THEMATIC

E-Thematic

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Thematic Network on e-Fulfilment

Final Report

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Chapter 1 Introduction

1.1 Background

In the context of the Lisbon 2010 objective of making the European Union the most competitive and dynamic knowledge-based economy in the world, the Directorate General for Information Society and Media developed the eEurope 2002 and 2005 Action Plans.

The eEurope Action Plans aim to provide a favourable environment for private investments, to create new jobs, to boost productivity, to modernise public services and to give everyone the opportunity to participate in the global information society. Part of these plans is ***to foster a dynamic e-Business environment and rollout leading edge applications and infrastructures.***

In order to realise a dynamic e-Business environment, the Directorate General for Information Society and Media has set out several forerunners of this action plan in the field of e-Business. One of these forerunners is e-Thematic, a thematic network on e-Fulfilment, which received funding under the 5th Framework Programme for RTD in 2002.

1.2 The e-Thematic project

The e-Thematic project addresses the area of e-Fulfilment focusing specifically on the concept of the value system of a company's supply chain. By integrating flows of information, materials and finances on a supply chain level, much inefficiencies can be eliminated, resulting in a virtuous circle of value creation for end customers and for supply chain stakeholders.

The e-Thematic project has provided market players, research organisations, experts and public authorities the opportunity to exchange knowledge on innovative technologies, research results and policy recommendations. e-Thematic applies to both Business-to-Business and Business-to-Consumer markets.

The ***main objectives of the e-Thematic network*** are to:

- Cluster existing European research projects in the field of e-Logistics and e-Fulfilment;
- Identify emerging applications and technologies;
- Identify examples of "good practice";
- Put e-fulfilment on the RTD-agenda;
- Provide input for EU research and policy development related to e-fulfilment.

By addressing these issues, e-Thematic aims to overcome the segmentation and compartmentalisation of the European market, which is still heavily based on national and even regional developments. Furthermore, e-Thematic stimulates the development and implementation of user-focused applications, with a view to furthering e-business in the area of e-Logistics and enhancing the competitiveness of European industry. While applications for most operational logistics activities are already well developed, e-Fulfilment applications are not yet. The e-Fulfilment packages currently on offer generally lack integration with other existing software suites, and there is often substantial variability in their use. User focused innovations will provide timely and adequate information in order to facilitate the efficient management of inventories and deliveries, consequentially lowering overall costs and increasing customer satisfaction.

To achieve these objectives, considerable research and networking activities were carried out by the network. Based on these activities, different obstacles for e-Fulfilment and efficient e-Business were identified. Recommendations for further research and policy development have been elaborated in order to tackle these issues and strengthen e-Business in Europe and enhance the provision and broad acceptance of leading-edge e-Fulfilment solutions. The recommendations have been validated in a RTD-requirements workshop, which was organized at the end of the project. EU stakeholders participated broadly and provided input.

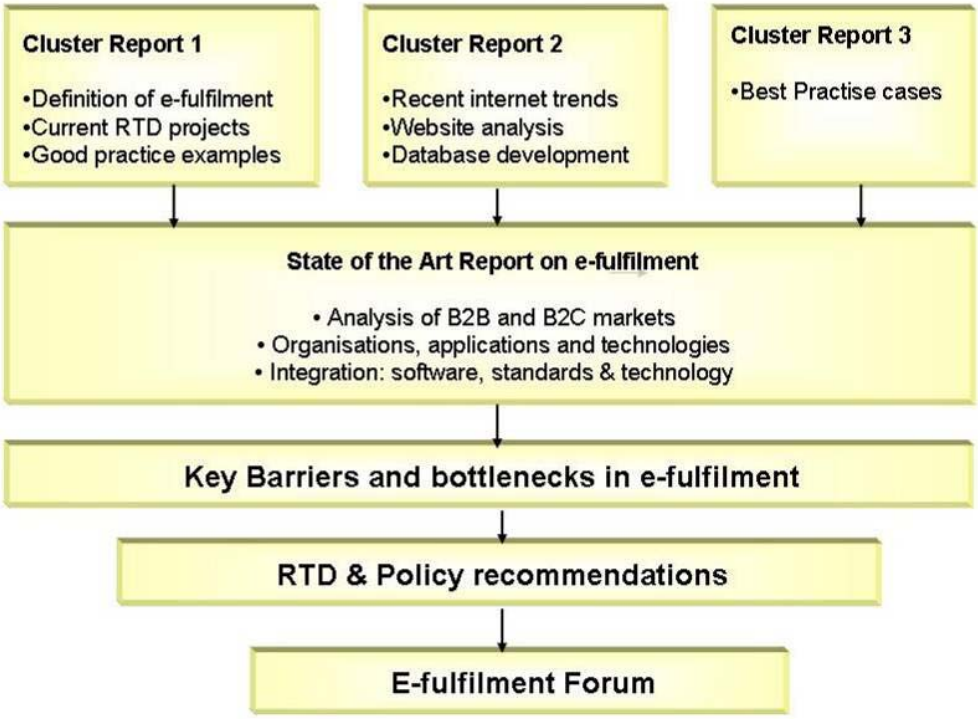
1.3 Methodology

To achieve the mentioned objectives, a research methodology was laid out (see figure 1.1). The project was divided into six work packages: Project Management, Technical Assistance, Inventory, Clustering Activities, Defining Future Needs and Exploitation and Dissemination. Together, these packages led to the following deliverables:

- Clustering Report 1;
- Clustering Report 2;
- Clustering Report 3;
- State of the Art Report;
- RTD Report;

- Final Report;
- Business Plan of an e-Fulfilment Forum;
- Compendium of e-fulfilment.

Figure 1.1 Methodology and deliverables



During the project, information on e-Fulfilment was acquired and analysed continuously, this included a website analysis of some 500 B2B and B2C e-Businesses from which best practices were identified. Comprehensive dissemination of project results was done via the project website, newsletters, participation in conferences, brochures, the organisation of seminars and workshops.

Information pertaining to e-Thematic was disseminated electronically via the project's website (www.e-thematic.org), including e-Fulfilment developments that were collected throughout the duration of the project. This has resulted in a dynamic database, available on the website, that contains information and data on relevant technologies, applications, market organisations, market players and RTD projects and programmes.

1.4 The Research Consortium

The e-Thematic consortium consists of two lead partners: Buck Consultants International, ERTICO, and different members (see table 1.1).

Table 1.1 e-Thematic Consortium

Number	Participant name	Participant short name	Country
1	Buck Consultants International	BCI	Belgium
2	European Road Transport Telematics Implementation Coordination Organisation	ERTICO	Belgium
3	Business Training Centre	BTC	The Netherlands
4	European Car Transport Group of Interest	ECG	Belgium
7	SHIPSERV	Shipserv	United Kingdom
8	ALLAGRAF	Allagraf	United Kingdom
9	Web House	Web House	DK
10	Institut Logistiki i Magazynowania	ILiM	Poland
11	Thomas Miller & Co. Ltd.	Millers	United Kingdom
13	S&H Productfulfilment	S & H	The Netherlands
14	Neckerman	Neckerman	The Netherlands
15	FEPI	FEPI	Belgium
16	British International Freight Association	BIFA	United Kingdom

To provide input for the project's activities, a Steering Committee (see table 1.2) was established. This Committee was composed of delegates from the Member States, the European Commission, relevant European and international organisations, and industry representatives. Industry participation was dominant in the three steering committee meetings held during the project's lifetime, in large part because of the project's focus on business issues.

Table 1.2 Steering Committee Members

Number	Organisation	Country
1	Goods Transport Unit, Ministry of Transport and Communications Finland	Finland
2	Strauja	Lithuania
3	PTV	Germany
4	Budapest College of Management	Hungary
5	Merlin.com	Poland
6	Garland laidley SGPS	Portugal
7	School of Management and Industrial Engineering	Sweden
8	Holland Distribution Council	The Netherlands
9	Dekra AG	Germany
10	Ministry of Informatics and Communications	Hungary
11	Interproto Bologna Spa	Italy
12	Barbosa & Almeida	Portugal
13	Ministry of Transport	Slovenia
14	Volvo technology Corp. Dept. Of Transport & Telematics services	Sweden
15	Via Donau	Austria
16	Flanders Institute for Logistics	Belgium
17	Transport Policy, International Relations and Environmental Dept, Ministry of Transport	Czech Republic
18	Digital North	Denmark
19	Logistra Consulting Oy	Finland
20	Ministry of Transport	Czech Republic
21	ORIA Computers	Slovenia
22	St. Stephen University	Hungary
23	City of Aalborg	Denmark
24	Ministry of Transport	Belgium (Flanders)

The e-Thematic project has been funded by the Directorate General for Information Society and Media (DG INFSO) under the 5th Framework Programme for RTD in 2002.

1.5 Report

Chapter 2 of this report sets the stage of e-Fulfilment. Regional differences in e-Business both in B2B and B2C are dealt with in chapter 3. Chapter 4 describes the main issues on e-Fulfilment based on desk research and best practices. The final chapter comprises RTD and policy recommendations.

Chapter 2 Defining the Stage

2.1 Supply chain integration and the Internet

Over the past decade a combination of economic, technological and market forces have compelled companies to examine and reinvent their supply chain strategies. Some of these forces include the globalisation of business, increased environmental concerns, the proliferation of product variation and the shortening of product life cycles. To remain competitive and profitable in this environment, many companies have strived to achieve greater coordination and collaboration among supply chain partners in an approach, which was labelled 'supply chain integration'.

Case: Supply Chain Integration at Agfa

Agfa has taken several measures in the area of supply chain integration. It is using e-Fulfilment tools to streamline its material and information flow as well as its performance across the entire supply chain - from vendors to customers. A selection of interview quotes:

- "Order-entry forms are linked to a web page, enabling a customer to make selections and directly place an order. That information is then captured within the ERP order-entry module."
- "Systems integration makes it possible to expand the area of 'order promising' to offer real-time 'Available-To-Promise' functionality. This improves the scheduling aspect of the operation, contributing to order accuracy and better demand forecasting capability. The application goes beyond matching orders to pre-planned production slots, actually determining the factory's availability to fulfil an order by checking constraints such as machine capacity, material availability and labour."
- "An integrated online supply chain system means linking our back-end systems with those of our suppliers and customers, allowing an open exchange of information."

Information technology (ICT), in particular the accelerated use of Internet-based computing and communication, has had a profound impact on business-to-business interactions, especially in the area of supply chain integration. Companies can use the Internet to gain global visibility across their extended network of trading partners and respond faster to a range of elements varying from customers' demand to resource shortages.

ICT development influences business logistics. 'e-Business logistics' creates the opportunity for businesses to reap more rapidly and more effectively the benefits of supply chain integration (reduced costs, increased flexibility, faster response times and increased transparency). e-Business logistics refers to "*the planning and execution of the front and back-end operations in a supply chain using Internet-based computing and communications".* The term 'e-Business' refers, in a broad sense, to the conversion of activities and processes throughout an enterprise into an electronic-based system.

2.2 Traditional versus e-business focus

Dotcoms were the first to attempt the optimisation of customer service by leveraging the possibilities of the Internet. Amazon, the online retailer, is a good example of a successful e-Business. Since 2001, the traditional dotcom business model has been increasingly challenged.

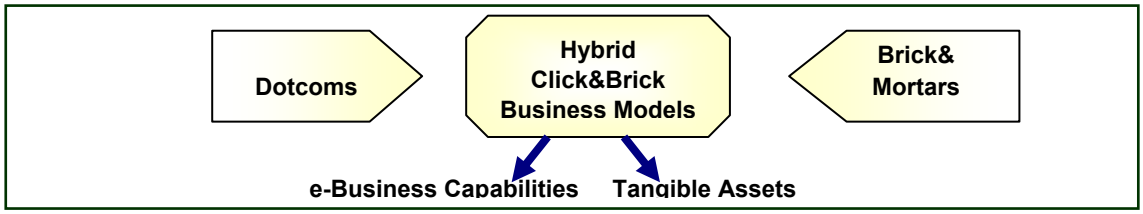
Figure 2.1 Differences between traditional logistics and e-Business logistics, source: BCI

	Traditional Logistics	**e-Logistics**
Distribution Model	Push	Pull
Customer	Strategic	Broader customer base
Demand	Predictable, Stable	Fragmented
Order Cycle Time	Weekly	Shorter (daily/hourly)
Shipment type	Bulk	Small lot sizes
Destinations	Concentrated	Dispersed, longer distance
Replenishment	Scheduled	Real time
Accountability	One link	Through entire supply chain
Customer Service	Reactive, rigid	Responsive, flexible

Many pure-play dotcoms have been investing considerable resources into acquiring access to physical assets such as warehouses and distribution infrastructures in general. These are hybrid entities combining the benefits of pure-play dotcoms (e-Business capabilities) and

traditional 'brick-and-mortar' companies (based on tangible assets). However, the transformation is also taking place at the other end of the spectrum: asset-based companies are building e-Business capabilities to leverage the physical assets they already control. Both of these evolutions lead to the development of 'click-and-brick' companies (see figure 2.2).

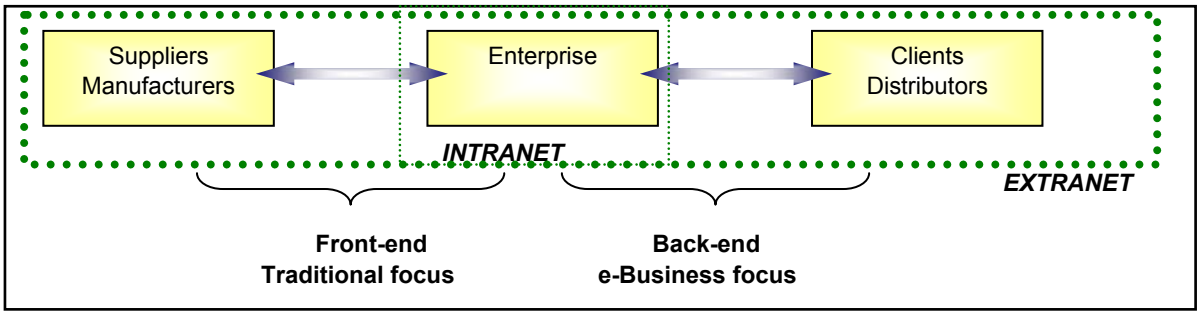
Figure 2.2 Evolution of Click& Mortars



Source: BCI

The development of the Internet offers companies an unprecedented opportunity for supply chain integration. Efforts for integrating enterprise systems have traditionally been focused on the front-end of the shippers' supply chain. However, to realise the highest ***return on investments (ROI) in supply chain integration***, it is important to start integration with the customer, because this is where the biggest economic value of the supply chain is situated.

Figure 2.3 Traditional versus e-Business focus



Today's customers have developed a new set of requirements:

- Fast and reliable delivery of highly customised products;
- Instant information on product availability;
- Instant information regarding lead times and delivery costs;
- Real-time order status information;
- Quick and reliable responses to order amendments and queries.

Customer expectations increase the ICT investments a company needs to undertake. To be successful, an e-Business should not only adopt an e-Business model that allows for

improved efficiencies throughout the supply chain but also set up an order management system that provides clients with a seamless and consistent customer experience.

Case: Amazon sees supply chain as crucial to its future

"Amazon believes that the 'end-to-end, 'click-to-ship' customer experience is even more important in the online world than it is in the physical world. Online, the word-of-mouth impact is amplified. Every Internet customer has a big megaphone, and if we make a customer unhappy, they don't tell five friends, they tell 5000. And the reverse is true: if you do a great job for customers they tell 5000 friends, in newsgroups and list servers and chat areas, etc. "

"It is likely that customers will dictate the shape and structure of European logistics streams in the future. Online customers place a great premium on reliability – 'doing what you say you will do' rather than speed alone. This means having the right product when the order is placed, being able to say when it will ship, and when it will be delivered with a high degree of accuracy."

2.3 e-Fulfilment

Definition of e-Fulfilment

Many definitions of e-Fulfilment exist. They vary from "core physical delivery to the customer" to "warehouse, pick and pack and call centres". The term 'fulfilment', as such, describes a horizontal tier of services from the beginning of an order through delivery to distributors or end users. In other words, it refers to the challenges that take place after the "Buy" button is clicked.

In the framework of e-Thematic, the following definition of e-Fulfilment is used:

"e-Fulfilment defines that part of e-Business which aims at efficiently and effectively integrating a company's back-office processes, activities and functions arising from order capture through to final delivery to the customer."

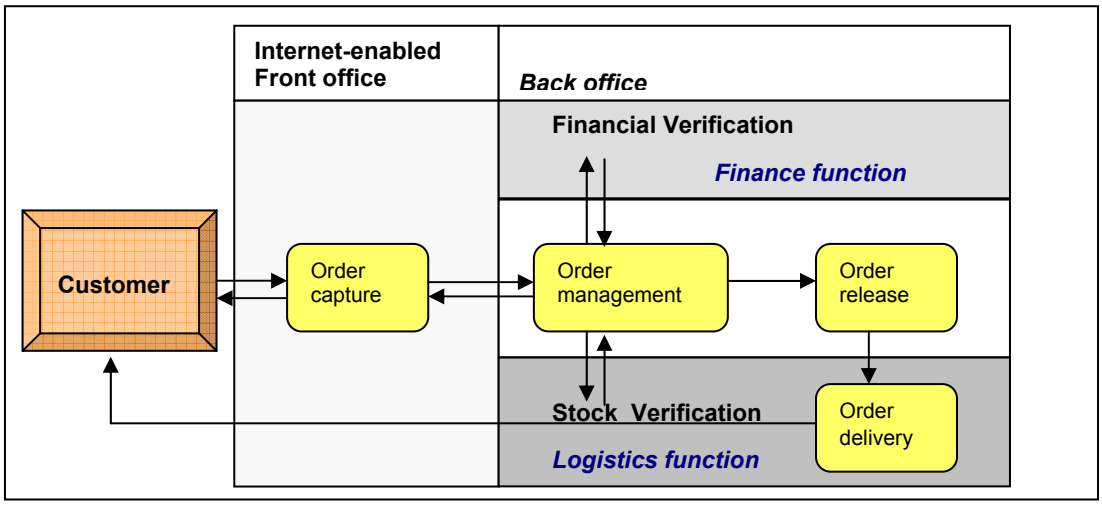
The e-thematic project defines the scope of e-Fulfilment as:

- Companies with an online retailing presence that are adapting e-Fulfilment applications (whether their business is old economy, new economy or a mixture of the two), and software vendors providing e-Fulfilment applications.
- Both the Business-to-Consumer (B2C) and Business-to-Business (B2B) market.

The e-Fulfilment process

E-Fulfilment refers to more than setting up an Internet-enabled front-office. It entails the integration of the website (front office) with back-office processes, activities and functions (marketing and sales, finance and logistics) that support the fulfilment of customer orders. ***As a result, logistics efficiencies improve and inventory and transportation costs decrease.*** Figure 2.4 illustrates the back-office processes that take place once the "Buy" button is clicked. The sequence of events is: order capture (web order) → stock availability check (e-warehousing) and interface to finance house (e-billing) → order confirmation → manufacturing or procurement (not studied by e-Thematic) → order release (picking/packing/shipping) → final delivery to the customer. Most of these processes can be executed internally or externally.
An effective integration of these functions, generates strategic data on customers behaviour and choice. The efficient exploitation of these data can enhance forecasting, reduce inventories and decrease cycle times.

