

BESTUFS II

DELIVERABLE D 2.4 PART I

Best Practice Update (2008)

Updated Handbook from Year 2001

E-Commerce and urban freight distribution (home shopping)

Public



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SIXTH FRAMEWORK PROGRAMME FOR RESEARCH AND TECHNOLOGICAL DEVELOPMENT: Integrating and Strengthening the European Research Area (2002-2006), Sustainable Surface Transport

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1 Introduction

1.1 The BESTUFS Thematic Network and need for action

Background

More than 80% of today's road freight trips in European conurbations are of distances below 80 km and can be defined as urban or urban-regional transport. The delivery and collection of goods within urban and metropolitan areas, especially in the core areas of cities with old and established centres has a major impact on the local community concerning the economic power, quality of life, accessibility and attractiveness of a city. Besides the benefits of goods transport in urban areas in terms of the supply of products to consumers and the economic importance of supporting other industries there are also negative impacts appear such as air pollution or congested roads. Taking the negative and positive impacts into consideration in developing an efficient and environmentally-friendly urban transport system is essential for the economic health and the quality of life of cities.

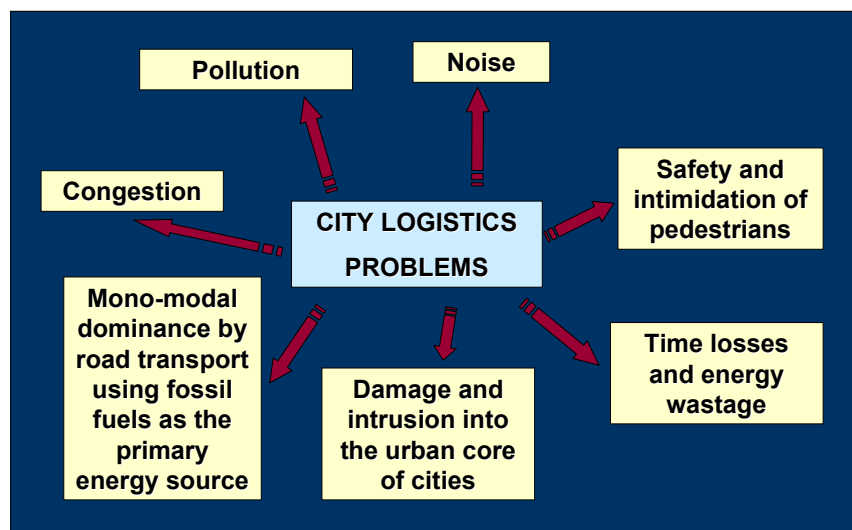


Figure 1: City Logistics Problems

Need for Action

For a future economic and environmental supply it is therefore important to assess the opportunities and chances of technical (vehicle technology, telematics applications, etc.), organisational (co-operation, etc.), operational (route planning, etc.) and political (time windows, weight limits, etc.) measures for improving the urban transport systems.

The thematic network BESTUFS contributes within the 6th Framework Programme to the Key Action „Sustainable Surface Transport“.

The sustainable surface transport work programme addresses the following objectives:

- New technologies and concepts for all surface transport modes (road, rail and waterborne).
- Advanced design and production techniques.
- Rebalancing and integrating different transport modes.
- Increasing road, rail and waterborne safety and avoiding traffic congestion.

BESTUFS II is a project that is relevant to all of these objectives, even though it is submitted to the City Logistics call under the fourth objective, “Increasing road, rail and waterborne safety and avoiding traffic congestion”.

BESTUFS II-project introduction

BESTUFS II is a follow-up initiative of the thematic network BESTUFS and aims to maintain and expand an open European network between urban freight transport experts, user groups/associations, ongoing projects, the relevant European Commission Directorates and representatives of national, regional and local transport administrations and transport operators in order to identify, describe and disseminate best practices, success criteria and bottlenecks with respect to City Logistics. Overall, BESTUFS II will further identify the problems and the requirements of the cities as well as of all private actors involved in urban freight and will maintain the environment for establishing policy as well as research recommendations. The most relevant and helpful findings promoted in BESTUFS II in form of guides for actors in medium sized cities together with national seminars organised in 22 countries will undoubtedly be suitable for many actors and many cities within Europe.

Furthermore, BESTUFS II will describe the urban context and the role urban freight transport plays in a city. A group of experts will quantify freight transport related processes and measures compared to other transport modes as well as compared to different sustainability objectives. Finally, common data models and applied practical modelling tools are addressed in more detail by European experts that will consider this topic at roundtables and prepare suggestions for a European harmonisation and roadmap.

