

# **ELECTRONIC COMMERCE**

*Report produced for the EC funded project*

*INNOREGIO: dissemination of innovation and knowledge management techniques*

by HELETEL Ltd.

J A N U A R Y 2 0 0 0



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## 1 DESCRIPTION

### 1.1 What is the technique

Electronic commerce activities fall in two main categories: The business to business and business to consumer categories. The business to consumer relation is carried out normally by systems that connect users to the company's web site. The transaction then is routed from the Web to the company's legacy system. This kind of systems is referred to as "electronic shops". The business to business is carried out by EDI and middle-ware systems.

The mode of operation that is going to be developed consists in developing an "electronic shop", which is EDI enabled. This shop will offer a number of services which are:

✚ **Dynamic Product Catalog generation.** With this service the customer of the shop can view categories and product lists in any order he chooses.

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✚ **A customer shopping basket.** This service offers the customer a way to collect products that he can order in a later time.

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✚ **Order Processing.** This service handles on line orders according to specific business rules.

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✚ **Payment options.** This service handles payments by connecting the system to the bank's payment system.

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✚ **Special offers and business news.** This service offers the customer the opportunity to view the latest business news and special offers in the company's products.

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- **Search engine.** This service offers extended search capabilities to the eshop customers, searching dynamically the database through the browser in a consistent and efficient manner.

- **Administration Service.** A control center and content management service offering site administrators centralized administration and content management of multiple commerce sites.

✚ **Information exchange.** Enables applications to exchange information using an EDI system with the electronic shop.

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### 1.2 Objectives of the technique

The main objectives are:

- ✓ To make business build customer loyalty, create an efficient channel for transactions with its customers (the distributors and suppliers included), and deliver their message in an increasingly global market.
- ✓ To support the marketing of products and services both for horizontal and vertical business areas in the Internet.
- ✓ To capture the attention of customers and partners with on line promotions and advertising.

- ✓ To transact business on line, with secure order capture and route EDI transactions over the Internet directly from the web application.
- ✓ To provide the customers with the highest level of security ensuring that each transaction is delivered.

### 1.3 Description / structure of the methodology

The development of the method described above follows a certain methodology, which has the following main axes:

☐(1) The first action to be taken of is to analyze how the business logic is, at the time of the system development. This analysis will identify the needs to be addressed, the list of the products that can be promoted and the system requirements in hardware and software. Finally the exact timetable of the implementation and delivery of the project is set.

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☐(2) In the next phase, all the appropriate installation of the related software is done, any changes of the existing database schemas take place and the resulted prototype adjusted to cover the needs of the company will start functioning.

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☐(3) The final step consists in doing the final tests to ensure that everything works properly, fine tune the system and then deliver it to the company.

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### 1.4 Expected results / benefits

The most important benefit of this method is that it can keep companies from being thrown out of the game. A well-conceived web site and a strong commerce application put the company on equal footing with larger corporations. The company can easily compete on quality, price and availability.

Exchanging transactions electronically, without human intervention, collapses the time it takes to complete each process in the supply chain and ultimately reduces overall cycle time. Thus a company can produce more without increasing overhead.

A new way of doing business is promoted. Vendors and suppliers can access product specifications, order details, confirmations and updates anything they need to complete a transaction, all without the help of customer service or sales support.

This mode of operation gives customers total control of the sales process: they can now easily choose from all products (better than a cumbersome catalog); get up-to-the-minute, accurate product and inventory data; and shop anytime they like. Plus it's cheaper and more convenient. The company will also build customer loyalty because they'll appreciate the way it does business.

This mode of operation promotes services and electronic commerce through a modern, quick, flexible and fully secure environment.

A 24hour store where anyone with access to the Internet can order or buy products any time he wants.

### 1.5 Characteristics of firms / organizations and service providers

A number of software development firms are actually involved in the development of products to conduct business electronically. These products are competitive to NetMarket and are exposed here, for the reader to form a view of the business environment for ecommerce products. To mention some:

**IBM**, a company that has managed to lead in the creation, development and manufacture of the industry's most advanced information technologies, including computer systems, software, networking systems has produced Net.Commerce, a tool for electronic commerce.