Figure 2.4 e-Fulfilment process



2.4 Need for end-to-end e-Fulfilment solutions

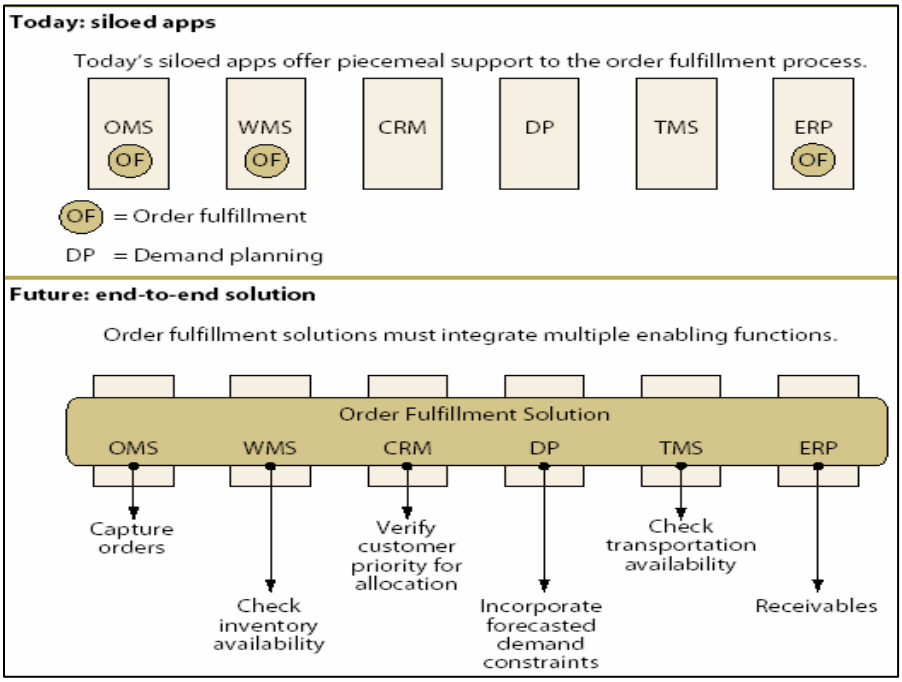
Logistics and Supply Chain Management are an increasingly important way to optimise both costs and revenues. In the last few years, several trends have emerged in this area, such as:

- Demand-driven supply chain management, meaning that supply chain planning and execution functions are driven by demand in real-time.

- Supply chain integration, by connecting to information systems of trading partners.
- Emergence of XML as a messaging platform: Web-enabling technology has been very important in supporting more collaborative ways of working.

These developments have led in many cases to the implementation of process management systems. Few companies have applications in place that cover the entire fulfilment process (exceptions are: UPS, FedEx, DHL, TNT, Amazon and Dell) and most of the ***currently available e-Fulfilment packages generally lack integration with existing software***. The problem is that information technology is often structured according to a company's administrative divisions such as sales, finance and logistics (see figure 2.5).

Figure 2.5 Siloed vs. end-to-end e-Fulfilment solutions

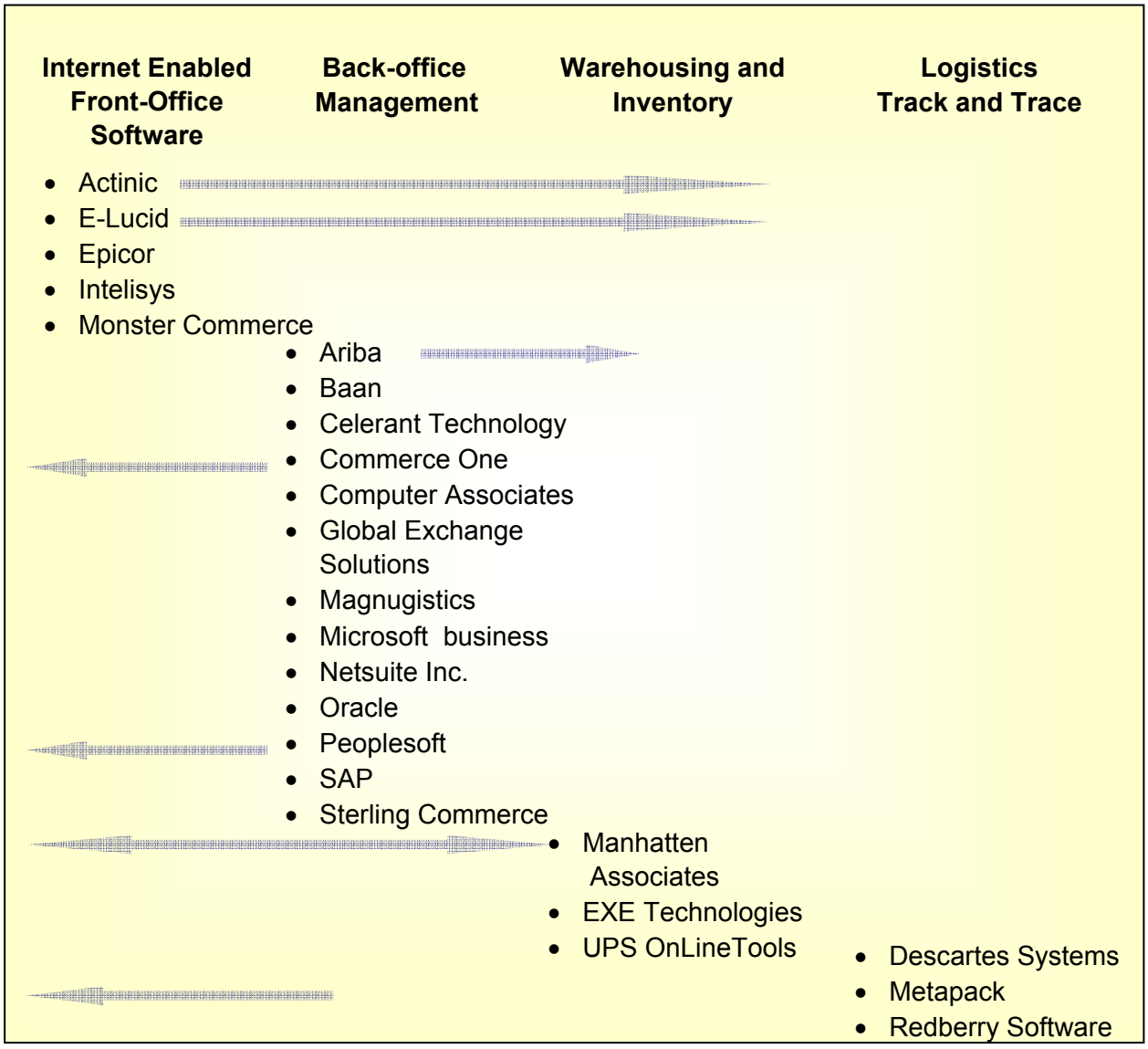


Source: Forrester Research

2.5 Software

As mentioned in the previous section, processes in an organisation are often organised by siloed applications. An e-Fulfilment solution would integrate multiple enabling applications, such as order management systems (OMS) and Transportation Management Systems (TMS). In most cases the following four systems have been implemented (see figure 2.6). This figure lists the identified software providers based on their main area of activity. The arrows show if the software also covers other functionalities.

Figure 2.6 Software Providers



- ***Internet-enabled front-office software:*** This is the web-interface, the first thing that a customer sees. These mostly off-the-shelf solutions provide ease of navigation around the site and the option to select products, see stock levels, use credit cards, etc. These are key elements in making the customer feel comfortable and happy with the e-purchasing experience. This is more important in the B2C market than in the B2B market.

- ***Back-office management systems:*** These are the systems that manage the day to day processes of a business. They include a Customer Relationship Management (CRM) element, as well as the ERP (Enterprise Resource Planning) aspects of the business. The information gathered at the front end needs to flow seamlessly into the company's back-office systems, in order for the e-Fulfilment process to be optimised.

- ***Warehousing Management System:*** A warehousing / Inventory Management System (WMS) is a software system used to track movements in and out of the warehouse and activities within the warehouse. The software often includes a track and trace functionality. Both off the shelf as well as own developed proprietary solutions are used.

- ***Logistics:*** This is the software that enables the e-tailer, and also the purchaser to see the status of the order and delivery (tracking and tracing). This is often managed separately. These management systems can even be built on various standards. Several of the organisations identified in the outsourced e-Fulfilment and 3rd party logistics providers had developed their own proprietary software and systems.

2.6 Standards

There are numerous different business applications, software and platforms that all need to "talk" to each other to ensure the flow of data. Integration can be achieved by developing custom middleware solutions and using integration software that is built according to the specifications and data interfaces of each application that needs to communicate with another application.

For communication across the company, many standards are used and enable the data being transferred to be used automatically.

The standards issue is an important one. Many companies are unaware of existing standards and the impact of using standards on the integration of their ICT-applications. In many cases, they develop proprietary solutions. By doing so, they complexity to their already segmented ICT-applications.

EDI

EDI comprises a series of formats, which provide a computer-to-computer exchange of standardized business documents between different companies' computers over the Internet. EDI allows for the transmission of purchase orders, shipping documents, invoices, invoice payment, etc. between web-based business and its trading partners. Virtually every computer company supports EDI standards and packet switched data communications company.

EDI was the first attempt to standardise electronic communications at a messaging level, for the purpose of being machine-readable. On both sides of the ocean, different forms of EDI were created. To homogenize these two versions, the new UN/EDIFACT standard was launched in 1986. Since then, most EDI communities have used standards based on

EDIFACT. Nevertheless, varieties of the EDIFACT standard, which have different structures and are sometimes incompatible, are still used.

Although most companies still use EDI, it is considered to be a “rigid” and costly solution. User friendly web or e-mail applications are readily available on the market.

XML

XML is a language that allows designers to create their own customized tags, enabling the definition, transmission, validation, and interpretation of data between applications and between organizations when common tags are used. XML was not used as a global standard until late 1997. XML provides a fairly strict syntax as to how metadata may be incorporated in text, but on the other hand, it leaves it completely open to the users as to what sort of metadata might be incorporated. Different advantages of XML over EDI standards can be identified:

- XML is entirely flexible and extensible, whereas EDI standards carefully enumerate the different acceptable data elements.
- XML is easy to understand, the XML document is even without formatting, making it comparatively easy to understand for a reader, whereas raw EDIFACT standards require extensive knowledge of the codes and segment tags.
- EDI messages use proprietary value added networks (VANs) which is much more expensive than XML that uses the Internet to transport documents.
- in its relatively short life span, XML has experienced widespread adoption and has been embraced by software houses, which means that there is a vast range of tools for interpreting, displaying, parsing and manipulating data expressed in an XML format.

In addition to XML there are higher XML formats (ebXML, Rosettanet, Bolero XML, CIDX, MTML) and web services and lower XML formats (XMLRPC, SOAP, WSDL, UDDI), which exist. These are standards that were further developed for special usage and are used by different consortia.

Web Services Security

There is still no standard security model or standard technology for security in web services. However, a security architecture has been proposed by a team led by IBM and Microsoft and is being developed under the auspices of the Organization for the Advancement of Structured Information Standards (OASIS). Since Internet security is a broad and challenging problem, the solution will be complex, and the availability of standard interoperable products is for the future. The Web Services Security (WSS) proposal contains two key concepts:

- Policies; security requirements established for access by a client to the web service or to a specific function within the service. A simple policy might require that the client provide a user name and password. More complex policies might require that the client

is authenticated by an authentication service and that the function requested is deemed available to the client in an access control list.

- Claims; assertions by the client that it meets the security policy of the service. A claim can contain a user name and password, or it can identify an authenticated user substantiated by a security token.

The Web Services Security proposal specifies a framework for implementing these concepts in Simple Object Access Protocol messages (SOAP). The web services Interoperability Organization (WS-I) has recently formed a group to develop standard profiles for security interoperability, but it may be some time before robust, interoperable security implementations are commonplace.

2.7 Conclusions

For centuries, Man has successfully done business by exchanging easily created, cheap and readable documents, such as purchase orders, invoices and freight documents. These documents work for any commerce because they do not require the parties involved to know about one another's internal processes.

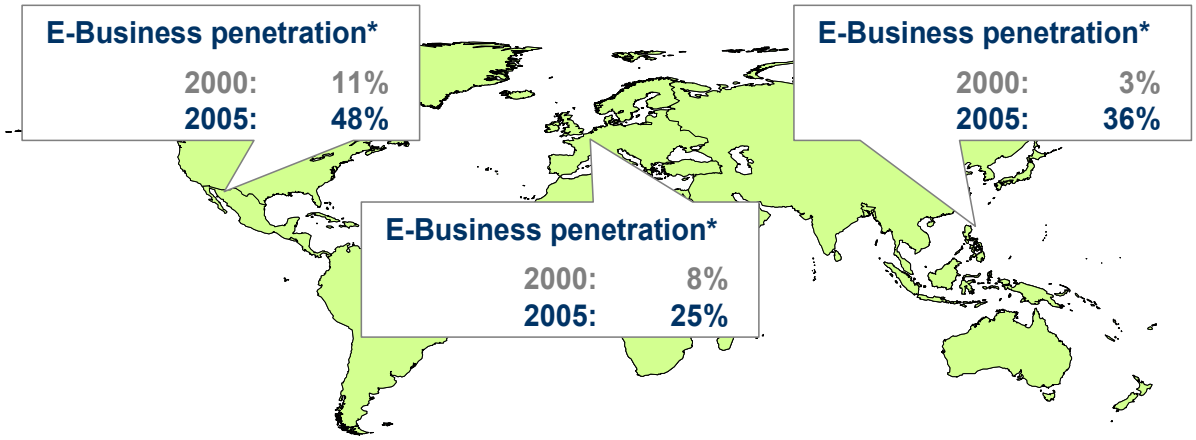
However, emerging trends such as demand-driven supply chain management, supply chain integration and the emergence of XML as a messaging platform has made significant changes in doing business. Over the last decade, the implementation of different, often siloed process management systems has been the answer to fulfil these emerging trends. The focus of these process management systems traditionally lies at the front-end of the supply chain (e.g. with suppliers), whereas the economic value of today's supply chain is at the back-end of the supply chain (with the customer). ***End-to-end e-Fulfilment applications are needed to integrate and couple these process management systems.*** These applications provide the required integration between back-office processes, so the services to the customer, offered on the front-office website can be delivered.

Chapter 3 Differentiation in e-Business

3.1 Introduction

e-Business has grown over the last few years and is becoming a more mature alternative for traditional business. Hence the supply of logistics services and order processes must be aligned with this alternative channel. The development of e-Business is related to the provision of online-business and the number of customers, both companies and consumers that can purchase online. This accounts for each company in e-Business around the world. However, ***e-Business development is estimated to grow at a slower pace in Europe*** than in North America and Asia.

Figure 3.1 Market share e-Business per region



Source: Boston Consulting Group

On the whole, the picture in B2C is the same (see table 3.4). According to Forrester Research, worldwide B2C e-Business will grow 320% between 2002 and 2006. Growth expectations for Western Europe are about 370% within the same period. Looking at estimates for 2006 in the table below, we can see that B2C e-Business revenues for Europe add up to a total of € 115,68 billion (about 26% of the world-wide total).

Table 3.4 Worldwide B2C e-Business revenues, by region, 2002-2006 (in billion €)

Region	2002	2003	2004	2005	2006
North America	62.48	86.72	113.44	144	175.84
Asia-Pacific	19.12	34.88	60.96	98.88	148.16
Western Europe	23.68	38.4	58.16	82.08	110.64
Latin America	0.4	0.88	1.68	3.12	5.6
Eastern Europe	0.48	1.04	1.92	3.2	5.04
African and Middle East	0.64	1.12	1.84	2.88	4.16
Worldwide total	106.8	163.04	238	334.16	449.44

Source: Forrester Research, December 2001

In terms of average monetary amount spent, North America appears to hold the leading position. The average online buyer in Europe spent $498 in 2002 (Source: Forrester Research) whereas the North American buyer spent $717 in 2003 (Source: eMarketer).

Many reasons can explain North America's leading position in the online B2B and B2C markets. These include the usage and accessibility of the Internet,, the provision of websites or the services offered. the business culture in the different regions, and a greater trust in online business. This chapter provides an insight into these regional differences. Firstly, the B2B and B2C business models are explained to understand why services provided can differ.

3.2 B2B business models

The evolution of B2B e-Business can be divided into four phases:

- EDI networks represented the first phase of B2B e-Business. EDI, as mentioned earlier, was designed to process high volumes of highly structured data, but the point-to-point connections of EDI provided no community or market transparency.
- Phase two initiated basic e-Business between buyers and sellers without an intermediary. A few early adopters began pushing their websites as a primary sales channel (eg. Dell, Cisco). Phase two for most companies was about displaying catalogue content and publishing marketing collateral.
- Phase three represents the rise of Community commerce. This entails the appearance of third parties that bring together trading partners into a common community.

- Phase four, Collaborative commerce, builds upon phase three by adding support for other business processes before, during, and after the order. Collaborative commerce fills in the gaps around e-Business.

Table 3.2 compares these four phases in more detail. It is clear that moving from basic e-Business to an integrated online supply chain means linking the back-end systems of a company with those of its suppliers and customers, allowing an open exchange of information. As described in chapter 2, e-Fulfilment applications enable this integration of back-end systems.

Table 3.1 Four phases of B2B e-Business

Phase 1: Batch EDI	***Phase 2: Basic e-Business***	***Phase 3 Community commerce***	***Phase 4: Collaborative Commerce***
Flexibility	Low; rigid format	High; open standards	High; open standards
Costs	High; propiertory network	Low; leverage Internet	Low; Leverage Internet
Business processes supported	Batch orders	Catalogue plus Auction and Bid/Ask	Multiple order forms; B2B interactions
Market transparency	Low; fixed supplier base	High; intergeography transparency	High; intergeography transparency

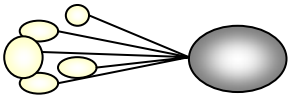
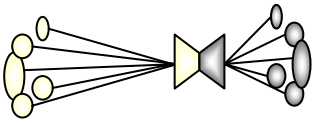
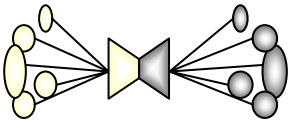
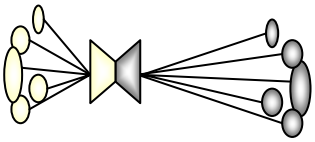
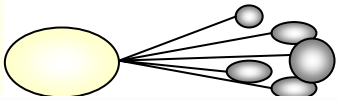
Source: Morgan Stanley, adapted by BCI

In general B2B e-Business is being used to:

- attract or develop relationships with customers;
- streamline the supply chain, manufacturing, procurement and corporate processes to deliver the right products and services to the customers quickly and effectively;
- capture, analyse and share information about customers and company operations, in order to make better decisions.

Many classifications of B2B e-Business models exist and different e-Business models can be defined on the base of the structure and actions by which an organisation operates within its marketplace. There is a difference between horizontal and vertical B2B companies. A horizontal B2B company offers a specific functionality or business process, which is scaleable across a number of industries and market sectors. A Vertical B2B company focuses on particular industries or market segments and often aims to become a 'one-stop-shop' for a specific industry or market segment. The underlying figure defines the e-Business models that prevail in the e-Supply chain.