Building on the structure and experience gained from the BESTUFS project the follow-up initiative of BESTUFS II will be augmented in three major ways: (1) a broad geographic coverage including the provision and dissemination in various languages of guides about urban freight transport best practice; (2) a quantification of the contribution of urban freight solutions to EU policy objectives; and (3) an examination of urban freight transport models and data structures.

Coordination Action

The general idea behind a “Coordination Action”, to encourage the co-operation between domain experts, research institutions and other interested groups at a European level is not new in the transport domain. The COST activities as well as the ‘concertation’ mechanism installed by the Transport Telematics Application Programme (T-TAP) in the 4th Framework Programme are previous examples. The latter focused on clustering themes and topics: Within the Program, funded projects were clustered and asked to participate in so-called ‘concertation’ meetings to discuss common ground and to derive further needed actions. The COST activities did not have a clustering component as such, but the participants did devise a sharp focus on single themes, which in many respects can be regarded as the predecessors to the thematic network activities of the 5th FP.

BESTUFS II
Thematic Network

The EC established a thematic network (TN) on BEST Urban Freight Solutions (BESTUFS) in January 2000 with a duration of 4 years. This thematic network (TN) corresponds directly to the task 2.3.2/4 of the *Key Action: Sustainable Mobility and Intermodality*. The open European network has been established between urban freight transport experts, user groups/associations, ongoing projects, interested cities, the relevant European Commission Directorates and representatives of national, regional and local transport administrations.

The partners of BESTUFS II aim to broaden the existing BESTUFS network to include medium sized urban areas in Europe including those in the New Member States.

The work of BESTUFS II-network takes place within the policy and regulatory framework of the Community, including the common transport policy, the development of the Trans European Transport Networks and the green paper on urban transport. It is the role of this thematic network to act as a facilitator in order to ensure that excellent strategies and best practices are not lost to the remainder of the European Community, the freight community and cities themselves. This approach allows structuring all relevant material available concerning the prioritised themes of the BESTUFS II-network and supports the analysis of the projects.

The concept of a thematic network is thereby focusing on the co-operation between experts and projects with already existing or just emerging experiences and expertises and on the collection and raw analysis of results of national and European projects - rather than starting new research activities. Within the network the following organisations and interest groups are involved: more than 20 European cities and regional administrations, interest groups like POLIS, ACEA, FTA or EVO, national networks (Association of Italian cities for sustainable mobility and transport issues, Forum for City Logistics Denmark) as well as European and International bodies (e.g. IMPACTS, Institute for City Logistics).

The following overview shows the co-ordination and organisation of the network:

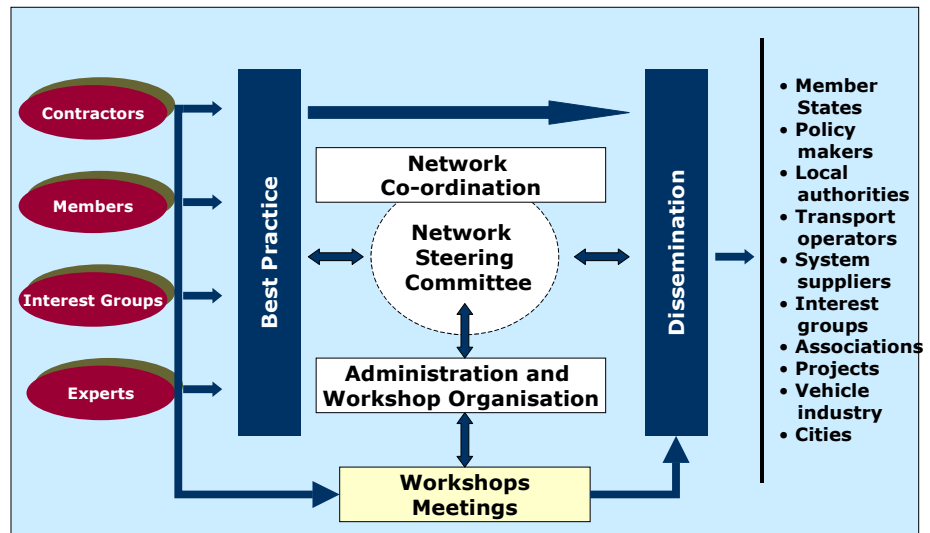


Figure 2: Co-ordination and organisation of the network

Main objectives of
BESTUFS

Main objectives of BESTUFS II are:

- to strengthen and extend the existing BESTUFS European network for urban freight transport experts, user groups/associations, ongoing projects, interested cities, European Commission Directorates, system/technology providers and truck manufacturers; the network is focused on the movement of goods and commercial transport in urban areas,
- to continue the long-term and dynamic ‘concertation’ activity during the period of the 6th FP,
- to support the integration of so called “last mile” distribution processes in cities into a door-to-door supply chain approach,
- to provide a platform for the exchange of ideas and information on urban freight transport modelling and to consider harmonisation and standardisation of corresponding associated data by experts,
- to strengthen intermodal transport as interface to CLS and to provide support for promising intermodal approaches,
- to support the increased introduction and use of alternative fuels and cleaner vehicles in the domain of CLS,
- to identify needs for standardisation in CLS and to support the realisation of European wide standards (e.g. on vehicle weight and size restrictions or for regulations concerning night deliveries),
- to identify and present project results and best practice of CLS through a similar thematic structure to that used in BESTUFS,

- to widen and strengthen the relationships with both European and international networks regarding urban commercial transport,
- to strengthen both the European Community's position in this area and the European industries providing CLS,
- to widely disseminate CLS best practice in a series of guides that will be available in whole range of national languages,
- to broaden the geographic coverage and increase the awareness of urban freight transport best practice across Europe, with special emphasis on medium sized urban areas,
- to support the DG TREN policy objectives (emission reduction, energy aspects, mode shift, congestion reduction, safety, etc.) with respect to CLS and to increase the contribution of CLS to achieving transport policy objectives,
- to quantify the contribution of the potential that CLS can make to DG TREN policy objectives and to quantify the role of urban commercial transport compared with other urban transport activities in terms of sustainability,
- to support the clustering of projects at a European level and to integrate projects and clusters into the network,
- to collect, compare and summarise available experiences and results of projects and initiatives in the CLS domain from Europe and to a lesser extent internationally,
- to identify and describe best practices and success criteria within the CLS domain,
- to disseminate experiences, projects, best practices and success criteria to a broad interested audience with the aim of initiating a transfer of urban freight transport solutions,
- to establish links and cooperation with other transport and urban interest oriented networks or groups in order to share and integrate results and to avoid duplication of work,
- to strengthen links and cooperation with national CLS CA or networks in order to share and integrate results,
- to support the co-operation between actors, which are active or which are interested in the urban freight transport domain, by providing information and contacts.

BESTUFS Glossary

The BESTUFS Glossary focuses mainly on urban freight transport and tries to create a common understanding of the used terms within all BESTUFS deliverables, workshops and discussions. It is available at www.bestufs.net.

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1.2 Relation to previous and running activities concerning urban freight

1.2.1 Global level

OECD Working
Group on Urban
Freight Logistics

The OECD (Organisation for Economic Co-operation and Development) set up a working group dealing with urban freight logistics. This working group follows the aimed targets of OECD, based on the Article 1 of the Convention signed in Paris on 14th December 1960, which came in force 30th September 1961 and promotes policies designed to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries. The Working Group on Urban Freight Logistics was set up to learn from international experiences and solutions, which have been proposed and implemented in OECD member countries with both successes and failures. In their actual report “Delivery the Goods – 21st Century Challenges to Urban Goods Transport” the OECD Working Group focuses on the delivery of consumer goods and highlights best practices in Member countries [OECD 2003].

Institute for City
Logistics

The Institute for City Logistics (ICL) was established at Kyoto, Japan in 1999. The most important objective of this Institute is to be the centre of excellence for the research and development on City Logistics and urban freight transport. ICL carries out the fundamental investigations and makes it applicable to the real society. ICL also provides the platform for the exchange of knowledge, experience and information about City Logistics and urban freight transport. ICL performs activities related to City Logistics and urban freight transport, including [Taniguchi et al 2003]:

- Organise international conferences
- Perform investigations
- Develop software
- Provide short courses
- Issue newsletters
- Publish books and journals

1.2.2 European level

THERMIE

Within the European Community programs THERMIE (1990-1994) and JOULE-THERMIE (1995-1998) the rational use of energy in transport has been looked at. Concerning urban goods transport various measures and technologies have been investigated and assessed. For more information see www.cordis.lu under THERMIE and transport.