Net.Commerce enables business to quickly, easily and securely conduct electronic commerce on the World Wide Web. It helps companies integrate existing business process and legacy systems with the Web as well as grow new Web based business. It is scalable, comes complete with catalog templates, wizards and tools that help the effective building of a commerce site.

Another leading company, **Netscape Communications Corporation**, offers a full line of client and server software, development tools, and commercial applications to create a complete platform for next-generation.

Netscape has created Commerce Server, server software for conducting secure electronic commerce and communications on the Internet. Organizations of all kinds can use Netscape Commerce Server to educate the market about their products and to conduct electronic commerce over the Internet's World Wide Web. Electronic retailers can sell everything from music CDs to fine wines. Financial institutions can collect credit card applications or enable customers to trade stocks online. Publications can offer subscription-based and advertiser-supported services electronically. In addition, the forms capability of Netscape Commerce Server enables businesses on the Internet to gather customer feedback, conduct market research, and build extensive customer databases quickly and efficiently.

**Microsoft** has created products that include operating systems for PCs, server applications for client/server environments, business and consumer productivity applications and Internet platform, and development tools. Microsoft Site Server Commerce Edition is a comprehensive Internet commerce server for engaging customers, transacting business, and analyzing eCommerce Web sites. It enables the sale of goods and services to customers and trading partners. Promotes and merchandises products dynamically, with specialized billing, payment, or accounting systems.

**Oracle** Corporation is the world's second-largest independent software company. A leading technology partner to successful companies in nearly every industry. Oracle's products include the industry leading Oracle database, development tools, and Internet-enabled applications for customer relationship management, manufacturing and supply chain, finance and human resources. Oracle offers a complete e-commerce product suite, which addresses each phase of customer relationship management.

This suite includes *iMarketing*, which is a new online marketing application, *iStore* which provides a powerful environment for creating storefronts, *iBill & Pay* that is an open-standards-based payment solution and *iPayment*, which is a complete electronic payment software solution.

## 2 APPLICATION

### 2.1 Companies that have applied the technique

Nowadays many companies have applied the method described above and in the future many more will.

The most popular company, where this mode of operation has been applied is **Amazon**. Amazon.com opened its virtual doors in July 1995, with a mission to use the Internet to transform book buying into the fastest, easiest and most enjoyable shopping experience possible.

Today Amazon.com is the place to find and discover anything anyone wants to buy online. Ten million people in more than 160 countries have made Amazon the leading shopping site. In Amazon.com anyone can search for books, music videos, browse extensive catalogs of products, receive the latest reviews of new titles in any category, become an Amazon.com Associate and earn money by selling books, CDs, DVDs, and other products from his web site.

Another example is **Bosch**. Bosch is one of the world's leading manufacturers of power tools, household appliances, automotive parts and communication equipment. They chose to use this mode of operation to streamline and web-enable their order process system in several divisions. The key to success was the understanding of Bosch's business and heterogeneous computing environment, which requires mainframe integration.

**Hewlett Packard** is our third example. Hewlett Packard's e-products Web site incorporates e-commerce technology, which helps the computer giant market and sell enterprise servers to ISP's, and tier-one resellers. The solution features a unique configuration tool, multi-currency pricing, custom catalogs, global content management and the potential help HP save in excess of \$100 million.

The last example is **Celestial Seasonings** a leading vendor of specialty tea who introduced a new line of herbal supplements through their online store. Through the electronic shop the company managed to customize the product catalog for Teashop & Emporium, the online tea and gift store. The store outperformed Celestial's traffic expectations by 200% in the first 90 days of operation.

**Maliaris** is a Greek bookstore located at Thessaloniki. This was among the first electronic shops to be developed. It offers its customers the possibility to buy and pay on line and have the books delivered to their location by normal post or by courier company. It is based on a proprietary software developed by Inshop SA for the eshop and on EDITran for its EDI transactions. It has a connection with Egnatia Bank to perform credit card clearing.