Figure 3.2 B2B e-Business models

Model	Architecture	Horizontal	Vertical example
E-procurement		DaimlerChrysler (Purchase of C parts with software solutions from healy Hudson)	Internet EDI
Buyer-centric marketplace		Global Trading Web (worldwide network for buyers	Covisint (purchasing platform Ford, DaimlerChrysler, GM, and others)
Neutral Marketplace		Allago (marketplace for indirect goods, Dreadner Bank	Freemarkets (auctions in various industries)
Seller-Centric marketplace		Grainger Export (sale of MRO	Omnexus (Sales platform BASF, Bayer, Dow and others
E-sales		Dell (computer sales to companies	Gehe (wholesale pharmaceutical sales

Source: BCG

B2B e-Business could be used as a significant enabler in the move towards greater trading partner collaboration. Survey data from Forrester Research and the Institute for Supply Chain Management indicate that the lack of integration between external and internal business systems is one of the major inhibitors to broader use of the Internet for B2B e-Business. More than 70% of companies have experimented with purchasing online, but less than 10% of their total spending is being channelled via the Internet. Fundamentally, B2B requires automatic integrated system-to-system interaction among trading partners. ***E-Fulfilment systems can provide this interaction that improves the logistics performances of the supply chain (e.g. reduced inventory, lower transport costs).***

3.3 B2C business models

The different B2C e-Business business models that exist are shown in table 3.4. Variations can be found in the front-end or in the back-end of the business model.

Table 3.2 B2C E-Business models

Business Model	Variations	Examples	Description	Revenue Model
Transaction broker		E-trade.com Expedia.com Monster.com	Processors of online sales transactions; stock brokers & travel agents that increase customers' productivity by helping them get things done faster and more cheaply	Transaction fees
Market creator	Auctions and other forms of dynamic pricing	eBay.com Priceline.com	Web-based businesses to create markets that bring buyers and sellers together	Transaction fees
Service Provider		xDrive.com, Whatsitworthtoyou.com, myCFO.com	Companies that make Money by selling users a service, rather than a product	Sales of services
Community Provider		About.com IVillage.com BlackPlanet.com		Advertising, Subscription, affiliate referral fees
Portal	Horizontal/ General	Yahoo.com, AOL.com MSN.com, Exite@home.com	An integrated package of services and content such as search, news, e-mail, chat, music-downloads, and video streaming	Advertising, subscription, transaction fees
	Vertical/ Specialized (vortal)	iBoats.com	Offers services and products to specialized market spaces	Advertising, subscription, transaction fees
E-tailer	Virtual merchant	Amazon.com	Online version of retail store. Customers can shop day and night without leaving the office or home.	Sales of goods
	Clicks and Mortar	Walmart.com	Online distribution channel for company that also has physical stores	Sales of goods
	Catalogue Merchant	LandsEnd.com	Online version of direct mail catalogue	Sales of goods
	Online Mall	Fashionmall.com	Online version of mail	Sales of goods, Transaction fees
	Manufacturer direct	Dell.com	Online sales by manufacturer	Advertising, subscription, affiliate referral fees
Content Provider		WSJ.com Sportsline.com CNN.com	Information, entertainment and tips like newspapers, special interest and guidance	Sales of goods

Source: Madison Area Technical College (2003)

The boom in B2B and B2C e-Business sectors will undoubtedly fuel the demand for third party e-Fulfilment providers. Figures assessing the development of the e-Fulfilment market, however, are quite scarce. An understanding of the consumer's requirements and desires is essential to be able to sell over the Internet in the B2C segment. There are various reasons for consumers to adopt the offer of e-Business. For some it is the opportunity of selecting their purchase from a wide range of suppliers, for others it is the ability to shop at unconventional times. In some cases price plays a part, whilst in others it is in fact a barrier.

Table 3.4 indicates some of the most important advantages and disadvantages for consumers buying over the Internet.

Table 3.3 Advantages and disadvantages of online shopping

Advantages	***Disadvantage***
Ease of access - The consumer does not have to leave home. He/she can order at any given time and does not depend on store opening hours.	***Payment*** - Can pose problems
	Price - Sometimes (standard) products become more expensive.
Information - Extensive product information available.	***Distribution*** - Distribution and completion of orders is often problematic.
Choice - Large search possibilities for products in the market. It is easy to track down rare products.	***Reliability*** - Reliability of sales person/ store difficult to determine.
Price - Transparency with regard to market sales prices.	***Quality*** - Consumer cannot touch or smell the product.

Source: BCI

Transparency lies at the base of nearly all advantages. The increase in transparency of information in online shopping often results in a wider scope of choice, price, insight in product availability and easier access to more products. All these aspects serve the customer and make it easier to buy. This easier access to products often leads to more and ***better-forecasted demand*** and thus scheduling of operations can be improved.

3.4 Differences between B2B and B2C

In both traditional business and e-Business, differences occur between B2B and B2C. In online B2B and B2C, differences can be identified related to numerous elements starting with the number of products offered. In general B2C channels provide a broad assortment of different products via their website, whereas B2B companies aim for more focused offerings.

Besides the differences in product assortment many other differences have been identified, such as pricing, order size and decision-making. Table 3.5 describes the differences of these and other main elements of both markets.

Table 3.4 B2B vs. B2C e-Business

	B2B Orders	***B2C Orders***
Order Size	Generally bigger, both in quantity and value	Generally smaller, both quantity and value
Participants	Multiple companies and employees	Consumer direct to merchant
Pricing	Negotiated long-term contracts, auctions, catalogue purchases	Mainly catalogue, fixed price
Decision making	Business rules, government approvals needed	Single consumer
Procurement catalyst	Demand chain drive nor replenishment	Impulse/casual purchase
Selection of e-market	Value, partnership or equity driven; portal brand means less	Brand driven, word of mouth, price or advertisement
Fulfilment perspective	Availability and fulfilment details more important	Lenient fulfilment, more likely to wait for backorder product
Credit	Initially credit card, now complex systems on tap bank credit lines	Consumer credit cards
Service time	Generally longer	Generally shorter
Return Shipments	Technical reason	Commercial reasons
Infrastructure	Larger to update	Smaller to update
Network effect	High	Low

Source: MorganStanley Dean Witter, adapted by BCI

In addition to the contrasts in table 3.5, there are some additional distinctions to be made:

- In a B2B environment there is usually room for discussion about the product specifications, the delivery of the goods and the price. This is not the case for B2C, where the seller determines product specifications and where delivery and price of the goods are mostly fixed.
- Consumers tend to take up more service time than businesses. This is due to questions regarding delivery and payment options, explanations on how to use the product, concerns when the delivery is late and of absence of the recipient regarding home deliveries.
- B2C orders are usually impulse buys. B2B buy/sell decisions involve complex business rules of the buyer and seller and have implications for channel conflicts, partnerships and costs of keeping and acquiring customers. In the B2B market repetitive purchases are more frequent.
- Return shipments: in the B2B market return shipments are mainly for technical reasons. In the B2C market, returns are often for commercial reasons: the goods have already been bought elsewhere because they were cheaper or they had a faster delivery time, after seeing the product the consumer decides he/she does not need it any more.

Although there are many differences, not all of these differences will entail different e-Fulfilment solutions. In short, relationships between customers, suppliers and partners in the B2B environment are much more complex, long term, often contractual and involve higher amounts of euros. In the B2C environment, customers return more products, consume more service time and order in smaller quantities. ***Whether it is B2B or B2C an effective logistics system will be the critical success factor to fulfil the online buying experience.*** E-Fulfilment systems enable the realisation of this effective logistics system, since it integrates back-office activities and processes from order capture to final delivery.

3.5 Regional differences in e-Business

Websites of pure-players as well as hybrid e-commerce companies were selected for analysis. An overview of the regional coverage of the database is presented in the table 3.6:

Table 3.6 Regional coverage of the database

Regions	Number of websites in the database
North-America	156
Europe	140
Asia	128
Other	88
Total	512

Among "Other" regions, focus is set to Australia/ New Zealand, Middle East and Africa

The entries in the database can be divided into two categories: B2C and B2B. B2C websites are interfaces between a producer and a consumer over the Internet in which a company provides goods or services to the consumer and where transactions may occur. B2B websites are interfaces between two companies over the Internet where companies offer goods or services for other companies and where transactions may occur. The table below shows the spread of entries over the two categories of websites.

Table 3.7 Type-coverage of the database

Type	Number of websites in the database
B2C	379
B2B	133

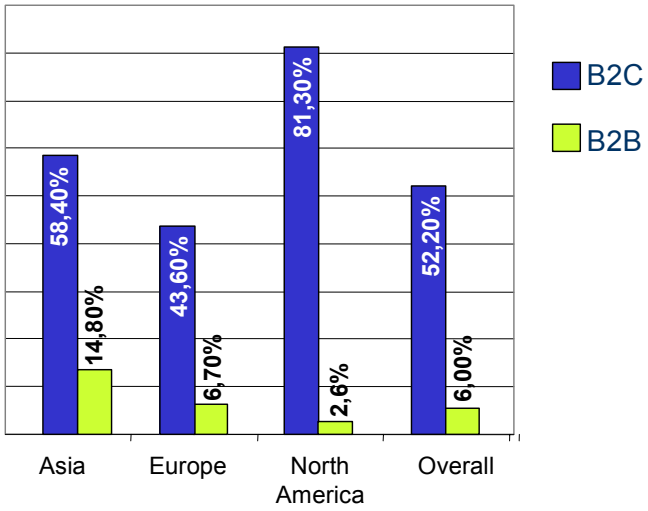
The entries in the database demonstrate that considerable differences exist between B2C and B2B websites.

Tracking and Tracing

Based on the website analysis of the e-Thematic project (see Clustering report 2), it can be concluded that direct online tracking and tracing is more important in the B2C market than in the B2B market. Traceability of products is especially important in the B2C market where customers by online without having seen the product physically, since it provides a feeling of confidence and presence of the product in the supply chain.

Large differences between Europe and North America can be noted. In Europe, only 43,6% of B2C websites offer this service while in North America this figure amounts to 81,3%. In North America, there is a homogenous logistics market, where it is easier to offer track and trace functionalities at low costs. Given the fact of a ***fragmented logistics market in Europe*** (different countries, regulatory differences between EU members, multiple logistics suppliers) ***integration of business processes (order capture, procurement, delivery) is required to provide online tracking and tracing facilities at low costs.***

Figure 3.3 Provision of Direct Tracking and Tracing on the website



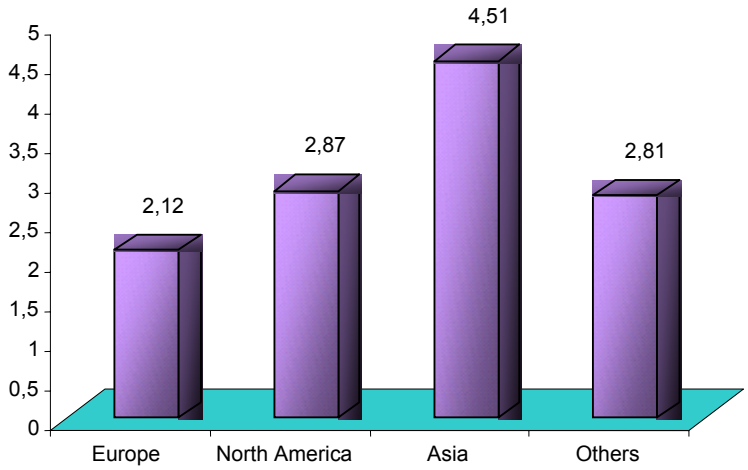
Source: e-Thematic, 2005

The figures in B2B indicate that tracking is not an important tool for this market. The overall offer of this functionality is only 6% (see figure 3.3). The lowest figure is shown by North American websites, 2,6%, followed by European websites, 6,7%, the highest figure is shown by Asian websites, 14,8%. The reason is that tracking of products is organised differently. In traditional B2B channels, there is often a non-virtual contact (for instance by phone) between suppliers and customers on the status of the product. It is nevertheless estimated, that online tracking functionalities will become more important due to the increase of security rules and regulations worldwide.

Average number of product groups

In the website analysis of the e-Thematic project, websites were checked on their product assortment. The number of products were counted and aligned for each region. Remarkable differences can be seen between regions when considering the average number of product groups offered at a website. See figure 3.4.

Figure 3.4 Average number of products offered at websites for each region



In Europe fulfilment companies offer on average 2,12 product groups on their websites. In Asia, on the contrary, 4,51 product groups are offered, which is more than twice as much as in Europe. In North-America 35% more product groups are offered compared to Europe.

Those relatively big differences between Europe and North America can be explained by logistics market differences. The US is a homogenous logistics market with an homogenous taste and culture. In Europe, this is still not the case. Logistics practices differ per country as do taste. Product postponement is important. Therefore, specialising in fewer products reduces logistics costs as well as risks.

the difference with Asian websites is explained by the fact that most of them offer products only to consumers in certain cities. This reduces the complexity of the supply chain but also reduces the physical coverage of the e-company. Because of the small coverage more product groups can be offered online.

Product coverage

Figure 3.5 Product coverage of e-commerce companies worldwide

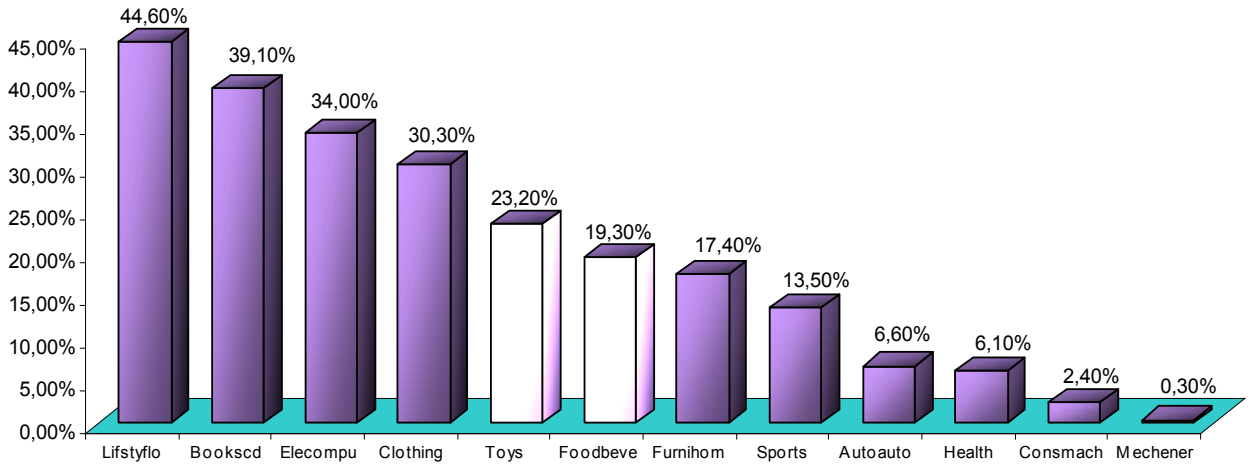
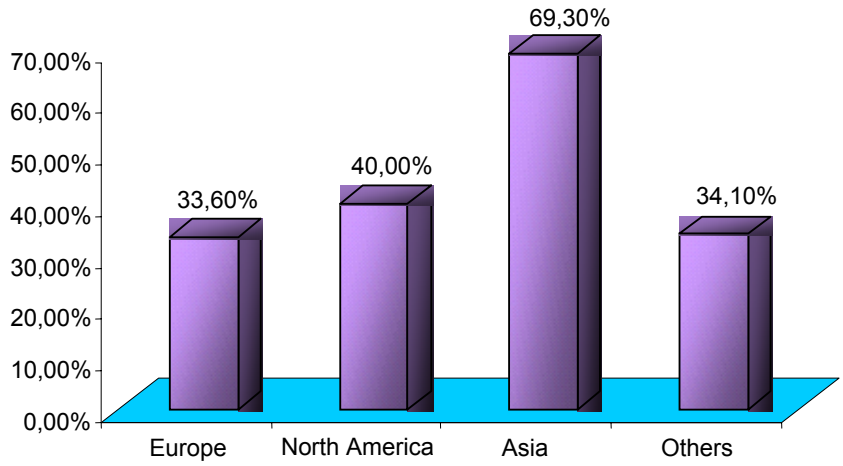


Figure 3.5 shows that the top four of most offered products are in the product groups ‘Lifestyle and flowers’, ‘books and cd’s’, ‘electronics and computers’ and ‘clothing’. This means that there is a clear correlation between product standardisation and product offer. The more standardised the more push-related the strategy. Products with a high degree of customisation have a lower internet presence.

Lifestyle and flowers

Regarding the product group ‘Lifestyle and flowers’, big regional differences exist. Almost 70% of all Asian sites offer this product group compared with only 34% of European sites and 40% of North American sites (see figure 3.4). This difference is probably due to specific Asian cultural traditions and the limited market some of the e-tailers are sourcing.

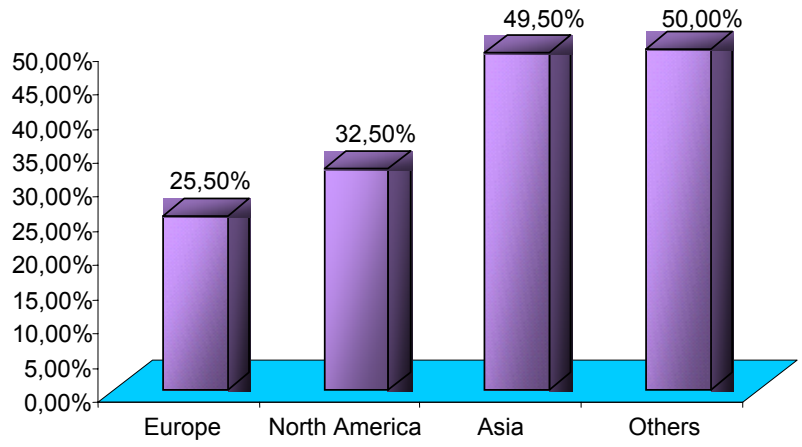
Figure 3.4 Offer of lifestyle and flowers for each region



Books and CD’s

Books and CD’s is the second most important product group. The same pattern emerges as for “lifestyle and flowers”. Almost 50% of Asian websites offer this product group against only 25% in Europe and 32% in America.

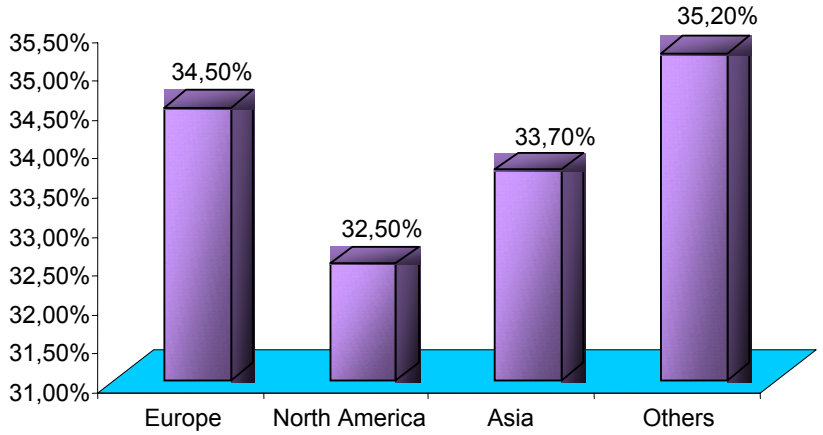
Figure 3.5 Offering of books and CD’s for each region



Electronics and computers

The third product group is “Electronics and computers”. In Europe almost 35% of the e-tailers offer this product group. In North America 32,5%, in Asia 33,7% of the e-companies are offering this item. No meaningful regional differences can be discerned.