COST Actions	<p>On European level the following COST Actions concerning freight transport and logistics are relevant:</p> <ul style="list-style-type: none">▪ COST 310/316: Freight Transport Logistics (1989-1992)▪ COST 321: Urban Goods Transport (1994 –1998)▪ COST 339: Small Containers (1998 – 2001)▪ COST 355: Changing behaviour towards a more sustainable transport system (2004 on) <p>COST 321 especially (http://www.cordis.lu/cost-transport/src/cost-321.htm) provided important base material, information and results as an input for the further activities in the BESTUFS TN [COST 321; 1998]. On one hand COST 321 reviewed current and potential measures promoted by public authorities and private parties, in the logistical, technical, behavioural, infrastructural and administrative field. An extensive survey was conducted, leading to a policy-relevant classification of observed and planned measures which were qualitatively assessed relating to their potential contribution to the improvement of the quality of urban goods transport. On the other hand COST 321 provided quantitative results on the impact of measures using simulation and modelling tools and also estimated effects in projects and case studies. Also some key figures relating to urban goods transport have been identified and provided for several cities.</p> <p>The BESTUFS TN can be seen as a follow up and continuation of the COST 321 project.</p>
Projects of the 4 th framework programme	<p>Within the 4th framework programme several projects are related to urban goods movements dealing with organisational, operational, technical and economical aspects.</p> <p>Important projects are: DIRECT, ELCIDIS, EUROTOLL, EUROSCOPE, IDIOMA, IMAURO, LEAN, MOMENTUM, MOSAIC, MOST, PROPOLIS, PROSPECTS, REFORM and SURFF. These projects have been identified within the BESTUFS project during a clustering process considering urban goods transport themes as freight centres, traffic access restrictions etc. For more information see www.cordis.lu.</p>
Projects of the 5 th framework programme	<p>Besides BESTUFS there are also other projects linked to urban goods transport within the 5th framework programme (1998-2002) such as EUTPII, PROGRESS, SULOGTRA, REVEAL, OSSA, MOST or CUPID (all within the sub-programme “competitive and sustainable growth”). For more information see www.cordis.lu.</p> <p>CITY FREIGHT is a European research project on inter- and intra-urban</p>

freight distribution networks. It will carry out an analysis of selected freight transport systems already functioning in Europe and evaluate their socio-economic and environmental impacts in an urban context, with a common assessment methodology. CITY FREIGHT will focus on innovative and promising logistic schemes in the seven countries represented in the project consortium.

The objective is to provide guidance to interested stakeholders (government, regional or local authorities, network operators, shippers and consignees) on the advantages and drawbacks of some recent innovations in the field of inter- and intra-urban freight distribution systems.

Other demonstration projects concerning Clean Urban Transport started 2001 as a result of the CIVITAS Initiative (City-VITALity-Sustainability; <http://www.civitas-initiative.org/civitas/home.cfm>), which had been launched in autumn 2000 by the European Commission as a joint Initiative between Key action Economic and Efficient Energy of the “Energy” Programme and the Key Action Sustainable Mobility and Intermodality of the “Growth” Programme). 14 EU-cities (Aalborg, Barcelona, Berlin, Bremen, Bristol, Cork, Gothenburg, Graz, Lille, Nantes, Rome, Rotterdam, Stockholm and Winchester) and five associated cities from the accession countries (Bucharest, Gdynia, Kaunas, Pécs and Prague) are participating in pilot projects combating congestion and pollution through technologies and measures that range from the introduction of new information and transport management systems to the promotion of "clean" vehicle fleets for passengers and goods.

Projects of the 6th
framework
programme

The 6th framework programme does also address sustainable freight transport in their topics: A CA “Logistics Best Practices” will start with a focus on logistics in general, but which will also encompasses city freight solutions.

BESTUFS
Clustering report

More extensive information on complementary research activities related to the BESTUFS topic of urban freight transport can be found in the BESTUFS Clustering report (Deliverable D 4.4). The BESTUFS Clustering report relates the BESTUFS themes to the body of research activity from European and national sources by clustering relevant R&D projects around the BESTUFS key themes. It is available at www.bestufs.net.

1.2.3 National level

At a national level, the activities concerning urban goods transport vary largely between the European countries.

Since the beginning of 1990, especially France (COST 321, Programme national merchandise en ville) but also Spain (COST 321, initiatives of single cities), Switzerland (COST 321, DIANE 6, City of Zurich), Belgium (COST 321, urban freight transport plans), Italy (COST 321, urban freight transport

plans), Denmark (COST 321, cities of Copenhagen, Aalborg, Aarhus), Germany (COST 321) and the Netherlands (COST 321) have been active in urban goods transport issues. However, the concerns and also the activities differ very much between the cities within a country.

