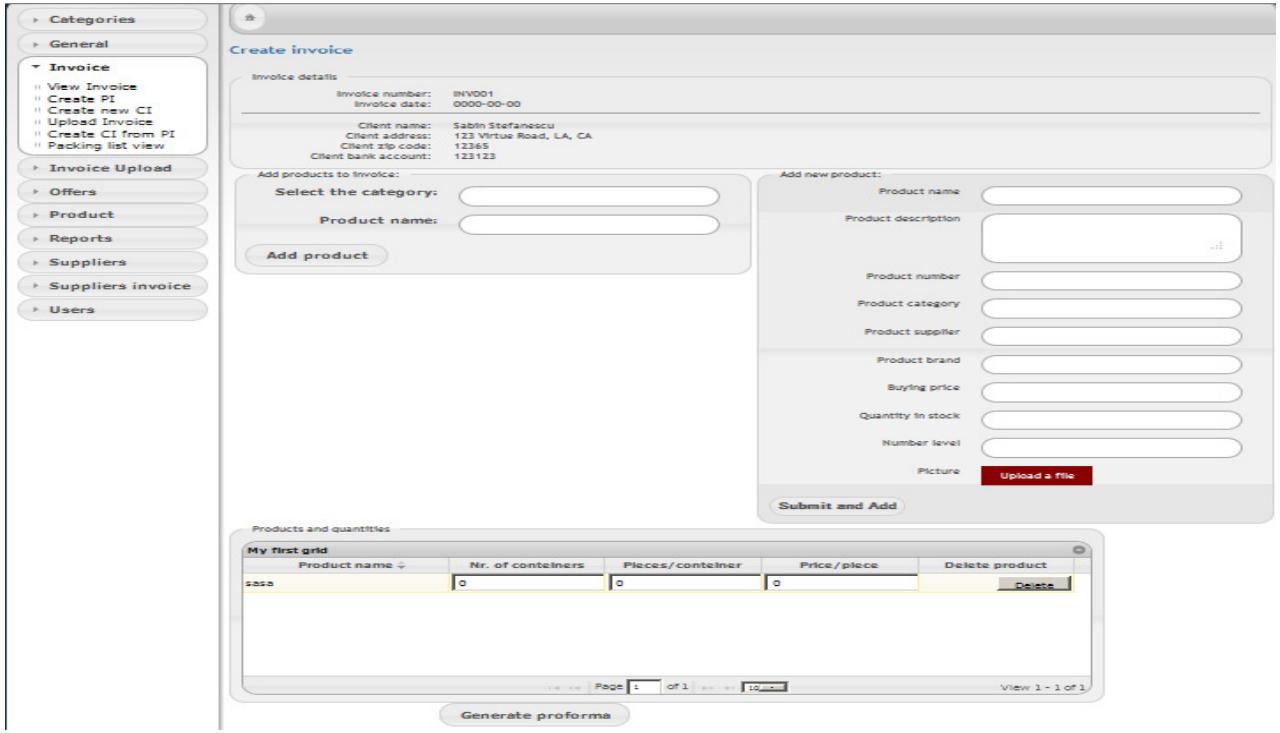
General settings module

- This module is a relatively simple one in the context of the application, which allows the administrator to set the billing data for his own company. These general data will appear on all invoices, proforma, tax and packing-list. This type of module is very important, because it gives the application a flexibility that is needed when there is a change in the structure of the company, or when you change a name.