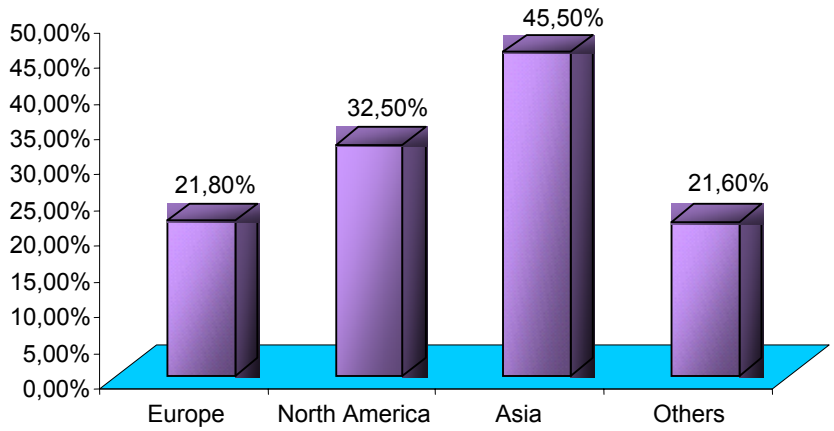
Figure 3.6 Offering of electronics and computers for each region



Clothing

The fourth product group is “clothing”. Big regional differences can be noted. In Europe, only 21,8% of the e-retailers offer this product online while in Asia this amounts to 45,5%.

Figure 3.7 Offering of clothing for each region

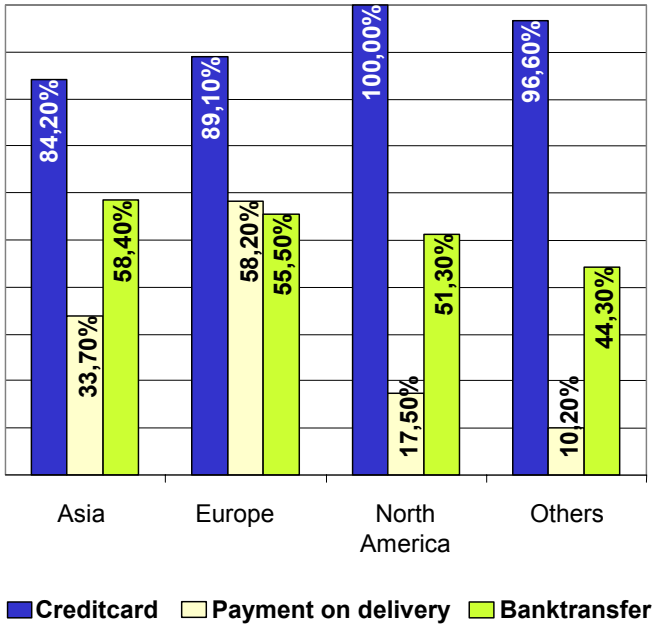


Payment options

In the B2C market, companies offer different payment- options. Worldwide, the credit card is the most popular payment option, reaching an availability of 100% in North America and almost 90% in Europe (see figure 3.8)

Payment on delivery (POD) is a very popular payment option in Europe with 58,2% of e-companies offering this possibility. In North America payment on delivery is only offered in 17,5% of the cases. Apparently, European customers have less trust in credit cards and consequently there are less credit card holders in Europe than in North America. For the other regions, this figure is only 10,2%. In terms of different payment methods per site, Europe is frontrunner. This often fosters sales revenues, since the customer is able to choose the method of payment.

Figure 3.8 Payments options for each region (B2C)



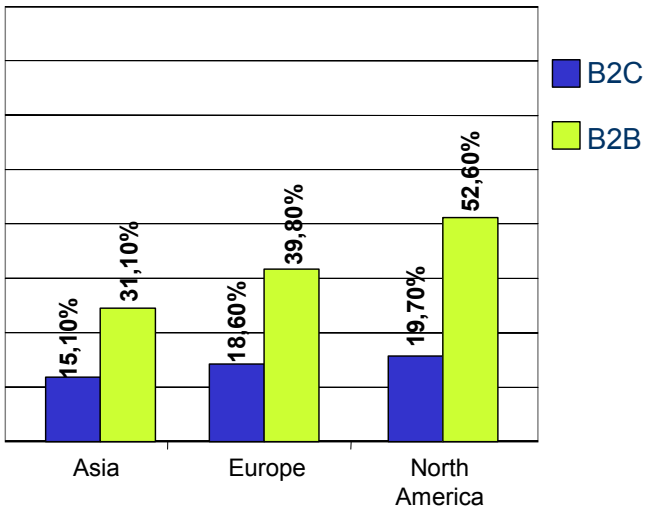
Source: e-Thematic, 2005

Distribution coverage

The distribution coverage of B2B websites for each region is captured in figure 3.9. Out of all non-European B2B companies, 39,8% deliver their products in Europe. 52,6% of all non-North American B2B websites offer their goods in North America. For Asia the figure amounts to 31,1%, meaning that 31,1% of all non-Asian companies deliver their products in Asia. The most important market for B2B companies seems to be North America.

The idea that by e-Business ***'the world is one mouse click away' does not appear in the B2C market.*** On average only 7% of companies have local offices outside their home markets. Due to this lack of physical presence, the distribution coverage in B2C is limited, and thus the focus remains region for region. Out of all non-European companies, 18,6% have included Europe as their market. In North America almost 20% of non-American retailers distribute their products. For the other regions, non-national presence is lower (see figure 3.9). This indicates that the e-markets in Europe and North America are more mature with foreign e-companies focusing on those markets. A correlation exists between the variable: "physical presence": apparently, servicing another market entails a physical presence in that market.

Figure 3.9 Other distribution coverage (B2B & B2C)



Source: e-Thematic, 2005

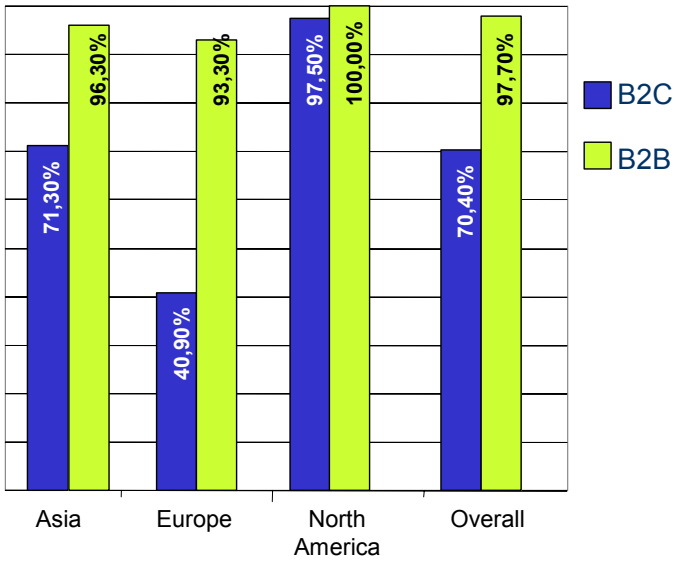
Languages

From the website analysis it was concluded that 96,7% of all European B2B websites use their national language. Asian B2B websites score significantly lower, only 77,8% of all Asian websites use their national language. Figure 3.10 shows that English is the most used language within B2B online business. 97,7% of all analysed websites have an English language option or are in English. The differences between the regions are minimal. As expected, North America shows the highest value with 100% of all websites offering an English version. European websites follow very closely with an average of 93,3% of all websites offering an English version.

This is a big difference compared to the B2C websites where only 40,9% of all European websites provided English as an option. It seems that European B2B companies do not share the narrow geographical focus of their B2C counterparts. 96,3% of the Asian B2C websites offer however an English version. One of the reasons to explain the low percentage for European B2C companies is that providing a service in different languages

has consequences for the back-office activities, which is more of a burden than for an e-company which provides the same service in a single languages. ***However, this local/regional focus could lead to lower sales revenues and thus explain why Europe is lagging behind.***

Figure 3.10 English languages provided (B2B & B2C)



Source: e-Thematic, 2005

3.6 Concluding Remarks

In depth analysis of both B2B and B2C markets have identified important differences, especially between North America and Europe.

Firstly, in Europe e-companies are mainly ***locally focused*** avoiding complicated supply chains and heavier back offices. Languages are a main barrier to conquer market share in other countries since different language applications make back offices heavier. European e-companies therefore focus on a smaller client base. In North America, a more worldwide focus is applicable due to the ***language advantage*** to conquer worldwide market share, ***without additional costs for the back office***.

Secondly, in Europe a strong specialization in products exists. Supply chains differ according to the type of products that need to be protected, transported and delivered. Due to the fragmented logistics market in Europe the focus is on optimizing logistics and cutting

costs by specialization. In America, more products are offered by one retailer. Since there is a homogenous logistics system, the supply chain costs are lower. Further, the back-office activities are not as expensive as they are in Europe. Therefore more products can be offered online. ***To lower the supply chain costs of the logistics systems in Europe to a more competitive level, integration and standardisation of these back office activities is required.***

Thirdly, the success of e-Business in North America also emerges in the distribution coverage outside the local market. In the B2B market in particular, North America is preferred by non-American companies as a sales and distribution location. This conclusion is also valid for the B2C market but less strong since there is a direct correlation between the variable physical presence and the distribution coverage. B2C e-companies often have no local presence outside their home markets, which leads to no or limited distribution outside the home markets.

Fourthly, in addition to language barriers and product specification, payment systems are different compared to North America. Payment on delivery is a common practice in Europe. Furthermore Europe provides more payment options compared to other regions.

Finally, direct track and trace options in the B2C market are offered on a much lower scale in Europe (43,6%) compared to the North America (81,3%). Tracking facilities via the website are not as essential within B2B business as within B2C business, since often alternative tracking has been used historically (e.g. frequent contact between supplier and customer by phone, fax, email) and has worked well. ***In Europe, especially in the B2C market, implementation of e-Fulfilment applications should be stimulated, since the ability to integrate processes, makes it easier to provide reliable order status information in the supply chain.***

Chapter 4 Best Practices and key issues in e-Fulfilment

4.1 Introduction

A company wanting to enter the area of e-Fulfilment needs to have a sound business plan based on the realisation that “business as usual” is over. This must be taken into account, since in e-Business many aspects can differ from traditional business, such as:

- Online shopping experience (product assortment, service levels, trust and data protection);
- Provision of required online services, such as online payment methods and credit checks, tracking and tracing facilities;
- Use of different process management systems and ICT standards;
- Etc.

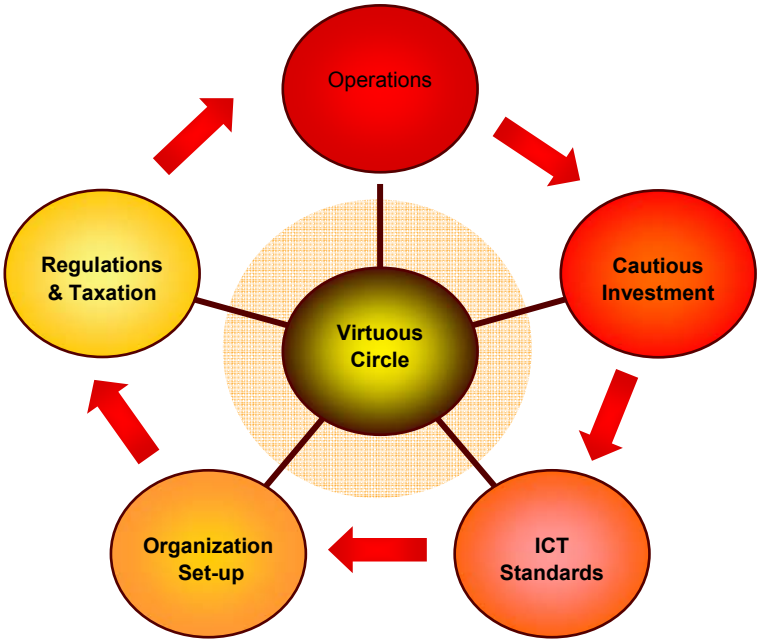
In the past many companies were unable to avoid the pitfalls that come along when setting up a business that differs from the norm. For instance, too often pure players invest heavily in their website (front office) but fail to adequately plan and address the underlying e-Fulfilment processes. “Hybrid players”, often map e-Fulfilment onto existing processes and flows and, consequentially, lose some of the scope for process integration and optimisation.

The key to success for both pure and hybrid players is to decide how e-Fulfilment fits into their existing strategic business plans and their operations processes. This must be considered up front, since e-Fulfilment is at the heart of e-Business. It constitutes a virtuous circle because it affects and is affected by elements such as the organisational set up and ICT standards (see figure 4.1).

For example, how a company approaches the issue of process management systems (e.g. OMS, WMS, ERP) and ICT standards is vital. ICT standards and standardisation of processes facilitate the communications between internal and external systems and applications. As concluded in previous chapters siloed process management systems cannot fulfil the requirements of today’s demand driven supply chains where the customer has high expectations on the product and the delivery once the “buy button” on the website has been pushed. Thus end-to-end e-Fulfilment solutions are required to integrate front- and back office processes and to meet the customers’ expectations.

However, regulatory issues such as VAT, legislation on returns or privacy are also important considerations. To minimise future problems any business adopting e-Fulfilment needs to establish the present and future implications of these issues on their strategic and tactical business plans.

Figure 4.1 e-Fulfilment virtuous circle



E-Fulfilment also means cautious investment. For many companies, the integration of e-Fulfilment suites with legacy systems is a long, costly and frustrating activity. Moreover, in large companies a variety of different applications exist, usually created at different times and using different technologies and standards. Thus investments in e-Fulfilment applications are and should be taken with caution. Considerations for outsourcing are also part of the level of investments. Outsourcing is an option for all e-Fulfilment activities from the design and hosting of the website to the integration with ERP systems or other applications, warehousing and last mile logistics. The type and scope of outsourcing has to be carefully considered and the application and management structures planned and correctly implemented in order to achieve the efficiencies it offers. The more complex the geographical and business scope of a business the more carefully outsourcing needs to be managed. The key consideration for a business is the level of outsourcing and its ability to ensure the standards of service and support are maintained in any scenario they adopt.

In short, both hybrids and pure players need to identify and position themselves to exploit all the opportunities created by the implementation of an e-Fulfilment application, before entering the field of e-Fulfilment and e-Business. If done properly the seamless integration of back-office activities that e-Fulfilment can provide, will create value for all internal and

external stakeholders. It will create transparency and reduce costs for the company and its customers.
In this chapter Best Practices demonstrated in e-Fulfilment are elaborated to provide insight in the virtuous circle of e-Fulfilment and to identify the key issues in e-Fulfilment and e-Business.

4.2 Best Practices

Both desk and field research has been done to analyse in depth the area of e-Fulfilment. Best Practices have been analysed in Asia, Europe and North America. The objective of this analysis is to:

- Identify best practices in e-Fulfilment;
- Validate barriers of e-Fulfilment in B2B and B2C that have been identified by the desk research in E-Thematic;
- Identify additional issues on logistics and transport optimisation;
- Compare Best Practices in Europe with Asia and North America.

For the Best Practices both shippers and LSPs have been interviewed in B2B and B2C markets. In table 4.1 the interviewed companies are listed.

Table 4.1 Best practices in B2B and B2C

Company	***Market***	***Region***
Alastian	B2B	Europe
Menlo	B2B	Europe
Ebags	B2C	North America
Haier	B2C	Asia
Lands End	B2C	Europe
UPS	B2C	Europe
Dell	B2B/B2C	North America/Europe
Amazon	B2C	North America/Europe

These companies have been asked, in a face-to-face interview, about their business models for e-Business, their experiences in e-Fulfilment and their opinion on required improvements in the field of e-Fulfilment. Elements that have been taken into account are:

- Front office
- Back office

- Systems
- Barriers/issues
- Missing research strands

Front Office

The companies were asked about their front office, how it is organised and what services are offered. Through the front-office customers can order their products 24/7, trace their products and look into their account, whereas the back-office provides the physical products, organises the transport and provides additional services if required and paid for by the customer.

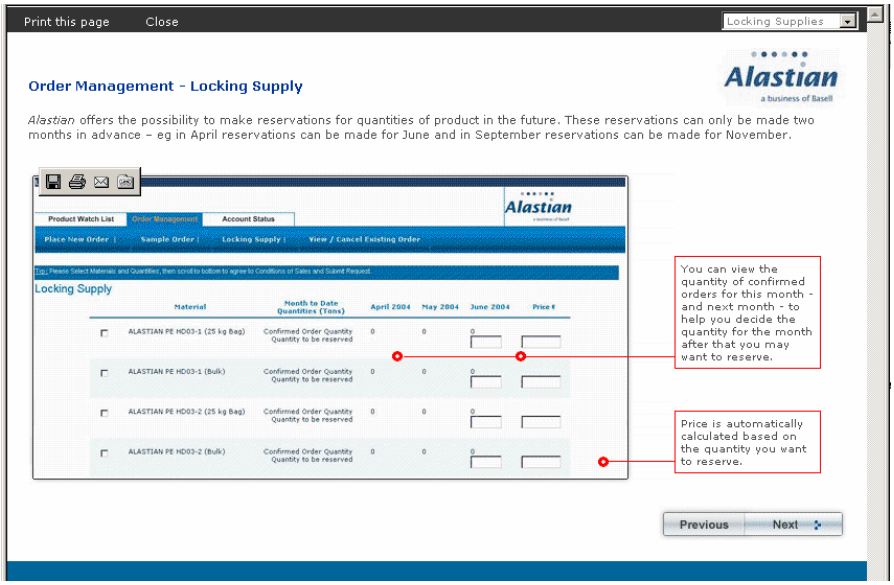
The following front-office services are almost always provided:

- Product information (type, description, sizes etc.)
- Customer registration (for new clients) and management (for existing clients)
- Customer service (technical support, download software or manual etc.)
- Payment options (POD, credit card etc.)
- News and announcement (e.g. on upcoming commercial campaigns)
- Company information (organisation, strategy, contacts etc.)

Additional services are provided, but this depends on the market and specialisation of the products. Especially in the B2B market, where the focus is on a smaller number of products, more customer services are provided. The interviewed companies mentioned that it is often a strategic decision, to provide these additional services to attract new customers or to stimulate existing customers to order online and thus lower traditional order costs. Since the additional services often contain company specific data or confidential data, the additional services are offered in a protected area for registered customers only.

The additional services provided are for instance, account management, which gives the customer insight into current accounts, outstanding claims or previous orders. Discount services are also often offered as additional services, so customers can influence their discount level, by ordering larger quantities or expand the delivery date. Another service that some companies offer online is insight into stock availability, so customers can see if a product is available and “lock their supply” for the coming period. This inventory information is in some cases even provided at plant or DC level. In figure 4.2 the website screen-shot on stock availability of Alastian is shown.