1.3 Themes to be treated within BESTUFS and BESTUFS II

Identified themes
within the
BESTUFS
workshops

As a result of the first BESTUFS workshop on 16th/17th May 2000 in Brussels and from experiences and suggestions at further workshops the following catalogue of themes has been determined to be considered with priority within the BESTUFS project (the themes in italics have - at least partly - been treated so far):

Methodology

- Models and methods to deal with the complexity of urban freight transport chains and the shared responsibilities
- Goods transport efficiency, assessment and costs
- *Statistical data, data acquisition and data analysis*

Planning and policy

- *Land use planning and business models for urban freight platforms*
- Traffic, land use, infrastructure and regulations planning and policy
- Integration of distribution centres and traffic management

Transport concepts
and management

- Door to door freight transport aspects
- Improved management of the urban road space and the kerbside access
- Interfaces between public and goods transport
- *City access, parking regulations and access time regulations*
- *Road pricing, tolls and heavy vehicle fees*
- *E-commerce and distribution (home shopping)*
- *Night delivery*

Co-operation and
organisation

- Co-operation of transport operators
- *Public-private-partnerships (PPP) and stimulation e.g. via freight forums*
- Win-win situations

- | | |
|---|---|
| Transportation technology | <ul style="list-style-type: none">▪ Transport units and intermodal transfer facilities▪ Innovative urban freight transport ideas (e.g. via underground systems, pipelines, etc.) and unusual transport modes (bicycles, etc.)▪ <i>Urban rail freight</i>▪ <i>Vehicle technology and functionalities (e.g. low-emission vehicles), weights and dimensions</i> |
| Supporting technology and infrastructure | <ul style="list-style-type: none">▪ Intelligent transport systems (ITS), transport telematics applications and systems for urban goods transport▪ <i>Enhanced signage and information systems (e.g. VMS)</i>▪ Infrastructural solutions (e.g. to improve loading and unloading)▪ Enhanced usage and maintenance of infrastructure (e.g. via a road map for transport vehicles)▪ Enforcement support (e.g. by video control) |
| Legal issues | <ul style="list-style-type: none">▪ Relationship and harmonisation between the urban, regional, national and European legislation |
| Identified themes within the BESTUFS II workshops | <p>First three themes to be treated in the Best Practice Handbooks of BESTUFS II:</p> <ul style="list-style-type: none">▪ Waste transport logistics in urban areas▪ Experiments and incentives in favour of environmental friendly vehicles and equipment▪ Enforcement and control in urban freight transport▪ City Access – New schemes and approaches |
| Workshops in BESTUFS II | <p>In the 4 years of BESTUFS II from 2005 to 2008 the following themes have been addressed, each in a workshop:</p> <ul style="list-style-type: none">▪ Approaches to Urban Consolidation: concepts and experiences, 1st workshop [13th and 14th January 2005 in London, UK]▪ Last Mile Solutions, 2nd workshop [21st and 22nd April 2005 in Nuremberg, Germany]▪ Urban freight transport in small and medium sized cities, 3rd workshop [29th and 30th September in Kaposvar, Hungary]▪ Waste transport and logistics in urban areas, 4th workshop [9th and 10th March 2006 in Zurich, Switzerland] |

- Managing urban freight transport by companies and local authorities, 5th workshop [21st and 22nd September 2006 in Vienna, Austria]
 - Port cities and innovative urban freight solutions, 6th workshop [22nd and 23rd March 2007 in Göteborg, Sweden]
 - Accommodating the needs of passenger and freight transport in cities, 7th workshop [27th and 28th September 2007 in Vilnius, Lithuania]
 - Environmental Zones in European Cities: impacts and opportunities for urban freight [13th and 14th March 2008 in Madrid, Spain]
- Conferences from 2005 to 2008
- Solutions for Air Quality and Noise Problems in Urban Freight Transport, 1st BESTUFS II conference [23rd and 24th June 2005 in Amsterdam, Netherlands]
 - Open topic 2nd BESTUFS II conference [18th and 19th May 2006 in St. Julians, Malta]
 - Vital cities optimise city logistics, 3rd BESTUFS II conference [24th and 25th May 2007 in Warsaw, Poland]
 - Cities of Tomorrow, Final BESTUFS II Conference [12th / 13th June 2008 in Athens, Greece]

1.4 Aims, contents and use of the handbook

Aims of the Best Practice Handbooks

In the field of urban goods transport, the Best Practice Handbooks aims at

- giving information and hints about innovative ongoing strategies, concepts and activities in European countries,
- providing knowledge and experiences of completed and running projects and actions
- providing contacts for further information.