**Blow Up** is a Greek disk store located also at Thessaloniki. It offers its customers the possibility to buy and pay by credit card and have the compact disk delivered to their location by normal post or a courier company. It is based on a proprietary software for the eshop and on EDITran for its EDI transactions. It has a connection with Egnatia Bank.

## 2.2 Types of firms / organizations concerned

The landscape of doing business today is evolving quickly. Markets are moving faster, customers are more informed and more demanding. Companies must be tied and in-step with their customers and more focused on and efficient at what the core of their actual business is. Internet-based-e-commerce is transforming both global macroeconomic and local day-to-day business models, and companies more and more rely on e-commerce empowered systems.

Every sector that can interact directly with its customers and suppliers is concerned with this method. To mention some:

- Manufacturing
- Publishing
- Grocery/food service
- Mass merchandising
- Entertainment
- Travel agents
- Telecommunications
- Software / Hardware companies
- Hotels
- Magazines

## 2.3 Implementation cost

In electronic shops there are two types of cost factors:

### *One time cost*

- Software
- Hardware
- Initial setup, Database setup and Programming

### *Recurring cost*

- Internet access charges
- Staff to operate and maintain software
- In the case where an EDI system has also been developed:
  - ✓ Staff to manage trading partners relations
  - ✓ Staff to comply with new enforced EDI standards and versions

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Concerning the software and the initial setup the cost varies between \$1200 for a shop based on a PC with Microsoft Access, to \$10000 for a full scale platform based on an RDBMS (eg Oracle).

## 2.4 Conditions for implementation

There are no major conditions for companies to apply eshops. However, every company who wants the above method to be applied and operate successfully needs to carry out a number of conditions and requirements. To mention some:

- The company should maintain a database, an inventory, that is connected to the electronic shop, in order to provide new products to the user and maintain product quantities and prices.

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- ◆ Web hosting is a very important step in this process, as this is how you gain a presence on the Internet in the first place. It is important that the web hosting is capable of providing a level of service needed for the web store to be maintained. A few things that need attention are: good uptime, good technical support, and fast connection to the net.
- ◆ Security. Many customers are still nervous about web transactions, p.e: sending credit card numbers. It's up to the web merchant to take the proper precautions to insure the security of every transaction, using encryption or digital signatures.
- ◆ The resources must report to orders. Too often people assume that because building a web store is more economical and quick than building a real store, they will not have to fully support the store once it is online. Customers hate the feeling that they are getting less by shopping at an online store. It is essential that the resources be in place to insure that the company's online sales presence will always be as responsive to customer needs and requests as it should be.
- ◆ In order to be able to accept credit cards over the Internet, the company must apply to a bank for an Internet Merchant Bank Account. This procedure depends on which country the company resides and what bank it is with.

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## 2.5 European organizations supporting the implementation of the method

**A European Initiative in Electronic Commerce:** The aim of this Initiative is to encourage the vigorous growth of electronic commerce in Europe. This Initiative builds on the particular characteristics of European business and the diversity of its social and cultural fabric to present a distinctive and coherent European approach to the development of electronic commerce in the global marketplace.

This Initiative provides a coherent framework for these mutually reinforcing technological, regulatory and support actions to facilitate the development of the electronic commerce market whilst adequately safeguarding public interest objectives. The political objective of the Commission is to implement this coherent framework, as a matter of urgency, by the year 2000.

**WeCAN (Wide Electronic Commerce Awareness Network of Excellence):** WeCAN addresses the issue of eCommerce awareness for SMEs and is aimed specifically at organisers involved in such awareness activities.

European companies and public authorities have invested large amounts of money into awareness creation and promotion activities in order to reach a large number of SMEs.