Figure 4.2 Example of front office services



Both discount management and stock availability service require a leading edge e-Fulfilment application in which cross-functional processes are integrated.

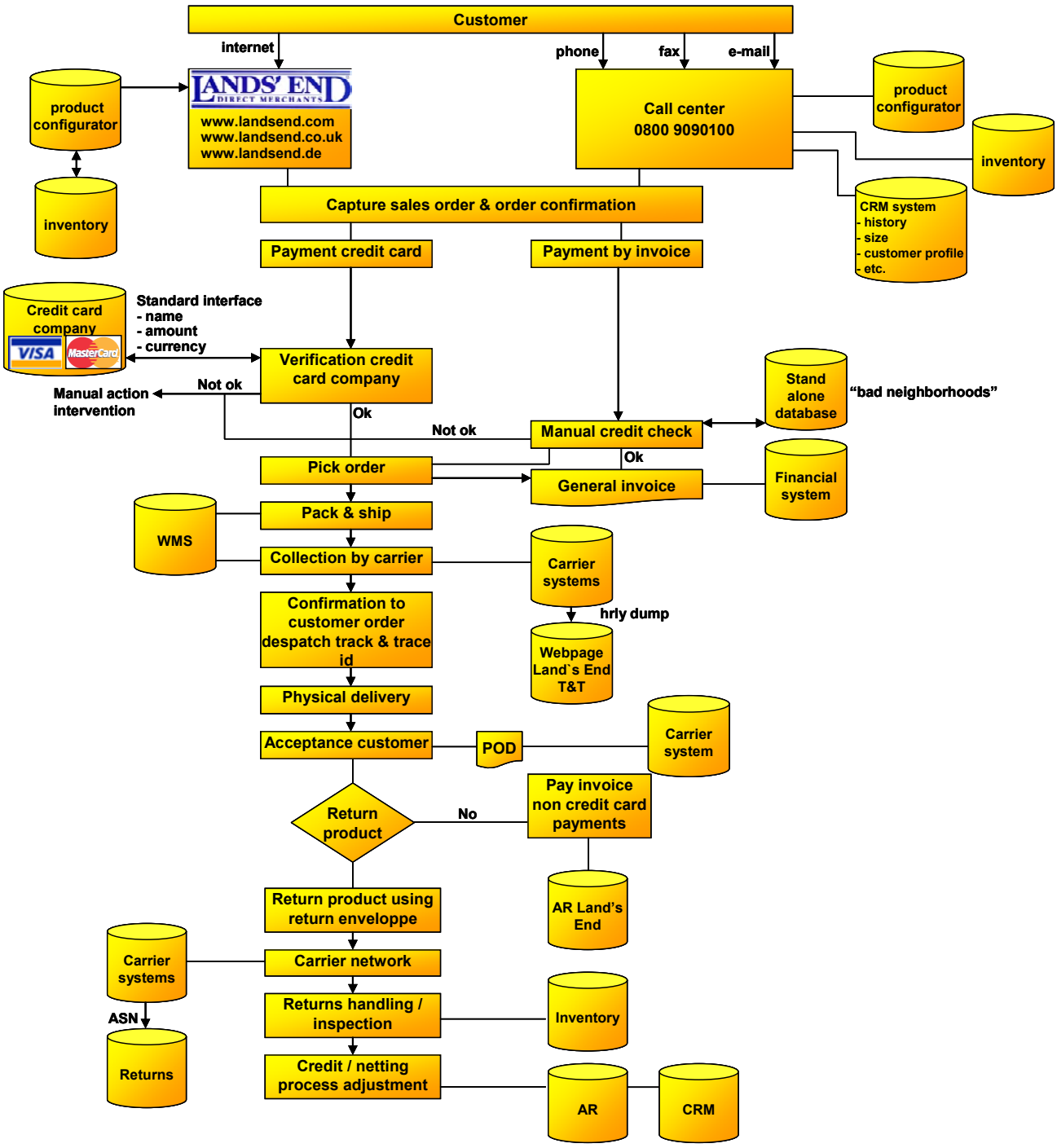
Back Office

The front office is mainly in-sourced where as the back-office is in-sourced, outsourced or a hybrid form of both, for instance in a combination of shipper and LSP. In the back office different processes are organised. After the order button is pushed, the processes in the back office come into operation, such as stock verification, credit check, releases of transport orders, etc.

Customers can enter their orders via the (protected) Internet site or in some cases also by phone, fax or email. After the login script or registration process (for new customers) the order can be entered. Based on the Best Practice cases, customers often have to go through different steps before the order is accepted.

After order acceptance, the back-office activities get off the ground, first a confirmation of the order is shown or sent to the customer‘s e-mail. From this point on several other processes come into operation. Figure 4.3 shows the full order e-fulfilment processes of the Lands End Best Practice case, which compiles credit checks, activates WMS, and generates invoices.

Figure 4.3 Example of order e-Fulfilment process

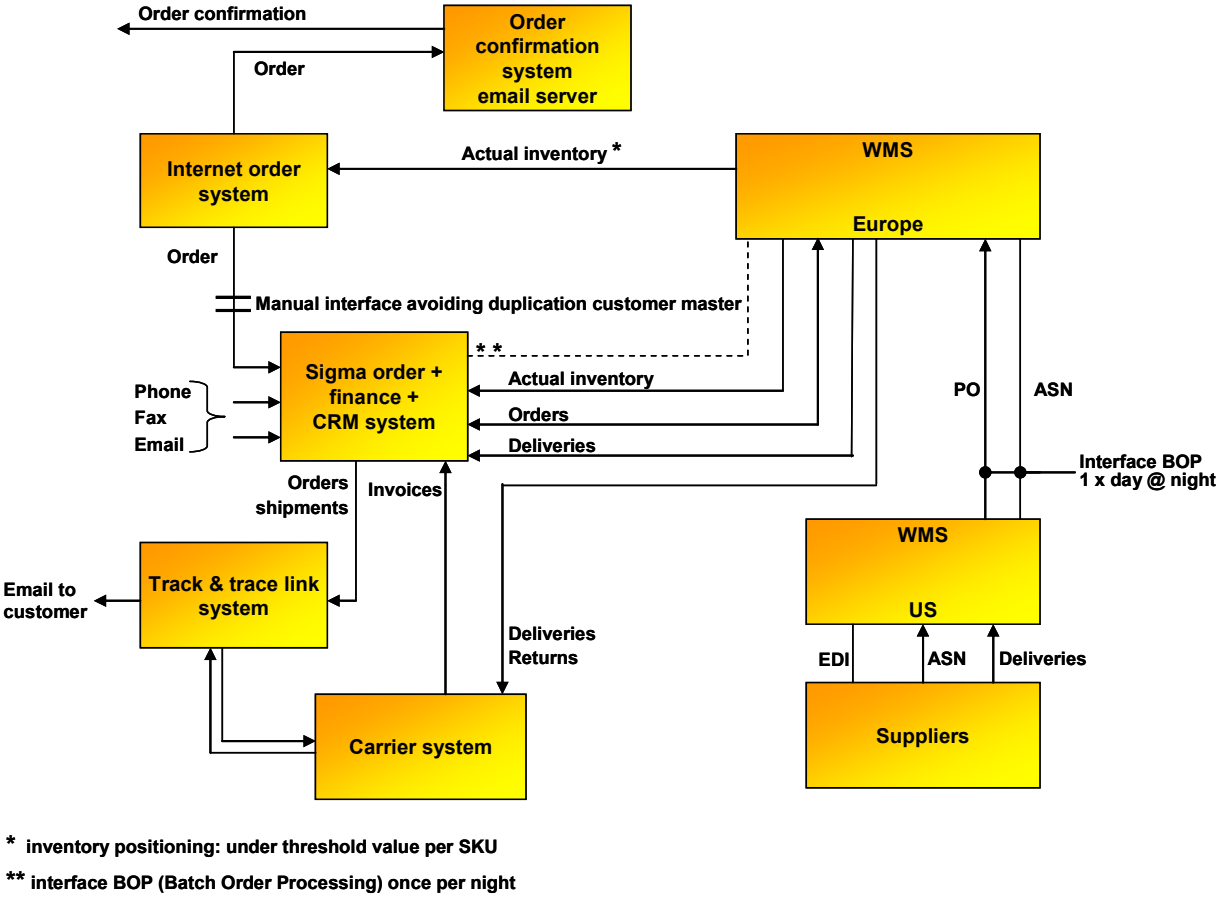


Systems

In order to realise the abovementioned order fulfilment process, companies have to invest heavily in ICT systems to support the different steps in the order process. Often companies have legacy systems or SAP systems running for their traditional business, but if necessary

these systems have to be adapted to communicate and run smoothly with the front office systems. The ICT structure often consists of different systems, consequently the effectiveness and efficiency of the processes are not optimised, due to possible communication barriers between these systems. Thus integration, interfaces or middleware is required. An example of the systems and its structure is captured in figure 4.4.

Figure 4.4 Systems



* inventory positioning: under threshold value per SKU

** interface BOP (Batch Order Processing) once per night

More and more companies nowadays run the processes on one integrated system, but this does not mean that optimum efficiency is reached. Since many different releases of one system exist, the communication across companies is still restricted or needs manual interference. This is one of the key issues that have been addressed by the companies interviewed for the Best Practices. Hence, this issue should be solved in order to enable better and more profitable e-Fulfilment solutions and foster e-Business in general.

This and other barriers have been identified by the interviewed companies as well as items for which further research is required. These items are described in paragraph 4.3 and final chapter 5.

4.3 Key issues

In order to create an efficient framework for e-Fulfilment companies, both pure and hybrid players should implement the principles of the virtuous circle. However, once underway several practical bottlenecks may arise for a company. These issues are described below.

ICT-issues

e-Fulfilment strategies are enabled by Information and Communication Technologies (ICT). There are five main areas in which ICT influences e-Fulfilment practices.

1 The existence of a myriad of standards
- Standards are building blocks
- Too many standards are available

A large number of system providers exist. These system providers offer different electronic solutions for one or more element of e-Fulfilment. Similar systems may be based on different standards depending on the technical choice of its supplier. Where a business adopts systems and applications without taking account of the standards they support, the greater the integration overhead will be for them.

2 The level of knowledge and awareness of standards
- Internal focus / Implementation complexity
- Not solely one e-Fulfilment application that covers the whole supply chain

Many companies are not aware of the opportunities now available from internal and external ICT improvements. The use of middleware, because of its multiple supported standards, facilitates and normalises communication between internal and external applications. This allows internal proprietary applications and external standards based applications to communicate effectively and efficiently, making it easier and less costly to integrate, manage and upgrade their systems, applications and processes.

3 The existence of non-standardised processes
- Basic standards are customized
- Internal focus/implementation complexity

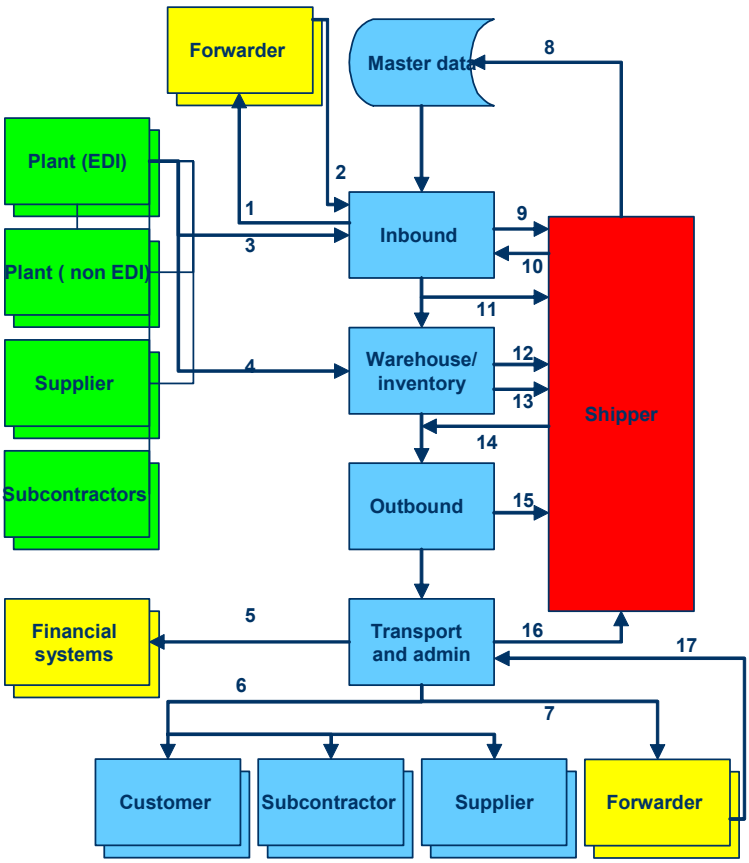
4 No off-the-shelf standard processes
- Customized processes

If badly managed by a business, the use of multiple standards can create a barrier to integration. Companies wish to have systems that are best of breed and that support a degree of customization that allows their unique process and service propositions to be managed and made available to the customer. There is a critical dilemma a business has to resolve between the amount of systems that should remain standard and the business necessity for customization and external service differentiation. The eventual integrated system has to effectively and flexibly mediate the efficiencies of standards and the business criticality of customization and differentiation. Many businesses have failed to get the

balance right, which often leads to internal and external inefficiencies and suppresses the overall commercial success.

In order to minimise or eliminate these inefficiencies and foster business integration companies should standardise their processes. Logistics Service Providers (LSPs) have standardised their processes and communication extensively which make integration logistics and business processes for different customers in different markets much easier. Figure 4.5 shows an example of standardised processes of LSPs.

Figure 4.5 Standardised processes of LSPs



1. Arrival confirmation
2. Shipping information (Yard Management)
3. Shipping notification
4. Quality status update
5. Turnover data
6. Shipping information
7. Shipment information
8. Material/relation master data
9. Arrival confirmation
10. Purchase order
11. Goods receipt
12. Stock photo
13. Inventory changes
14. Delivery notes
15. Goods issue
16. Shipping information
17. Shipment information (Yard Management, unloading info)

5 Legacy systems

- In-house developed systems

In addition to the number of available external systems, many companies still rely heavily on legacy systems. This is because they continue to function well, fulfil their business purpose and are probably core to business operation and differentiation. As it is difficult to integrate decade old legacy systems within a supply chain, it can have negative effects on the integration and overall value generation, transfer and efficiency.

For many e-Fulfilment process and integration problems, ICT solutions already exist, but companies are not aware of them. To assist with this issue the creation and availability of real life case studies concentrating on specific issues and solutions would be of great use. These cases would not only serve as an information database but also as a tool to assist companies with ICT and associated business decisions.

Organisational issues

The integration of e-Fulfilment capabilities to a business is both long and complex. During the integration of a company's processes, several organisational issues have to be addressed.

1 The complexity of the implementation
- In a B2B environment there is more than one company involved.
- There will be a change in transparency because of the way data are exploited throughout the company.
- Organisational integration may lead to a clash of cultures

When companies want to connect their business processes, they need to generate an understanding of their own systems' capabilities as well as those of their partners and then negotiate the best way to fulfil the needs of both parties. The more knowledge publicly available on systems' capabilities the easier it is to arrive at common requirements to drive the creation or upgrade of interface and process standards.

Greater transparency will be created because of the way data is generated and shared inside and outside the company. Internal business processes become more visible, comments and input are made and changes can emerge from this process. In addition to the technical issues a business must also manage the cross-cultural issues of integrating with another e-Fulfilment stakeholder. These issues commonly cause long and costly delays whilst differences are negotiated through to a solution. It is only when cultural issues are resolved, documented and signed off that technology and process integration can hope to proceed and succeed.

2 The limited scope of the implementation process

Establishing the correct scope of the e-Fulfilment initiative and projects is a critical business challenge and risk. A key factor in managing these is ensuring that the scope and mechanisms are inclusive of all groups, processes and stakeholders, which will be impacted or influenced by e-Fulfilment. Where this is not done there is the real possibility that other departments and functions see the project as a large investment, and the sole responsibility of the sales- and ICT department.

Equally the implementation can then be dismissed as an operational event, rather than an all-encompassing strategically critical management change process. If this view exists in a company, the e-Fulfilment strategy will be seen not as the implementation of strategic structural changes but rather a veneer over the traditional functional areas and activities.

3 The fear of sharing information

To succeed in a chain-wide integration, companies must be willing to share certain data and information with their suppliers and customers. However many do not want to do so for fear of diminishing their bargaining power. The fear of sharing information can depend on the prior level of integration and their experiences with information sharing. This is also an issue

that applies internally since conflicting departmental goals and political agendas can lead to unwillingness to share information..

What consistently characterises businesses that succeed in e-Fulfilment is their willingness to negotiate the stakeholder required data and information sets that support and maintain the new interfaces and interconnected processes. These businesses create a data and information set, document it and then manage it as a strategic business resource. Adherence, supply and support of this resource is non optional within the company and its stakeholders.

It is however true that network integration can and does still lead to a fear of sharing strategically important information but in most cases the benefits of doing so outweigh the risks and concerns.

Case: Alastian

Basell, a polyolefin producing company started an e-Business venture called Alastian the proposition of supplying quality polyolefin in a 'No-Frills' way. This means that Alastian delivers high quality products at low prices via a reliable supply chain and a lean web-based interface. The ability to set these competitive prices finds its basis in the way the company manages the complexity of the range of goods and services. It offers:

- **Limited services**: technical support is not included and is only supplied at additional costs. The standard payment term is 15 days. The term can be extended, but at additional costs.
- **Limited number of products**: It provides 50 commodity products that come in two different packages, in bulk and packed in bags.
- **Transparency**: Real time pricing (base price / volume discount / logistics costs / surcharges), order status, financial account status are all available 24/7. The principle is: 'What you see is what you get'. This is exemplified when a customer logs in and a list of the most frequent ordered products with the current discount are directly shown. The volume discount is based on the total quantity ordered via the system the past 12 months. The higher the quantity, the higher the provided discount. During the order placement process the customer directly sees the required products, quantities, requested and proposed delivery dates and costs, divided in initial product costs, discount, transport costs and additional costs.
- **Control for the customer**: The third main advantage is control for the customer. By 'pushing buttons' the customers can choose what he/she requires, when and at which service level. Customers can decide real-time if the balance between requirements and prices is right for that moment.
- **A plain basic set of products and services,** instead of a wide scope of services. From here customers can choose from a limited amount of extra services to upgrade their order.

Reluctance to share information can also be found in other areas of B2C markets. In most cases, this reluctance is present from a customer's perspective. An important factor of the success of the financial processes of e-Procurement is the willingness of consumers to share financial information. Often credit card information is used. A credit check is done and personal and secure information of the consumer needs to be filled in. The willingness of a consumer to do so, depends on the confidence a consumer has in the payment system. Security, legal and jurisdictional issues play a role in the trust and confidence in a payment system.