Best Practice Handbooks 2005, 2006 and 2007

Within BESTUFS II best practice is derived for 4 major themes addressed for the first time within the BESTUFS network. In 2005 the first out of two Best Practice Handbooks (Deliverable 2.1) was published comprising the following themes:

- Waste transport and logistics in urban areas (Theme 1)
- Experiments and incentives in favour of environment friendly vehicles and equipment (Theme 2)

The Best Practice Handbook 2006 (Deliverable 2.2) was related to the themes:

- Control and Enforcement (Theme 3)
- City access restriction schemes (Theme 4)

and in 2007 (Deliverable 2.3) to the themes

- Road Pricing and Urban freight platforms
- Intelligent transport systems

Aims of the Best Practice Updates

The Best Practice Updates are the updated version of previously published Best Practice Handbooks. The aim of the Updates are:

- providing the latest developments in relevant fields of urban freight
- including new approaches and findings from BESTUFS events in the Best Practice context
- maintaining the knowledge gained in the first publication of the theme

Contents of the Best Practice Updates

The Best Practice Handbooks in BESTUFS I and BESTUFS II treated a wide range of themes. The following table provides an overview over the addressed topics including the update procedure.

Themes	BPH published in year	update of the theme
Statistical data, data acquisition and data analysis in urban freight transport	2000	No update within the Best Practice Updates, as this theme in depth analysed within BESTUFS II: Urban freight data harmonisation and Quantification of effects (deliverables D3.1, D3.2, D5.1, D5.2)
City access and enforcement	2000 and 2006	recently addressed and updated in the BPH 2006 (D2.2)
E-commerce and urban freight distribution	2001	2008 (D2.4 part I)
Road pricing and urban freight transport	2002	2007 (D2.3 part I)
Intelligent transport systems	2002	2007 (D2.3 part I)
Urban freight platforms	2002	2007 (D2.3 part II)
Public Private Partnerships in urban freight transport	2003	2008 (D2.4 part II)
Waste transport and logistics in urban areas	2005	2008 (D2.4 part III)
Experiments and incentives for environment-friendly vehicles	2005	2008 (D2.4 part III)

Table 1: Best Practice Update themes

For each theme the information provided is structured as follows: an overview on national situations and relevant projects; case studies (Best Practices) and experiences as well as conclusions and recommendations.

The base information for the first publication of the Best Practice Handbooks was gathered by means of material collections procured by about two dozens of national partners and subcontractors.

The information for the updates has been collected and completed by the BESTUFS II contractors including important inputs from the involved experts and the workshops. The Best Practice Handbooks contain the following new and updated information in addition to the old information:

- a an updated country overview (where significant changes occurred)
- newly established or changed projects
- and a short update of conclusions and recommendations

The Best Practice Updates replace the previously published Best Practice Handbooks delivered in BESTUFS I and in the first two years of BESTUFS II.

Newly collected projects will also be included in the “thematic overview”, the project and country description database published on www.bestufs.net.

Update sources

Sources of the updates are:

- The data gathered for the BESTUFS newsletters
- Projects and information provided by experts in workshops and conferences
- Information gathered by the BESTUFS contractors and experts network

Use of the Best Practice Update

The main focus of this Best Practice Handbook update is to provide a European overview over solutions and existing activities related to the considered themes. The results are described as experiences rather than as a thorough scientific analysis. The state of the art knowledge and experiences in the addressed fields are presented and conclusions and recommendations drawn.

Contents of this handbook

The present Best Practice Handbook (Deliverable 2.4/I) is related to the theme

- E-Commerce and urban freight distribution (home shopping)

consisting of

- an overview on national situations and relevant projects
- Case studies (Best Practices) and experiences
- Conclusions and recommendations

The material for this handbook has been collected and completed by the BESTUFS II contractors and subcontractors including important inputs from the involved experts and the workshops.

Use of the
handbook

The main focus of this handbook is to get a European overview of solutions and existing activities related to the considered themes. The results are described as experiences rather than as a thorough scientific analysis.

Comments from
readers

Remarks and input regarding this Best Practice Handbook are welcome. Please send your ideas for updates and additions to the following address:

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2 Best Practices

Identification of Best Practices

In order to develop a common framework for best urban freight solutions as many as possible relevant aspects which might have an impact on urban freight transport are considered. In general, different “types” of actions, research and activities can be identified to characterise best practice solutions for urban freight transport.

A best practice solution does not necessarily focus on particular measures such as the implementation of freight centres in urban distribution traffic. Also activities without direct impact on the actors of urban transport operations such as the improvement of the data and information basis or of planning tools in urban freight transport are considered. The following “types” of action can be part of best practice solutions:

- Projects, actions and activities where goods transport changes are realised – “vertical” projects. Normally, these projects are directly related to a particular problem in urban freight transport.
- Projects, actions and activities which will not directly lead to changed urban freight transport operations but which provide tools and/or knowledge to influence and prepare decisions in urban freight traffic – “horizontal” projects. These projects are focusing on the improvement of overall planning and basic knowledge, i.e. data collection, education, planning tools etc. Usually, they are not directly related to a particular problem.