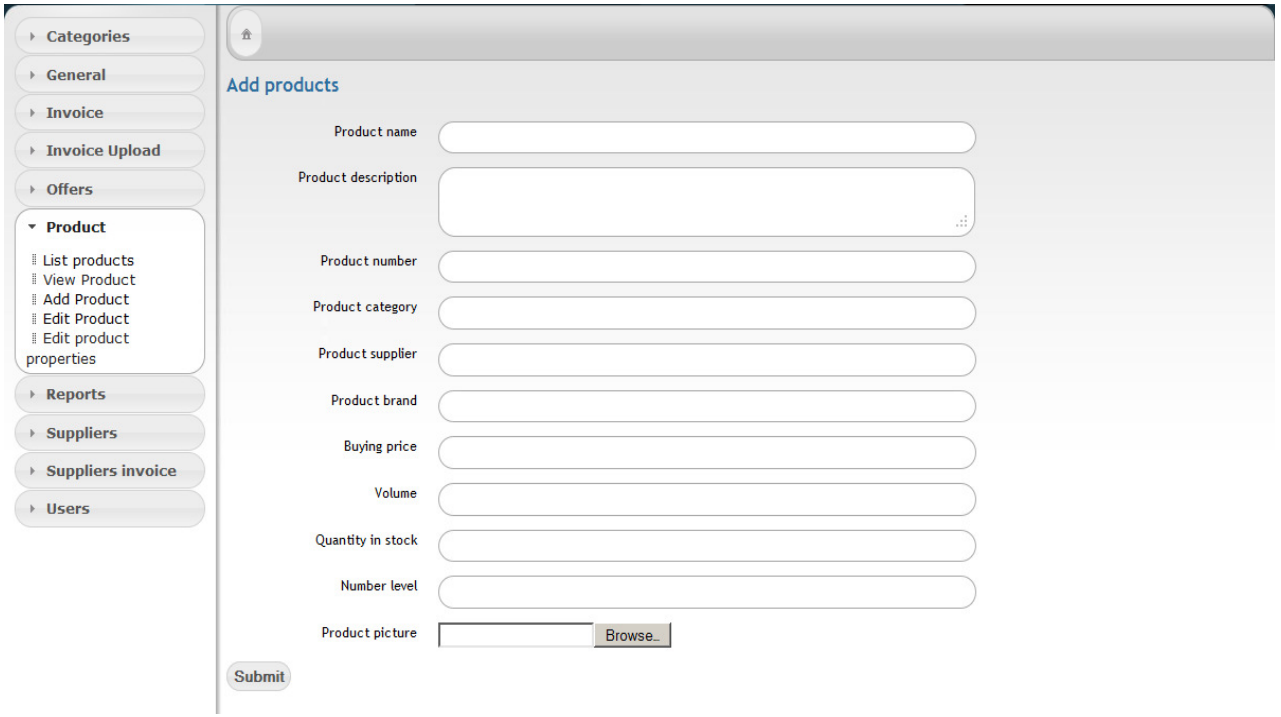
Invoices generating module

- The procedure of generating proforma invoices and transforming them into other documents necessary for the international trade is dynamic and very easy to use, in order to facilitate the use of the forms.



Products Module

- The module for product management is one of medium complexity. The products are related to categories and manufacturer by foreign key. They are also related to the brand, which is a property specific to each manufacturer. The form of adding products has to be extremely easy, as the products are entered into the system with a very high speed



Conclusions

- The way by which miniaturization of computing power and lowering the price of mobile data transfer have changed the business world is still little known and studied. Managers are still at the stage of studying the possibilities of keeping up with this technology, advanced yet accessible.
- The management software applications must meet two main functions: to provide managers the information they need in real-time and provide customers the offer of one's company, before customers can appeal to competition.
- The present application was developed bearing the objective of modernizing a company that develops faster than its managers could monitor it. Although the initial specifications did not provide for this, the need to optimise application for mobile devices arose; to use it to see the prices of products which they are interested in.

Further developments

- In order to meet customers and operators needs, the application will undergo in the near future a number of changes to facilitate access to information:
  - Creating an application for Android and iPhone which will allow operators access to the application data from their mobile phone to check in real time the prices
  - Creating RSS feeds in order to facilitate the transposition of products on customers ' websites
  - The possibility to create online stores on key, directly on the server where the application is, with the possibility for customization. The shops will be useful for small customers who do not have site and who want to supply their customers via Internet
  - Ways of integration with various other software
  - Advanced reporting modalities