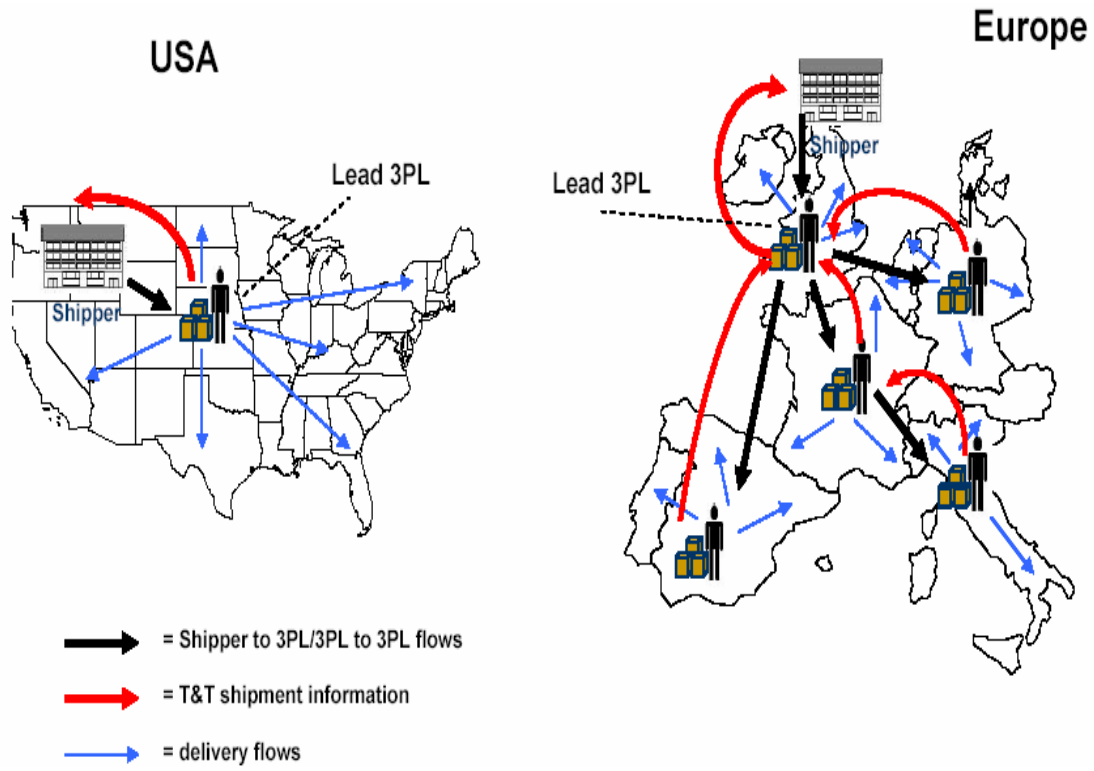
Logistics / Operational issues

As e-Fulfilment progresses, logistics and operational issues surface:

1 The European logistics market is fragmented
- Leads to high costs, multiple carriers, lower services
- There is a need for integration

Few if any Logistics Service Providers (LSPs) can offer a full geographical coverage to the European B2B and B2C markets. The B2C market is extremely fragmented, see figure 3.5 and problematic for all LSPs. They operate most efficiently where there is a high density of delivery and deliveries are made consistent and daily. For LSPs it is the greatest disincentive to B2C service. Postal systems have a legal, social obligation that negates this and forces them to service the entire national territory.

Figure 3.5 Fragmentation European B2C market



LSPs need to work together and with postal authorities to cover the entire European market. Issues are evident with this as friction costs occur when there is a transfer from one LSP to another LSP. The systems that different LSPs use, are incompatible and closely controlled. For instance a shipment that uses two or more LSPs cannot be tracked from a single interface. Such integration problems with LSPs result in an increase in costs and a decrease in the level of service a customer receives. There are significant community wide efficiency opportunities through making the two key LSP services (Shipment entry to network and Tracking) interoperable, compatible and cross-visible at a data and process level. By sharing information and collaborating in infrastructural networks the scale of the market will be increase. Currently nobody has a solution to create this change.

2 Last mile logistics
- Especially the B2C market is problematic
- Multiple calls in home deliveries increase costs

A problem in the B2C market is the fact that the final delivery is a home delivery. It could be the case that a home delivery needs to be repeated several times as a result of absence of the recipient. Multiple calls in home delivery will increase the costs for LSPs. Currently different concepts are tested to increase the efficiency of delivery in the B2C market. Few have proven universally applicable or culturally acceptable across the entire EU market.

3 Pure-players: high investment in infrastructure
- Warehousing, ICT, distribution

Many pure players are investing in last mile capabilities and infrastructure to decrease fragmentation and to provide more extensive coverage. In addition to the investments in warehousing, distribution and ICT innovations, more and more projects are testing new strategies concerning home deliveries in the European market. Many of these projects focus on last mile logistics in urban areas.

Case: Ebags

Ebags is one of the dotcom companies from the end of the 1990's that has successfully developed its e-Business over the last years. The company started operating in 1998 and was established by several former Samsonite executives. Very much like e.g. Dell, Ebags North America works on the basis of a 'direct business' model. Ebags sells a wide range of bags (hand bags, travel bags, business luggage, backpacks, duffelbags, wallets, etc.) through its website. Ebags does not operate inventory or distribution centres itself. Orders generated through its websites are processed by Ebags and subsequently forwarded to its vendors.
Although it is possible in the North America to work with 1 logistics partner for distribution activities across the states, be it for B2B or B2C, this is not the case in Europe. European logistics solutions are almost by tradition fragmented. There are no single pan European logistics providers. Building a pan European network in B2B will involve a number of 3PLs. Building a B2C network in Europe is, at the moment, extremely difficult for a number of reasons

- No single pan European B2C network is available. Large 3PLs like e.g. DHL and UPS have fragmented parts of B2C networks in place but not across the EU
- European postal companies (that often have a B2C network) are almost without exception national.

Irrespective of the changes and improvements in integration between stakeholders it is clear that last mile logistics in B2C markets needs to be radically improved. One of the key enablers of this could be cross compatibility of LSP processes. The issues related to the servicing the fragmented European market can be resolved. Only then can pure players - explore and exploit the possibilities of cross border integration.

Taxation issues

Taxation difficulties occur when business crosses borders. For many businesses the attractiveness of e-Business is that it allows very cost effective entry and operation in new markets. A substantial proportion of a company's revenue may be generated outside its home market. To achieve this, significant issues have to be resolved.

1 There are differences in tax regulations in EU member states
   - National sales limit the determination country of VAT payment
   - VAT is not refundable in case of the return of non-accepted products by a customers
   - Fiscal representation by e.g. 3PLs is becoming more difficult (different rules and interpretation apply in various member states)

The country where VAT payments are made depends on the VAT sales limit per country. Different, relatively low, limits apply across Europe. When a company conducts cross border sales and the VAT payment has to take place in the country of the customer, the company needs a VAT number in the that country. Ultimately this would mean that a web

shop from a European country would need to obtain more than 20 VAT numbers across all Member States in order to conduct international business. In a B2C environment, VAT is not refundable in all cases of returned products from the final customer. When a customer has already paid for a product and then decides to return the product, the fulfilment company cannot claim the VAT with the local authority. A way to overcome issues regarding the lack of clarity on when to pay VAT, a fiscal representation in countries could be established.

2 There are differences in the implementation of customs regulations between EU member states
   - Regulations (e.g. import duties for non-EU products)
   - Flexibility

The differences in the implementation of taxation regulations between the European Union Member States are creating barriers to cross border e-Fulfilment. The main issue is the country where a company is legally obliged to pay its taxes.

Case: UPS

"Every Member State has its own VAT rulings and import and export tax regulations. For instance in The Netherlands a warehouse can be bonded where import duties only need to be paid when products actually are delivered to the end customer and when they are physically entered in to the country as in many other countries. To deal with these issues UPS has an active legal department consisting of more than ten lawyers. The lawyers assess cases regarding different regulations. The lack of a transparent set of rules causes headaches to too many companies, over how to deal with the VAT and legal issues involved in moving products across borders. Although big steps have been made since the start of the common market, many boundaries still exist."

In some cases laws from different countries conflict. To create a more efficient European business environment, a single regulatory system, which is transparent and flexible, is needed. Each company, independent of its origin should primarily be facing the same costs of VAT. It is also true that there is no standard computerised source of tax, duty, import and export information for companies to provide and use for their customers. Having this would radically simplify the challenge of a business wishing to trade online.

Regulatory issues

Because of social and legal challenges and of constant new innovations and implementations of e-Business activities, e-Fulfilment has a dynamic relation with regulations. Key issues are:

1 Data Protection
   - Privacy of data
   - Differences in national regulations
2 Processing of returned items
   - National regulations with regard to disposal and scrapping of returned materials

Privacy of data, consumer rights, disposal and scrapping of returned materials, payment conditions and intellectual property are issues that are equally important in B2B and B2C markets. Establishing the correct balance between what is needed to legally operate a business and privacy / security issues are critical to business efficiency and consumer confidence in B2B and B2C. Countries operate different laws on privacy of data, consumer rights, disposal and scrapping of returned materials, payment conditions and intellectual property are ongoing barriers for cross border e-business. To overcome these barriers, harmonisation of rules and of regulations is a logical first step to take.

Cultural and financial issues

The cultural identity and financial structures of different markets affect cross border e-business.

- European marketplaces may require companies to operate a large number of website versions
- The large number of European languages

Although many companies have multilingual websites, simply translating the content does not take into account the different cultures of users. Assisting businesses to appreciate and manage the culturally sensitive elements for web site design and operation would be a key saving for new and established business when going cross border with their products and services. Correctly done, this serves the purpose of enhancing European internal excellence in this field and creating a barrier to entry for non-EU competitors.

1 Lack of trust in on-line purchasing
   - Security of on-line exchange of financial data
2 Wide variety in payment methods
   - Credit cards/COD/bank transfers/private label cards/ gift certificates

The perceived security of online payment is a major barrier to online business in the EU. This barrier is because of differences in perception, unchallenged high profile media focus on payment security, and cultural preferences related to payment methods. Penetration of credit cards, compared to the North America is relatively low across the total market. Europe benefits however from a variety of viable and culturally attuned alternatives that have deeper penetration and greater trust in various markets. Some of the more common are Cash on Delivery (COD) / direct bank transfer / private label cards/ prepaid, / gift certificates. Enabling businesses to understand and exploit the culturally acceptable mechanisms of payment in different markets is an opportunity to radically improve the perception of safety and market confidence in on-line business.

3 Uncertainty with regard to:
   - International settlement of disputes
   - Terms and conditions of distant selling contracts

As in any business transaction the reputation of the business is critical to their commercial success. The quality of their product, the reliability of the supplier and the ability to get a refund are important factors in e-business. These issues all relate to the perceived trustworthiness of the business whether they are online or physical traders.

Trust in any aspect of e-business can deteriorate when abuse is perceived to have taken place. For this reason e-business fraud should be tackled and severely sanctioned, uniform regulations need to be established. In relation to financial issues in the European market, a uniform enforceable European payment trust mechanism is critical. Through this mechanism, any customer, anywhere, trading with any business, can have confidence that they are secure and supported in their online trading. The value of this over time is inestimable.

Case: Amazon.com

Distant selling or sales via Internet or telephone in Europe is less well developed and accepted when compared to North America. North American customers are more accustomed to buying items on the Internet than Europeans. It is expected that this difference will disappear over the coming years. Already, growth of Internet sales in North America is slowing down. For Amazon, building trust with its new customers is vital to the development of its business. It is very important to the company that the customer is serviced transparently (fast, reliable). If the service is either late, goods are damaged or incur a high cost (e.g. because of shipping), customers may very well not come back.

Chapter 5 RTD and Policy recommendations on e-Fulfilment

5.1 Introduction

Time to fulfil

European companies have a more local-to-local view of E-Business (60% of the European e-Business websites target the local market). They are less internationally focused in their e-Business strategies than North America. This is a reflection of the greater issues and difficulties that face set up, administrative, cultural, taxation, legal and financial areas compared to North America.

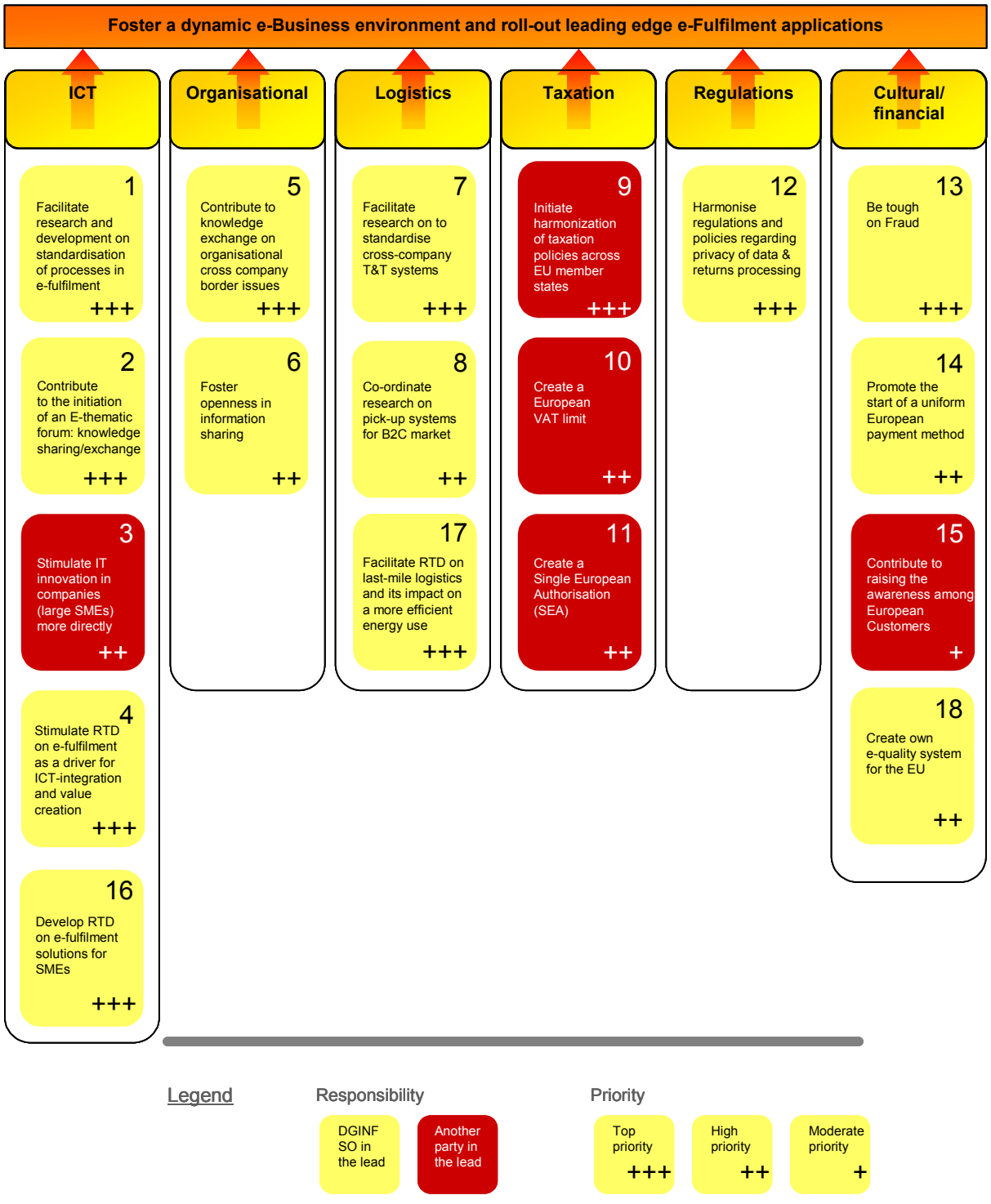
In North America e-Fulfilment is more embedded on a strategic level, with 91% of businesses having someone responsible for e-Fulfilment on Board level whilst in Europe it is only 68%. Even at a cost of business level, Europe is severely disadvantaged. In short Europe is losing ground and something must be done to slow the growing international disadvantage whilst accelerate the exploitation Europe's natural internal e-advantages.

In chapter 5 we look at the major issues. These form the basis of the recommendations that follow in the sections below. These recommendations have been validated by two industry workshops organized respectively in Brussels, Belgium (January 2006) and in Poznan, Poland (February 2006) . The workshops stressed the importance of e-Fulfilment solutions for SMEs, the role of transport and, especially, last mile logistics and the importance of fulfilment for the enhancement of energy use by using efficient solutions. Finally, the role of quality control in e-business was also stressed.

Responsibility and priority

The research performed in E-Thematic has led to ***15 recommendations*** in six key areas that cover the B2C- and B2B market. The recommendations will be dealt with item per item. (See figure 5.1). The mentioned industry workshop has identified three additional recommendations which are numbered 16 , 17 and 18.

Figure 5.1 Overview recommendations



5.2 ICT

The main ICT objective should first of all be to initiate and drive the emergence of ***standardised business processes*** as much as possible. In the last decade, an intensified use of ICT systems to support different logistics business processes has occurred, focussing mainly on internal company process efficiency. Cross stakeholder integration was rarely taken into account and different systems, for different but customised processes, now restrict the opportunities for cross compatible efficient and flexible e-Fulfilment solutions

As illustrated by LSPs, internal standardisation of processes using market standards for external communications simplifies the process of integration, cross stakeholder communication and support of the flows of goods and services.

Table 5.1 ICT recommendations

No.	Recommendation	Responsibility	Priority
1	Facilitate research and development on the standardisation of processes in e-Fulfilment (B2B and B2C)	DG INFSO[1], DG Enterprise	+++
2	Contribute to the initiation of an E-thematic forum: knowledge sharing. (methods and exchange)	DG INFSO	+++
3	Stimulate ICT innovation in companies (large SMEs) more directly.	DG Enterprise	++
4	Stimulate RTD on e-Fulfilment as a driver for ICT-integration and value creation	DG INFSO, DG Enterprise	+++
16	Develop RTD on e-fulfilment applications for SMEs	DG INFSO, DG Enterprise	+++

To realise further standardisation of business processes, DG INFSO should facilitate research and development of processes in e-Fulfilment. The first step should be to ***map the common processes and negotiate which could be standardised***. Eight main processes are common to any e-Fulfilment cycle. These are order entry, stock management /advice, pricing, payment, order entry to transport, transport monitoring, billing, and reporting. This job stream is best managed by DG INFSO in collaboration with the internal and external stakeholders in both e-channels (B2B and B2C).

The second step in facilitating research and development of processes in e-Fulfilment is ***optimising the use of standards within ICT systems***. In short, a limited number of ICT standards should be endorsed and active participation is needed in their management and evolution to improve operational, security and deployment efficiencies. This optimisation of

[1] The underlining indicates the leading organisation for the action.

ICT standards mainly lies in the hands of DG INFSO in combination with facilitating organisations like the UCC (Uniform Code Council) and RosettaNet.

Another high priority is to ***stimulate knowledge sharing and exchange by initiating an e-Fulfilment Forum***. In an e-Fulfilment forum, knowledge can be shared and exchanged between companies in a dynamic way. Secondly, knowledge of forum participants will result in an aggregation of different cases that will both illustrate and assist in the emergence of best practices. Furthermore an e-Fulfilment manual can be developed within the forum, based on the standard logistics processes and enablers. Finally, to validate this manual and drive leading edge e-Fulfilment applications, pilot projects should be set up. The forum participants could function as pilot environment and starting point for further sharing and exchanging of the compiled knowledge on e-Fulfilment.