Sources of Best Practices and thematic structuring

To analyse existing and ongoing projects in the field of urban freight transport a thematic structure is applied. This approach allows to structure all relevant material available concerning the prioritised themes of the BESTUFS network and supports the analysis of the projects.

To identify best practice in urban freight transport three “sources” will be used within the BESTUFS project:

- First, a formal approach is followed by providing tools as a thematic structure, suitable attributes and parameters as well as assessment directions.
- Second, a pragmatic approach is realised in order to assess ongoing projects as well as available project results on their contents.
- Third, workshops, national seminars and conferences are organised in order to extract experiences and knowledge from experts.

The following graphic describes the action lines:

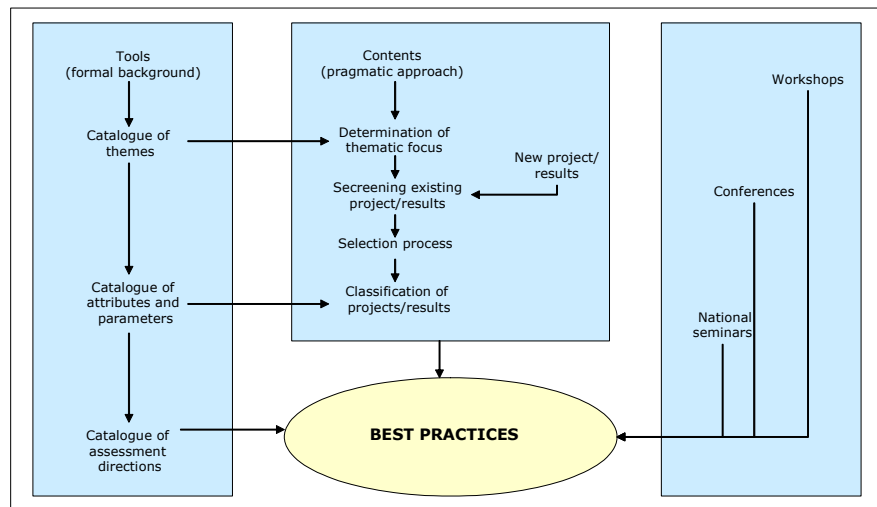


Figure 3: Sources of Best Practices and thematic structuring

BESTUFS
definition of Best
Practice

Best Practices are planned or implemented private only, public only or Public Private Partnership (PPP) strategies, measures or activities which have an essential contribution to urban goods transport and ideally lead to benefits for all actors involved. This can be projects, concepts or strategies. Best Practices will be identified on the fulfilment degree regarding the following requirements:

- Best Practices have to fit to a defined theme or address a relevant problem with respect to the movement of goods in urban areas (see structure of themes).
- Best Practices should be based on real experiences (real world implementations, pilot projects, concepts, strategies) or analysis in studies.
- Best Practices should have considerable and measurable positive effects (qualitative, quantitative) on relevant indicators of urban goods transport.
- In some cases it can also be important to take project activities into account which have not been successful. We can also learn from bad experiences and improve solutions by describing and analysing failure factors.

Urban freight
transport and
environment

Urban freight transport is an extremely important activity in the context of urban life: it is fundamental to sustaining our lifestyle and serves industrial and trade activities, which are essential to wealth generation. Efficient freight transport can play a significant role in the competitiveness of an urban area and is, in itself, an important element of the urban economy, both in terms of the income it generates and the employment levels it supports. However, freight transport is responsible for traffic and environmental impacts in urban

areas (such as contributing to congestion, pollution, noise, fossil fuel use etc.). Freight transport is, therefore, an important factor in the consideration of urban sustainability: it sustains the economic life of the city, but is also responsible for a number of social and environmental impacts. Over the past 20 years there have been significant changes and developments in the ways in which freight operations are carried out and the concerns about the negative environmental and social impacts of freight vehicle activity. First, distribution and logistics systems have changed considerably, with a significant degree of centralisation in manufacturing sites, stockholding points and retailing. Supply chain structures have also changed substantially, especially for larger companies where many have taken increasing control over the supply chain and the distribution of goods to their premises. Second, the stockholding patterns, and hence the goods delivery patterns required by manufacturers, retailers and other urban premises, have changed substantially, with a tendency towards more frequent, smaller deliveries. This move towards more frequent deliveries has resulted in a growing use of smaller freight vehicles. Third, the level of current concerns about the environmental impacts of our urban activities, and especially our urban transport systems, were not present 30 years ago. It is now widely acknowledged that new urban sustainability policies are necessary if urban areas are continuing to be desirable places to live, work and spend our leisure time. City logistics is a keyword to manage urban goods flows.