However, studies show that only 5% of European SMEs are currently using eCommerce for their daily business. Current and future awareness activities have to be improved, coordinated and supported to make them more efficient and effective. Two concrete measures resulting from this project will be to get more SMEs using modern trading practises and bringing together those local organisations who have most impact on SME awareness.

**EBES (EUROPEAN BOARD FOR UN/EDIFACT STANDARDIZATION).** EBES acts as the European Entry point for the UN/EDIFACT process. Its core activity is the processing of European DMRs (Data Maintenance Requests). The aim of the EBES Workshop is to establish a European entry point within the UN/EDIFACT process related to the UN/CEFACT structure, and to constitute a focal point for European Co-ordination.

The Workshop will provide a structure to ensure that European-developed EDIFACT messages and amendments (known as Data Maintenance Requests - DMRs) are processed for submission to UN/CEFACT/EWG, which maintains the global directory of approved messages, issued twice a year. About 800 DMRs are currently produced annually in Europe.

In addition to providing and managing the administrative structure for the European entry point, the Workshop will ensure the full external visibility of the UN/EDIFACT process. It will also ensure a coherent position is available from the UN/EDIFACT community in Europe on relevant policy and technical issues within the UN/CEFACT.

### 3 IMPLEMENTATION PROCEDURE

#### 3.1 Steps / phases

The implementation procedure consists of four steps/phases. These are the following:

**Step 1: Situation Analysis.** In this step an in depth analysis takes place which records the level of computerization and the inventory management process. It is examined whether the company has an Internet access and web presence and the business model is formed. The duration of this phase is approximately 15 days.

**Step 2: System Configuration.** In this step the publisher is configured, the product catalogue is defined and the templates are created. The search engine of the web site and the shopping basket are equally configured. Finally the payment system through the electronic shop is defined. The duration of this phase is approximately 20 days.

**Step 3: Installation and implementation of the pilot phase.** In this phase the installation of the system takes place. The connection between the database the publisher and the Internet is tested and the connection with the bank for transaction clearing is setup. This step will last approximately 15 days.

**Step 4: Final tests and delivery of the system.** In this step tests are made to ensure that the ordering process and the shopping basket are working correctly. Tests are also made to see that payments through credit cards are done with success, and the final fine tuning and delivery of the system takes place. This phase lasts 5 days approximately.

#### 3.2 Partial techniques and tools included in each step

**Step 1:** In this step where the situation analysis takes place, the main issue is the contact with the company's employees in order to determine what the needs of the company are. A strategy is determined in order to help the company engage and transact with customers effectively. There are no tools used at this phase other than critical thought .

**Step 2:** In this step the company decides which are the most suitable products to be sold through the electronic shop, in order for the catalogue to be configured. In this phase, web page construction tools are used, (for example FrontPage).

**Step 3:** In this step the tools used depend upon the database that the eshop will be based on (eg Oracle, or SQL Server).

**Step 4:** In the final step stressing conditions are applied to the engine in order to test that everything works correctly and a fine-tuning is made. There are no partial tools used at this phase

### 3.3 Related Software

The software that is used in the implementation procedure is NetMarket. In the next paragraphs follows a brief description of this product's features.

### 3.4 Features of NetMarket:

The NetMarket is a software platform for electronic commerce, supporting the creation and management of electronic shops. It supports the marketing of products and services both for horizontal and vertical business in the Internet.

An innovative product, NetMarket, consists of a collection of software tools that can automate the management of an Internet hub. It can adjust to the demands of a client, offering the possibility to connect to accounting systems, EDI and RDBMS. It has an easy to use graphical interface both for maintenance and management.