The third ICT recommendation is the dissemination of ICT innovations in companies. As many large companies will integrate with their customers or suppliers, small companies are sometimes pressured to use specific standards and technologies. Small companies need to be assisted in their access, understanding and use of the available technical and standards options. This should be facilitated through the creation and development of an ***e-Fulfilment awareness tool***. This can be developed under the umbrella of DG Enterprise for instance as a successor of the EBSN (The European e-Business Support Network for SMEs) initiative of DG Enterprise.

Fourthly, research on e-Fulfilment, which is a new area of study, should be supported by DG INFSO, DG Enterprise, academia and business, and needs to be included in the next RTD Framework programme. The research should focus on e-Fulfilment as an ICT-integration driver and as a driver for value creation for companies and their customers.

Finally, DG INFSO and DG Enterprise should examine the impact of e-fulfilment on SMEs and facilitate the development of appropriate applications for e-fulfilment.

5.3 Organisation

The implementation of e-Fulfilment in an organisation is complex for both pure plays and hybrid companies. During the integration of a company's processes, several organisational challenges emerge. The success of implementing e-Fulfilment projects, depend inter alia on the way change management is incorporated into the project structure. To accelerate and increase the number of excellent e-Fulfilment implementations available, several issues have to be tackled.

Table 5.2 Organisational recommendations

No.	Recommendation	Responsibility	Priority
5	Contribute to knowledge exchange on organisational cross company border issues	DG INFSO, DG ENTERPRISE	+++
6	Foster openness in information sharing	DG INFSO	++

First, a contribution must be made to ***exchange knowledge*** on organisational and planning issues for e-Fulfilment. Many e-Fulfilment are failures from day one because companies lack this type of information. e-Fulfilment means new strategies and goals and potential benefits that are unknown. By educating companies the knowledge vacuum can be alleviated. DG INFSO and Member States should make an effort in exchanging knowledge on how to set clear goals and benefits in new cross company environments. In short, this can be realised by ***dissemination of best organisational practices,*** by organising workshops and using the e-Fulfilment forum as a platform.

Furthermore, companies need to have a resource that details the information available related to the possibilities of existing ICT systems and logistics processes such as project planning, legal and administrative resources, security information, order processes, credit validation and stock verification processes that support the realisation of e-Fulfilment. DG INFSO should therefore ***foster openness*** in information sharing. This can be dealt with via regulatory policies and consolidated one stop information shops for aspiring e-Fulfilment companies. It can also be assisted by ***driving the emergence of technical ICT solutions such as interfaces*** to assist companies to integrate standard processes (see recommendation 1). This makes it easier and less costly to integrate their business processes.

5.4 Logistics

Fragmentation is a key issue in Europe's drive to achieve its e-Fulfilment goals. There is not one LSP or postal authority that can provide an integrated, optimised solution for the entire EU B2C market. This is due to the limited geographical coverage, poor cross border postal networks and gaps and structural issues at a social, economic and administrative level. This leads to higher costs to all stakeholders and society as a whole.

Table 5.3 Logistics/Operational recommendations

No.	Recommendation	Responsibility	Priority
7	Facilitate research on the barriers of the roll out of T&T systems	DG INFSO, DG Enterprise	+++
8	Co-ordinate research on pick-up systems for the B2C market	DG INFSO, DG Tren, DG Enterprise, Member States	++
17	Stimulate research on last mile logistics and its impact on efficient energy use.	DG INFSO, DG Tren, DG Enterprise	++

DG INFSO and DG Enterprise can help in solving this fragmentation problem by facilitating research for to standard mechanisms of providing and operating process visibility between companies and transporters, irrespective of their country of operation.
A key focus should be in relation to the visibility on shipment movement as this is strategically critical to managing the overall supply chain. Such a capability would significantly advantage European players in e-Fulfilment.

Facilitation of research on the opportunities to standardise cross company Track&Trace systems is the first action needed. Despite huge public and private RTD-investments in T&T, results are still limited. The barriers to the roll out should be closely examined.

Then, optimisation of pick-up systems and last mile logistics solutions in both B2B and B2C market should be targeted. It is these two points of the e-Fulfilment that impose the most severe inefficiencies on transporters. ***Co-ordination and exchange of these research projects and pilots*** that exist on local level should be the key.

Finally, RTD on the level of applications and networks should be undertaken on last mile solutions and the impact on energy use.

5.5 Taxation

The differences in taxation regulations between the Member States are still creating bottlenecks for efficient fulfilment of all cross border business. The main problem is where a company is legally obliged to pay its taxes. In some cases, laws of different countries still clash. For instance regulations on import duties for non-EU products differ on a national level. In the table below the three main recommendations are listed.

Table 5.4 Taxation recommendations

No.	Recommendation	Responsibility	Priority
9	Harmonise taxation policies across EU member states	DG TAXUD, DG INFSO,	+++
10	Create a European VAT limit	DG TAXUD	++
11	Create a Single European Authorisation (SEA)	DG TAXUD	++

The Directorate General Taxation and Customs Union (DG TAXUD) is already very active in the area of tax harmonisation. Amongst others DG TAXUD aims at:

- Simplifying and modernising the tax and customs administrative rules and procedures;
- Developing a coherent, modern and simple VAT system and a strategy designed to limit the distortion that arises from interaction of the different tax systems of the Member States.
- Provide a single computerised taxation and customs rules resource for companies and transporters to integrate and use in their e-Fulfilment processes

Based on the research and findings from e-Thematic, it must be concluded that in order to foster e-Business and effective e-Fulfilment in Europe, DG TAXUD should ***further harmonise taxation policies*** across the Member States especially ***related to cross border businesses***. They should address issues such as non-refundable VAT in case of returned products. This harmonisation should also address fiscal representation issues, which LSPs are confronted with. If these issues were to be resolved it will provide significant efficiencies of process and price to all stakeholders.

Furthermore DG TAXUD ***strengthens the possibilities for one single VAT level and management*** in Europe. This would eliminate issues of tax levels, payment and fiscal representation for both companies and transporters. This would lower set up and operating costs for LSPs and other e-Fulfilment players.

Finally, harmonisation of taxation and customs issues like fiscal representation and one single VAT limit can support the development of ***one Single European Authorisation*** (SEA). This already is in its proposal phase.

5.6 Regulatory

Progress has been made in legislation on e-Business on an EU level. However significant differences still exist between specific national regulations on data privacy or how general EU legislations on this privacy issues are translated on a National level.

Table 5.5 Regulatory recommendation

No.	Recommendation	Responsibility	Priority
12	Harmonise regulations and policies regarding privacy of data, scrapping of returned materials	DG Enterprise, DG INFSO	+++

Managing the different EU and national regulations relating to cross border e-Fulfilment imposed cost and inefficiencies on the entire supply chain.

In B2B as in B2C markets, there are several regulatory areas that are of importance to the users. As described, issues with different VAT hamper the efficient provision of retail and logistics processes, data privacy and payment conditions are key concerns for consumers, whilst disposal and scrapping of returned materials, intellectual property and conditions of contracts are emerging concerns for merchants, LSPs and national authorities.

The availability of the correct and timely data is essential to e-Fulfilment operations. Without this, irrespective of how good the technical infrastructure and process integration is, e-Fulfilment will fail. Balancing the issues of security, privacy and data availability is fundamental to establishing robust, secure and appropriate e-Fulfilment capabilities in Europe.
In a B2B environment, companies must share data with customers and suppliers in order to operate and remain service competitive. The sharing of information such as pricing can be against regulations.
In the B2C market, consumers often do not wish to share all their private information. There is data that can be used by companies for process management and marketing purposes. The extent to which companies should be able to use data such as consumption behaviour and credit card information data needs to be consistent and clearly explained to all stakeholders.

To address these issues, the confusion over the different regulations and policies within the EU needs to be addressed.. DG Enterprise should initiate the process leading to the harmonisation of rules and regulations since they cover different business processes of companies. An action plan could be a potential successor of the analysis on “Legal barriers in e-Business”.

5.7 Cultural/Financial

Fraud continues to be a major concern for all legitimate stakeholders in the B2B and B2C environments. Of urgent concerns are the different rules and regulations on returns and scrapping of materials. This is clearly shown in the results of the open consultation of DG Enterprise on “Trust barriers for B2B e-marketplaces”.

Moreover, in the EU, payment on delivery continues to be a popular payment mechanism due to customer concerns with on-line payments. Credit cards or other electronic payment systems continue to lag in popularity and for the e-Business companies, this creates friction costs. Finally, a quality control system is missing. An e-quality control system would foster the brand “European e-business”.

Table 5.6 Cultural/Financial recommendations

No.	Recommendation	Responsibility	Priority
13	Be tough on Fraud	DG ENTERPRISE, DG TAXUD, DG INFSO,	+++
14	Promote the start of a uniform European Payment method	DG INFSO, Member States	++
15	Contribute to raising the awareness among European Customers	DG Enterprise	+
18	European e-quality system	DG INFSO, DG ENTERPRISE, Member States	++

E-Business stakeholders fear fraud and lack of payment security. These are significant barriers to the development of e-Business in Europe. An Internet taskforce should be created at an EU-level to monitor Internet fraud, research security improvements elsewhere and propose appropriate actions.

The EU should liaise with banks, credit card companies and software developers to drive improvements in Internet payment and associated security mechanisms. Uniform EU regulations need to be established even to the point of establishing and endorsing a European payment mechanism, security infrastructure and payment guarantees. This would address many of the issues with payment, security, dispute settlement and the terms and conditions of distant selling contracts.

Without stakeholder confidence that they will benefit from e-Business and e-Fulfilment investments, Europe will continue to struggle to achieve its goals in this area. Toughness on fraud is critical for this. This must also be paralleled by the explicit and forceful education of all e-Business stakeholders as to their responsibilities and their rights in relation to e-Business and its operation.

Finally, a EU quality system for e-business and e-commerce is lacking. Such a quality system would create trust and boost e-commerce in both the B2B and B2C market segments.

Chapter 6 E-fulfilment Forum

6.1 Introduction

During the e-Thematic project, research and networking activities have been carried out to provide a better view on and to exchange knowledge relating to existing and emerging processes, technologies and applications in the area of e-fulfilment. Based on these activities, different constraints on achieving efficient e-Fulfilment and e-Business were identified.

One of these was identified by different industry stakeholders as the absence of a forum to discuss issues pertaining to e-Fulfilment and to comprehensively represent the e-Fulfilment sector and its development in Europe. Without international cooperation, e-Fulfilment will not be successful. The needs are too divers and the volumes insufficient for the majority of stakeholders to create their own national solutions. Therefore parties must be willing to establish co-partnerships on operational levels. Without this, the operational costs will prove to be too high and the service levels too low. In an industry forum on e-Fulfilment this cooperation can be established, stakeholders can meet and exchange knowledge and experience.

The industry workshop on e-fulfilment (see chapter 5), endorsed the proposal to create an e-Fulfilment Forum aiming at strengthening the sector on an EU-level.

This Chapter covers the different stages of the creation and initial management of such an e-Fulfilment forum. It is structured as follows: paragraph 2 describes why the establishment of an e-Fulfilment forum is required. In paragraph 3 the main objectives of the forum are described. Paragraph 4 gives an overview of the benefits of an e-Fulfilment Forum. Paragraph 5 highlights the activities and organisation of the forum. Finally, paragraph 6 summarizes the main conclusions.

6.2 Does Europe need an E-fulfilment Forum?

E-Business has specific issues that apply to most markets. European e-Fulfilment has to cope with very specific issues which do not occur in non-European markets. The research of the E-Thematic project showed that in order to ***foster a dynamic e-Business environment and roll-out leading edge applications and infrastructures in e-Fulfilment*** the following issues have to be tackled (see table 6.1).

Table 6.1 Key Issues in e-Fulfilment in Europe

Type of issue	Identified issue
• ICT	• The existence of a myriad of standards • The level of knowledge and awareness of standards • The existence of non-standardised processes • No off-the-shelf standard processes • Legacy systems
• Organisational	• The complexity of the implementation • The limited scope of the implementation process • The fear of sharing information • Lack of coordination across European E-Business • Poor information and experience flow • Poor access to successfully implemented models • Poor reuse of best demonstrated proactive • Poor ongoing support for e-businesses
• Logistics	• The European logistics market is fragmented • Last mile logistics • Pure-players: high investment in infrastructure
• Taxation	• Differences between EU member states: − in tax e.g. VAT regulations − in the implementation of customs regulations − in environmental taxation on products
• Regulatory	• Data Protection • Processing of returned items (non refundable VAT and collection of electronic products for recycling) • Provision of export figures per product (Intrastat)
• Cultural/Financial	• European marketplaces may require companies to operate a large number of website versions • Lack of trust in on-line purchasing

In essence each and every one of these elements raises the cost of establishing an e-Business in Europe and thus acts as a disincentive to the emergence of a strong, competitive and efficient e-Business sector at all levels of the European economy.

These issues are best resolved in a cooperative endeavour between policy makers and industry stakeholders. The proposed forum will facilitate and contribute to the resolution of these issues by:

- Establishing an EU wide comprehensive e-business stakeholder representative body;
- Establish clear, easy to use and comprehensive set of communications channels;
- Establish mechanisms and means for mutual information input, use and benefit;
- Coordinate and standardise the collection and collation of information to policy consultations;
- Establish resources designed to cut the costs of planning and set up of e-businesses;
- Establish existing and emerging Best Demonstrated Practices in the EU and globally;
- Establish support for e-businesses from the experts in the forums membership;
- Initiating bottom-up initiatives and by providing input for policy initiatives.

The e-Thematic project also concluded that cooperation between the industry stakeholder in e-Fulfilment is virtually non existent. The need to enhance industry cooperation was strongly advocated during different meetings, seminars and conferences of the e-Thematic project.

The creation of an industry forum on (e-)Fulfilment will contribute to stakeholder cooperation by enhancing knowledge exchange between pure and hybrid e-Businesses whilst sharing and discussing best demonstrated practices. In addition, the forum would provide valuable information on key issues that limit the broader use or acceptance of leading edge business models, processes, applications and infrastructures in e-Fulfilment. Finally, such a forum would provide policymakers with in depth, immediate and comprehensive input and feedback for the design and the scoping of policy actions in this field.

6.3 The Industry Objectives with the e-Fulfilment Forum

During the project's life time, many different structured and non-structured contacts and exchanges with European fulfilment actors took place. These actors indicated that there is an urgent need to create an e-Fulfilment Forum. ***The main Industry objectives*** are:

1 ***Exchange of knowledge and experience***
At present, knowledge exchange in e-fulfilment is very limited in the EU and is exclusively organised vertically. The horizontal exchange flows are lacking. To be efficient, industry knowledge exchange should be organised ***vertically*** between e.g. vendors, manufacturers and service providers and ***horizontally*** between manufacturers or between service providers.

2 ***To foster cooperation between stakeholders***
As is the case in other industry sectors inefficiencies can be eased through the effective gathering and distribution of information and support on prior experience and Best Demonstrated Practices.

3 ***Coordinated Industry input and Feedback***
To provide sectoral input and feedback regarding e-fulfilment on the level of policy initiatives.

4 ***Input to Standards Bodies and Initiatives***
Provide input and a considered European position to standards bodies.

5 ***Establish a European body of research and reference information***
To identify further research on e-Fulfilment and establish a specifically European body of research, statistics and information in support of business planning, experience and operations.

6 ***Identify and share Best Demonstrated Practices***
To share best practices, which can form the basis of benchmarking and objective process recalibration in companies.

6.4 Benefits of the forum

Member benefits

As the costs of setting up and managing e-Business and e-fulfilment capabilities are high and long term, the forum is focused on the following key benefits to its members:

- The availability of comprehensive business models describing the establishment of an e-Business in Europe;
- The availability of guidelines and support information for the set up process;
- The availability of Best Demonstrated Practices and expertise available to them;
- Information on the key challenges and reasons for failure in establishing an e-Fulfilment infrastructure;
- Ongoing updates and information on EU and Global e-Business and e-Fulfilment;
- Notification and clear explanation of EU initiatives that impact e-Fulfilment and e-Business;
- Access to regular information updates, survey results and statistical information;
- Access to the membership for one on one or mediated topic related meetings;
- Simple comprehensive input to the EU consultation processes related to e-Fulfilment and e-Business;
- Membership logo usage on their web sites;
- Usage of Forum statistics and information in marketing and sales information;
- Forum staff availability for briefings to boards or organisational meetings.

The key company level benefits that emerge from the list above are:

- Reduction in the heavy initial investments in establishing the appropriate business model, introducing a comprehensive and cogent business justification;

- Establishing a realistic project plan;
- Choosing and negotiating the best e-Fulfilment options;
- Managing business transformation and transition planning;
- Establishment of consistent business metrics and benchmarks;
- Having up to date and comprehensive information on the evolution of e-Business and e-Fulfilment;
- Access to low cost support in cases of issues that need to be resolved;
- The ability to project their successes for the benefit of their brand reputation.

It is estimated that the research and planning savings to a company looking to enter e-Business will be reduced by 20 to 30% with such support and standard template information available to them.

Benefits of other stakeholders

Businesses establishing an e-business presence have to interact with many different administrative and support groups in order to achieve success. E-Fulfilment is one of the most problematic of these as it is highly complex and fragmented across the European market. The existence of a forum to assist in linking businesses with a need to businesses or groups with a solution or proven approach would be a key enabler of e-business in the European market. Hence, a lot of other stakeholders could benefit from such a forum:

- ***Logistics Service Providers (LSPs):*** By knowledge exchange and listening to the issues addressed by the forum LSPs can provide better logistics solutions to optimise inventory control, transport, last mile distribution, communication and services for their customers.

- ***Software providers:*** The e-Thematic project has shown that stand alone or proprietary systems are often used in e-Fulfilment. Through the forum issues and requirements of businesses related to e-business and e-Fulfilment can be consolidated and have a far bigger impact than a business by business approach to suppliers. The weight of this consolidated input will translate into applications, capabilities and processes with a high degree of connectivity and process integration. For the suppliers the ease of sale into the contributing businesses will be enhanced and they have a benefit from cooperation with the forum.

- ***Policy makers:*** In a multi nation market of 25 countries the ability to rapidly gather information , input and comment on issues that are subject to policy initiatives is highly problematic. The forum offers an opportunity to broaden, standardise and speed up the gathering of consistent, cross comparable and real time input and feedback to EU level initiatives. This adds depth and credibility to the EU process and assists in generating national support and faster uptake of resulting legislation, policies and guidelines.

- ***Standardisation bodies:*** In order to facilitate e-Business processes standardisation bodies like the Uniform Code Council and Rosettanet can use the outcome of forum discussions or best practices to align the standards with the business processes.

6.5 Activities and organisation of the forum

Introduction

We limit this Business Plan to the first two years of the Forum, the start-up phase, which is the most critical for any organisation.

Activities

In the start-up phase of an e-fulfilment forum, the following activities should be initiated in order to create a solid base and to harvest quickly results:

1 ***Setting up the organisation of the forum:*** In the start up phase, gaining trust between members is very important. A draft work plan will have to be produced which will be presented at a kick off meeting.

2 ***Establish the Forums Purpose, Philosophy and Principles:*** This is where the framework of the forum is presented to the kick off meeting for agreement. It establishes the consensus for cooperation, coordination, contact and activity. It is from this that the benefits for the membership emerge.

3 ***Drafting the Forum's rules and regulations***: The rules and regulations will include a statement of forum purpose, legal status, financial basis, admission criteria, membership rights, roles and responsibilities, code of conduct, management and administration principles, accountabilities, commitments and sanctions. .

4 ***Marketing the forum:*** The creation of the Forum will have to be marketed on an EU-level and international level. This implies the drafting of a marketing plan.

5 ***Recruiting members:*** The credibility and value of the forum will result from its ability to attract and engage a wide variety of businesses, organisations and individuals from across the 25 EU countries that participate or influence e-Business. Recruitment can initially be done through the established network of the E-Thematic project. The goal is to recruit a core of 8 to 16 representative members for the establishment of the forum. Some of the participating e-Business organisations in the E-Thematic project have already shown interest. It is likely that the forum as it grows will establish a series of membership options geared to ensure that businesses can participate at the level they wish.

6 ***Creation of Working Groups***. The Forum's work will be done through different working groups. The themes and practical operation of these working groups will be established by the Members.

7 ***Organise 1st annual e-Fulfilment conference***: The Forum will organise annually an international conference. The conference theme will be identified by the membership.

8 ***Dissemination of forum results***: The results of the collaborative endeavours of the members will be disseminated widely. A specific dissemination plan will have to be elaborated.

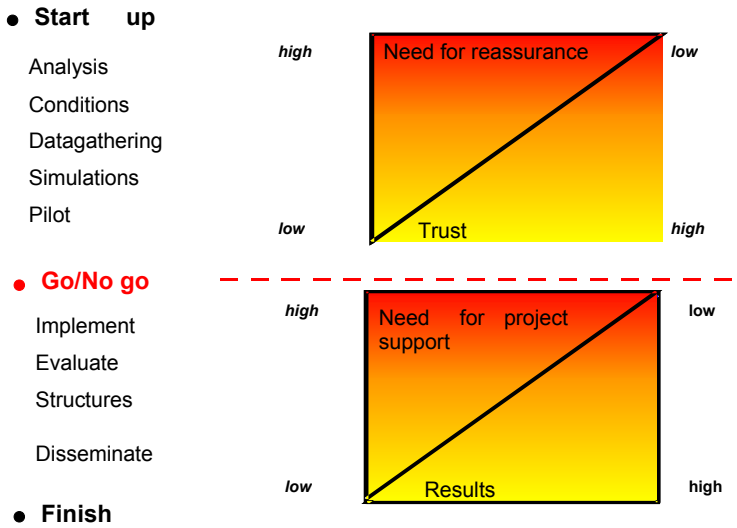
Organisation

The key role of the forum is to establish a neutral environment focused on facilitating and establishing trusted, comprehensive and beneficial interaction between its members. By focusing on issues of common concern, difficulty or inefficiency the forum can assist in attracting members from all sectors and competitors within sectors to arrive at a common approach and input to the resolution of such issues.

At most start-ups of industry the lack of trust between the members is a major issue. As a consequence, substantial effort is generally invested in building a relationship based on trust between the members, which are in fact also competitors and hesitate to share knowledge and information.

In figure 6.2 a model for successful collaboration and gaining trust in a network environment is shown. At the start up of the network the need for reassurance is high and the trust is limited. When start up has been successfully finalized, the need for reassurance diminishes and the level of trust increases. In view of this, the need for a trusted Third Party, which supports the creation of such networks, is high.

Figure 6.1 Model for collaboration within networks, platforms and forums



Source: BCI, 2003

6.6 Conclusions

E-Business at this time represents between 3% and 7% of all retail trade. With EU inefficiencies relating to e-Fulfilment estimated (on the basis of a UK survey of 25% of total e-Fulfilment in 2005) at a minimum of €1.5 billion as e-Business grows so will the costs of inefficiencies.

The Forum is focused on the reduction of such inefficiencies and the establishment of a comprehensive, inclusive and mutually beneficial environment of cooperation.

The evolution of e-Business and e-Fulfilment in the EU has so far progressed on the basis of costly independent business initiatives. Little or no cooperation or support is available to leverage the experiences and Best Demonstrated Practices across the business community. Thus the costs of establishment, learning and operation are far higher than needs to be.

The forum looks to address these issues and establish an environment where businesses can benefit from past experiences, leverage common solutions, become more efficient and input in a strong and comprehensive manner to the evolution of the EU broader information society aspirations.

In light of the cost of inefficiency the initial investment in the forum is money very well spent as it provides the opportunity for Europe to establish a strong, mutually supportive and efficient market environment capable of competing locally, nationally, EU wide or globally.

Annex 1 Compendium on e-fulfilment

A

Application — A software program designed for end users. It provides the user with tools to accomplish a task (e.g. database programs, word processors and web browsers).

Application Service Provider (ASP) — A third party that manages and distributes software-based services and solutions to its customers from a centralized located server base. The use of the software application is leased instead of building the software from scratch

B

B2B (Business-to-Business) — B2B e-commerce is the exchange of services, information and/or products between businesses via the web.

B2C (Business-to-Consumer) — B2C e-commerce is the exchange of services, information and/or products from a business to a consumer via the web.

Back-office (Back-end) — All the processes and components that take place behind the scenes. A back-office indirectly supports the front-office (front-end)[2].

Best Practices — A practice, which is considered superior over other practices, in e-fulfilment

Black holes — Knowledge vacuums.

[2] See Front-office

Bottleneck	A constriction, which limits the flow a system is capable of handling.
Bricks-and-Clicks	Also called Click-and-Mortar. The term refers to businesses that offer online services via the Web as well as a traditional offline enterprise staffed by people. It was first used by David Pottruck, co-CEO of the Charles Schwab brokerage firm, Bricks-and-Clicks run two divisions, one on- and one off-line, in a cooperative and integrated manner. These divisions both support and benefit from each other.
Building Blocks	Standards that function as a base on which the technical environment of an e-fulfilment B2B or B2C system is constructed.

C

Cash on Delivery (COD)	A shipment that is paid for by the customer at the time of delivery.
Cash-to-order cycle	In the supply chain leg performance indicator, which measures the time between the receipt and the payment of an order. The shorter the cycle, the better for the company.
Chain wide integration	Integration throughout a whole value chain.
Clicks and Mortar	See Bricks-and-Clicks
Cross border e-fulfilment	E-fulfilment of which payment and delivery cycles cross national borders
Customer Relation Management	Customer Relation management (CRM) entails all aspects of service and sales interactions a company has with its customer. CRM often involves personalizing online experiences, help-desk software, and E-mail organizers.

D

Data mining

Looking for hidden patterns and relationships in data to predict future behaviour.

Database

Similar to an electronic filing system, a database is a collection of information organized for quick access. Databases are organized by fields (single piece of info), records (complete set of info), and tables (list of records).

Digital Marketplace

An alliance of cooperating enterprises that use an internet based solution, which links businesses interested in buying and selling related goods or services to one another. The marketplace facilitates the exchange by matching buyers and sellers while taking into account the interests of both buyers and sellers.

Dot-com

Used when referring to an online retailer has a negative connotation because of the highly publicized dot-com crash in 2000.

Download

Downloading refers to copying documents or files from the internet or a network server to your computer. The opposite of downloading is uploading.

E

e-business

The use of the internet to facilitate the buying, selling, or exchanging of products and services. E-business extends beyond selling online and impacts management, marketing and sales, operations, and legal aspects of operating your business.

e-business plan

An e-business plan, like a traditional business plan, maps out your business's strategy. Your e-business plan will pay more attention to the electronic aspect of your business.

e-business logistics	The planning and execution of the front and back-end operations in a supply chain using internet-based computing and communications.
e-commerce	The term e-business and e-commerce are often used as interchangeable terms. E-business is a broader term that refers to all areas of your e-business strategy' from marketing to the transactional component.
EDI (Electronic Data Interchange)	A series of formats, which provide a computer-to-computer exchange of standardized business documents between different companies' computers over the Internet. EDI allows for the transmission of purchase orders, shipping documents, invoices, invoice payment, etc. between web-based business and its trading partners. EDI standards are supported by virtually every computer company and packet switched data communications company.
E-fulfilment	That part of e-business that aims at efficiently and effectively integrating a company's back-office processes, activities and functions arising from order capture through to final delivery to the customer.
eEurope 2005	European Commission's action plan, which focuses on the widespread availability and use of broadband networks throughout the European Union by 2005, the development of internet protocol IPv6 and the security of networks and information, eGovernment, eLearning and eBusiness.
e-marketplace	A system that enables multiple buyers and suppliers to interact and transact online.
Enterprise Resource Planning (ERP)	An electronic business management system that integrates all aspects of a business from inbound to outbound logistics. ERP is generally supported by multi-module application software, which assists in managing the system and interacts with the suppliers, customer service and shippers.

Enterprise-Wide Technology	A technology that supports an agency-wide application.
e-procurement	Online purchasing of goods and services through a web interface.
eTailer	Online version of a retail store, where customers can shop at any hour of the day or night without leaving home or office.
E-thematic	The e-Thematic project aims at the optimisation of value creation in the Supply chain by examining and focusing on e-Fulfilment applications. The project is co-funded under the Information Society Technologies" Programme of the European Union. Thoe project's URL is: www.e-thematic.org
Extranet	a secure extension of a company's intranet that allows business partners to access specific company data. A username and password would be required to gain access to information, such as training manuals, pricing and promotional materials, and operations plans.

F

File Transfer Protocol (FTP)	An Internet protocol that enables you to transfer files between computers on the Internet.
Forum	Virtual topically-focused discussion group or area, where ideas and proposals are discussed. Deducted from the traditional Roman forum.
Fraud	The gain of privileged information transferred via an ICT system (such as a password) It often involves unauthorized usage of personal information
Front-end (Front-office)	Customer interface, where data is communicated from a customer to a computer or from a computer to a customer.
Fulfilment	The process, which leads to consumption of a product or service. It entails when and how a need is satisfied.

G

Gift Certificates	A substitute for a currency, which is not a legal tender. Money, which can only be used with one company, association or group of companies.

H

Hardware	Physical aspects of computers, telecommunications and other information technology devices.
Hybrid Player	Organisation active in both the traditional off-line business as the on-line business.
Hypertext Mark-up language (HTML)	A scripting language used to create web pages. HTML defines the structure and layout of a web page by using a variety of tags and attributes

HyperText Transfer Protocol (HTTP)	The internet protocol responsible for transferring and displaying web pages. Through HTTP web servers and web browsers are able to communicate with each other.
Hyperlink	An HTML tag that allows you to click on some text or an image and link within the document or to another document or web page. Hyperlinks are the most essential ingredient of the World Wide Web.

I

Information Technology (IT)	All aspects of managing and processing information, including all matters concerned with the furtherance of computer science and technology and with the design, development, installation, and implementation of information systems .
ICT	Information and Communication Technology is the use of computer-based information systems and communications systems to process, transmit and store data and information. Since communications systems are dependent on microprocessors the term is often abbreviated to information technology.
IT Infrastructure	Computerized networks, intelligent terminals, and accompanying applications and services people use to access, create, disseminate, and utilize digital information; the equipment, software, services, and products used in storing, processing, transmitting, and displaying all forms of information
Industry Standards	Common and repeated use of rules, conditions, guidelines or characteristics for products or related processes that are developed and promulgated by an industry for.
Interface	A demarcation between two devices, where the electrical signals, connectors, timing and

	handshaking meet. Often the procedures, codes and protocols that enable the two devices to interact are included or carried out by the interface. An interface makes it possible to interoperate two systems.
Integration	Refers to how well you website integrates with legacy (old), database systems, financial systems, your offline strategy, your corporate culture, and proprietary third-party software and application service providers. In general integration generates many efficiency advantages.
Internet	A worldwide network of networks that all use the TCP/IP communications protocol, share a common address space.
Internet auction	An auction through the internet. There exist three types of auctions. First of all the highest bidder. Secondly, Dutch, where the price starts at a certain point and it drops until somebody accepts a price. Thirdly, sealed bid, in which bids are concealed and not public to other bidders.
Intranet	An internal computer network owned by a company or organization. Access is limited to company employees or others with authorization.
IP address	IP can be compared with a postal system. It allows you to address a package to be sent to another computer connected to the internet.
ICT-Value Chain	The division of enterprise activities that relate to ICT operations. Both to add value directly for external customers and to add indirect value by supporting other enterprise operations.

J

Java	An object oriented programming language created by Sun Microsystems. Java is a device

	independent language, meaning that programs compiled in Java can be run on any computer.
Just-in-Time (JIT)	A process for optimizing manufacturing processes by eliminating all process waste, including wasted steps, wasted material and excess inventory.

L

Last Mile Logistics	The final leg in the process of delivering a product to a recipient/customer.
Legacy systems	Operational mainframes, terminals, networks, databases, operating systems applications and other forms of hardware and software that are of great value to a company but which cannot easily communicate to fulfil the requirements of an e-business model. Legacy systems operate with standard controls designed by the individual company.
Logistics	The process of planning, implementing and controlling the efficient, effective flow and storage of goods, services, and related information from point of origin to point of consumption.
Logistics Service Provider	An organization that manages and executes a particular logistics function, using its own in house assets and resources, on behalf of another company. (also known as third party logistic, 3PL)

M

Middleware	Software designed to integrate separate software and/or hardware systems. It provides the communication between the separate systems.
Mobile Commerce	E-business in a wireless environment. For example, you might access resources such ad

	stock quotes, directions, weather forecasts, and airline flight schedules through a wireless laptop or telephone

N

Network	A group of computers or devices that are connected together for the exchange of data and sharing of resources.
No-frills	Service which consists of solely the core service without surrounding extra's.

O

Operating system	Master control program of the computer. All programs must talk to the operating system in order to run.
Order capture	The moment the order first enters a company's system.
Order delivery	The moment a product is handed over to the customer.
Order Management	All deliberate activities to fulfil an order from order capture to order delivery.
Order Cycle	The time spent and activities performed from the time of order until the time of delivery.
Outsourcing	The act of transferring responsibilities for a process to an outside organisation.

P

Pilot	The trial implementation of a solution, on a limited scale, to ensure its effectiveness and test its impact.
Platform	A website on which information is dynamically processed and has the function to disseminate information widely.
Portal	A website that gives access to a broad scope of resources and services.
Pure-Player	A company, which is solely web-based and has no bricks-and-mortar business.
Privacy	The right to control access to one's person and information about oneself
Privacy policy	A policy regarding the collection, usage and disclosure of personal information collected in the course of business.

Private Label Cards	A private label card is issued by a retail outlet, such as a department store or gasoline company, and contains the logo of the retailer. It is accepted only by the retailer who issued it. Retailers partner with a bank or a card-issuing management company to back the cards.
Proprietary software	commercial software whose source code cannot be modified. Proprietary is the opposite of open source code software.
Protocol	A set of rules that determines how two computers communicate with one another over a network.

R

Radio frequency identification (RFID)	A technology that uses devices attached to objects that transmit data to an RFID receiver. These devices can be large pieces of hardware the size of a small book like those attached to ocean containers or very small devices inserted into a label on a package.
Roll-out leading edge applications	A leading application, which can be distributed through a computer system to users across an organisation.

S

Software	Computer programming code that provides a computer with instructions to perform specific tasks; a program or application.
Scalability	Popular buzzword that refers to the ability for a hardware o software system to start small and grow to meet future demands.
Standard	A specification for hardware, software, or data that is either widely used and accepted (de facto) or is sanctioned by a standards organization (de jure).

Standardisation	The process of establishing a technical standard among competing entities in a market, where this will bring benefits without hurting competition.
Start-up	A new business venture.
Security	Computer security is the effort to create a secure computing platform, designed so that agents (users or programs) can only perform actions that have been allowed.
Supply Chain Management	The integration of supplier, distributor, and customer logistics requirements into one cohesive process.

T

TCP/IP	Abbreviation for Transmission Control Protocol/Internet Protocol, a collection of protocols that define the basic workings of the features of the Internet.
Third Party Logistics Provider (3PL)	See Logistics Service Provider.
Transmission Control Protocol / internet Protocol (TCP/IP)	A protocol for communication between computers, used as a standard for transmitting data over networks and as the basis for standard Internet protocols.
Tracing	The action of retrieving information concerning the whereabouts of cargo, cargo items, consignments or equipment.
Tracking	The function of maintaining status information, including current location, of cargo, cargo items, consignments or containers either full or empty.
Tracking&Tracing	Monitoring and recording shipment movements from origin to destination.

U

URL	A complete web site address (e.g. http://www.e-thematic.org).
Usability	Ease-of-use of a company's website.

V

Value Chain	A value chain is a high-level model of how businesses receive raw materials as input, add value to the raw materials through various processes, and sell finished products to customers.
Value Added Network	A value Added Network (VAN) is a third-party service organization that provides a variety of services for businesses that want to do business using EDI. Most importantly it provides the communications link between EDI trading partners.
Virtuous circle	A chain of activities, which positively reinforces one another.

W

Web	The system of internet servers, which supports HTML pages and links it to other documents.
Web hosting	The placement and maintenance of a web site on a server.
Web server	A computer that is connected to the internet and that stores files written in HTML that are publicly available through an internet connection.

X

eXtensible Mark-up Language (XML)	XML allows designers to create their own customized tags, enabling the definition, transmission, validation, and interpretation of data between applications and between organizations if common tags are used.

Annex 2 List of Abbreviations

- **3PL** Third-party logistics provider
- **5th FWP** Fifth Framework Programme
- **B2B** Business-to-business
- **B2C** Business-to-consumer
- **CIDX** Chemical Industry Data Exchange
- **COD** Cash On Delivery
- **CRM** Customer relationship management
- **DG Enterprise** Directorate General Enterprise
- **DG INFSO** Directorate General Information Society and Media
- **DG TAXUD** Directorate General Taxation and Customs Union
- **DG Tren** Directorate general Energy and Transport
- **DP** Data Processing
- **EBSN** European e-Business Support Network
- **EI** Electronic Invoicing
- **EIA** Enterprise application integration
- **EBSN** European e-Business Support Network for SMEs
- **EDI** Electronic data interchange
- **ERP** Enterprise resource planning
- **ICT** Information communication technology
- **IES** Enterprise solutions
- **IP** Intellectual Property
- **ICT** Information and Communication technology
- **ISO** International Standard Organisation
- **IT** Information Technology
- **ITS** Intelligent Transportation System
- **JIT** Just-In-Time
- **LSP** Logistics Service Provider
- **MTML** Marine Trade Markup Language
- **OEM** Original Equipment Manufacturer
- **OMS** Order Management System
- **RFID** Radio Frequency Identification
- **RTD** Research Technological Development and Demonstration
- **SME** Small and Medium-sized Enterprise
- **SCM** Supply Chain Management
- **SGML** Standard Generalized Mark-up language
- **SEA** Single European Authorisation
- **SOAP** Simple Object Access Protocol
- **TCP/IP** Transmission Control Protocol/Internet Protocol
- **TMS** Transportation Management Software
- **T&T** Track & Trace
- **UCC** Uniform Code Council
- **UDII** Universal Description, Discovery and Integration
- **VAN** Value-Added Network
- **VAT** Value-Added Tax

- **WMS** Warehouse Management System
- **WSDL** Web Service Descriptive Language
- **WS-I** The Web Services Interoperability Organization (WS-I)
- **XML** Extensible mark-up language
- **ebXML** Electronic Business eXtensible Markup Language
- **XMLRPC** XML Remote Procedure Call

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