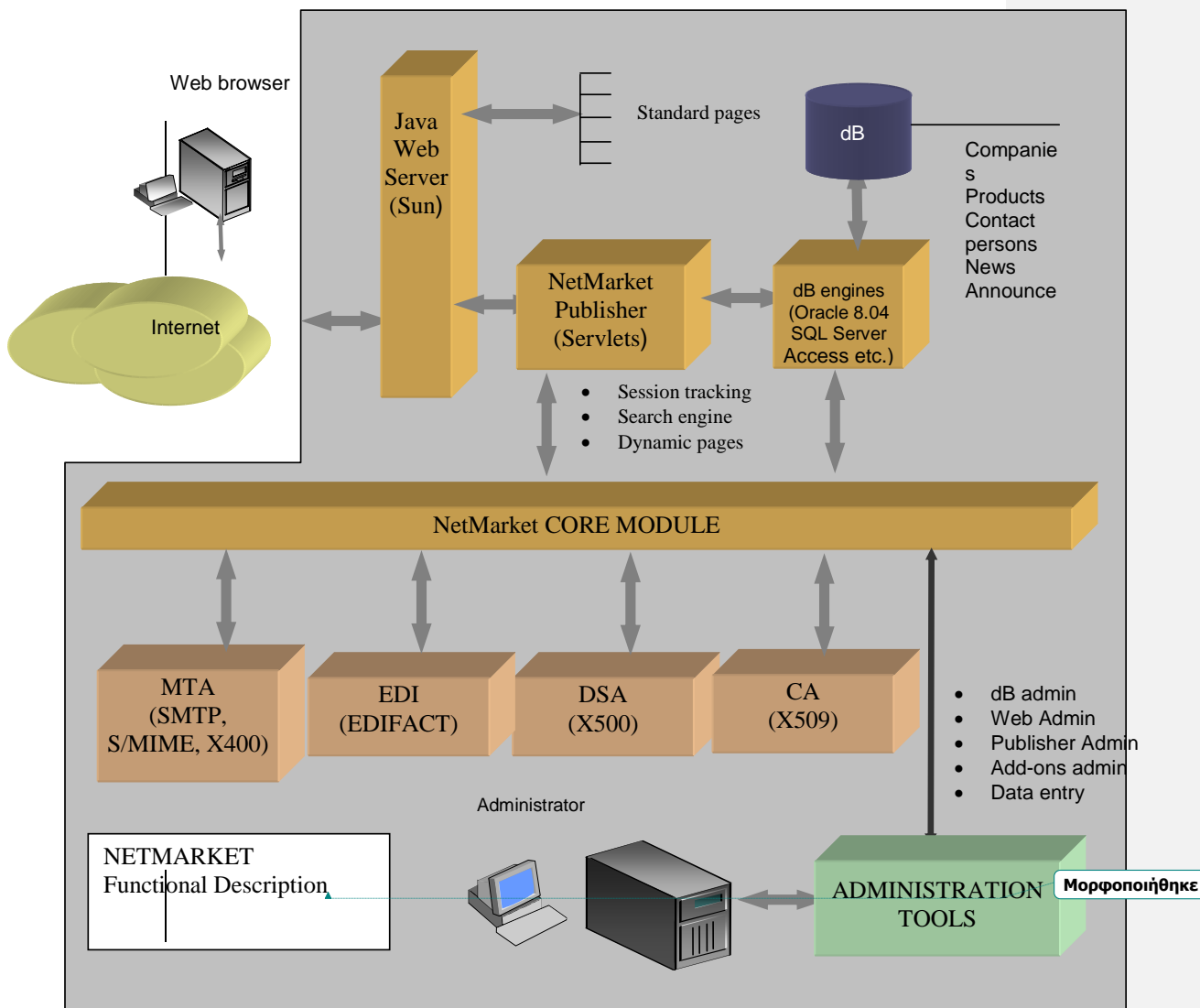
Designed with open architecture, based on Java and RDBMS technologies, it supports the most common databases. It can be upscaled with user modules decreasing the cost in maintenance, while at the same time increasing its power.

#### *Advantages:*

The use of the NetMarket gives the possibility to offer Electronic Commerce services through the Internet in a way that:

- Decrease the running expenses of the hub:
- Use of non-specialized personnel in its operation.
- Less manual and more automatic processes thanks to its production of dynamic Html pages from templates.

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In the previous functional description, one can see three main module categories composing the NetMarket platform: the publisher module consisting of a set of servlets, responsible for managing web browser requests, creating web pages from templates and feeding the clients, the administration tools that help the administrator to manage the database content and the site's overall security and statistics and a set of plugins such as mailing systems (X.400, SMTP etc), Directory services (X.500), EDI, and Certification Authority Systems.

- Decrease in the maintenance costs of the hub due to standardization.
- Fully integrate and synchronize Internet services with their MIS or ERP due to: EDI (EDIFACT) native support of NetMarket, RDBMS connectivity for most common databases.
- Offer better service to the client.
- Develop an improved and leading image to the company.
- Promote services and electronic commerce through a modern, quick, flexible, and fully secure environment.

The use of NetMarket also provides the users through the Internet:

- To realize commercial transactions with payment option.
- To be informed about companies, products, news, announcements and to come into contact with the interested organization electronically.
- To develop business partners.
- To search dynamically the database through the browser in a consistent and efficient manner.

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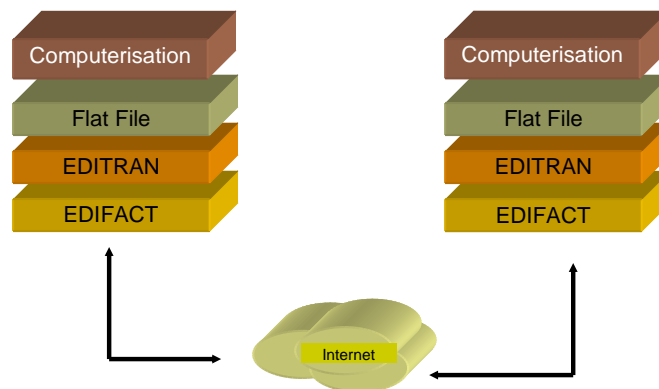
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## ANNEX

Electronic shops need to be connected with the company's legacy system in order to update the company's inventory management system. The eshop must update the system of the products sold and get informed of the remainder of each product. For this interconnection two methods are used: on line connection of the electronic shop with the inventory management program and off line connection. In the first case the electronic shop acts as a part of the company's information system and there is no need for further synchronization mechanisms. In the second case the electronic shop is seen as a remote shop-front where a number of items is sent using a bill of goods. When the items are sold a new amount of items is sent. This amount of items is subtracted from the total number of items available in the main shop.

In order to apply the first method there may be unconquerable problems especially if the legacy system is not based on RDBMS and uses proprietary unknown format of data files. It is easier when the legacy system is accompanied by APIs or is based on commercial RDBMS.

In the second method, off-line mechanisms such as EDI can be applied. This kind of technologies is easier to apply and are more universal. They use the ability of legacy systems to import and export ASCII files. In the case where EDI is implemented as partial tool Editran can be used. Editran is a powerful product that converts data from various sources to EDIFACT and sends it to the recipient using secure MIME over the Internet or VAN. The objective of this program is to give the opportunity in two dissimilar applications to communicate with the common language EDIFACT.



What Editran offers:

- ✓ Advanced and very fast translation core, which provides suppleness in the adjustments and ease of use.

- ✓ Support of an unlimited number of trading partners with different features of process for each one.
- ✓ Ability to have different mappings for input and output of the same document.
- ✓ Support for multiple EDIFACT versions, multiple map files for each trading partner and multiple documents.
- ✓ Ability to function as a gateway for documents to the appropriate application according to the type, the trading partner or other information provided.
- ✓ Ability to control the correctness of the documents with multiple levels of error diagnosis and warnings.
- ✓ Full ability to adjust the audit trails.
- ✓ Full input-output control of the type of fields of the message, their length, whether the field is mandatory or not etc.
- ✓ The user can create tables for alteration of information not covered from EDIFACT, for example codes of suppliers and customers.
- ✓ Fully compatible with the UN/EDIFACT standard.
- ✓ Functional acknowledgment.
- ✓ Support of Windows NT and Windows 95.