The definition of the term City Logistics

In the context of this project the term *City Logistic* is considered in its broadest sense, such that it includes not only the movement of goods in urban areas, but also activities related to other commercial transport (e.g. service technician trips). CLS are attracting ever more attention due to three primary reasons: First, current urban goods transport activities are perceived as having a negative affect on the quality of life in urban areas; Second, structural changes are taking place in urban areas in terms of planning city infrastructure and transport policy (e.g. pedestrian and parking zones), and commercial developments (e.g. shopping malls and emerging e-commerce – home delivery); Third, technological innovations (e.g. low emission vehicles, small containers, less expensive transshipment, or EDI) are swiftly entering the market and becoming competitively priced compared to the established technologies.

Projects must not only focus on urban city logistic, also regional projects that directly influences urban freight transport, e.g. the planning of an urban freight platform in the periphery, that leads to bundled transport flows and reduces vehicle-kilometres can be taken into account.

3 E-Commerce and urban freight distribution (home shopping)

3.1 Introduction

E-commerce is one of the themes which influence the every day life from most of people in Europe. E-commerce is a fast growing market with the potential to revolutionise not only whole businesses but also lifestyle patterns and even societies. That makes it also a high priority issue for logistics service providers, forwarders and shippers. It has therefore been treated within the 4th BESTUFS workshop in 2001 and the 2nd BESTUFS II workshop with the thematic focus on last mile solutions in 2005.

For the full year 2007, Forrester projects European online retail to grow 58 percent year-over-year. The significant growth in online retail is due in part to increasing consumer confidence and familiarity with the Web. [Forrester Research, 2007]

Additional highlights from the research survey are that 58% of European online consumers will make a web purchase. Consumers in the UK, Sweden, and Germany shop online far above the European average, with around 70 percent of Net users shopping online in those three countries. In Italy and Spain, the percentage of consumers making an online purchase is closer to 30%.

What is e-commerce?

There is a great variability of definitions on e-commerce. According to Browne [2000] e-commerce can be regarded as “the purchase of goods, services or other financial transactions in which the interactive process is mediated by information or digital technology at both, locationally separate ends of the interchange”. In this broad sense e-commerce was practised by companies already 25 years ago in the form of Electronic Data Interchange (EDI), the transmission of standardized information (EDIFACT) between businesses by electronic means. But it was not until the nineties that the Internet offered the possibilities to replace these highly dedicated solutions by more open systems and thus started the triumphant advance of e-commerce.

E-commerce and transport

Nowadays the information society is changing the lifestyle of European citizens and in some cases the fundamental mechanisms of the European economy. But the information society does not necessarily mean that goods and passenger movements will decrease. They will however change as a result of developments in e-commerce practices. These changes will also influence the structure of goods deliveries and passenger transports in the

cities. New problems might arise requiring innovative solutions and different framework conditions.

B2B and B2C

Within e-commerce a distinction is usually made between business-to-business (B2B) and business-to-consumers relationships (B2C). Although this distinction is not directly related to the use of information technology (IT) it is usually used in relation to e-commerce as e-commerce is restructuring whole value chains transferring B2B-businesses into B2Cbusinesses (disintermediation) and vice versa.

The distinction between B2B and B2C should not hide the strong links between the two concepts. Any business model including more than 2 parties is inevitably partly B2B-business, as per definition only the front end relationship can be B2C (if at all). For example a retailer selling products online to customers is considered B2C, but as soon as logistics are outsourced, this part of the value chain becomes B2B. Still the distinction can be useful with regard to different characteristics of both relationships.

Transport in B2B e-commerce

B2B-e-commerce is typically characterised by a flow of information by means of new information and communication technologies allowing closer and more widespread collaboration between different companies. Obviously this affects goods transports as well as passenger transport patterns (e.g. more long distance business trips versus less personal meetings thanks to new communication media).

Logistics marketplaces / freight exchanges

Information technology enables the establishment of e-platforms and exchanges for logistics services, i.e. electronic marketplaces for freight transports and other logistics services. Such systems lead to greater transparency which increases competition and offers opportunities to consolidate orders, increase vehicle capacity utilisation and improve vehicles fleets. This can contribute to reduce traffic and freight costs. One successful example of a large freight exchange is www.teleroute.com which claims to have 35'000 professional users in real time and 56'000 offers being posted every day. With teleroute transport operators can find a subcontractor on the basis of pertinent criteria such as departure and arrival geographical zones and time, weight and type of goods. The company also offers other services like information on transport related events, hosting of web pages and financial applications. [Quispel; 2001] However, not all freight exchanges are that successful. There are many hampering factors too, such as inappropriate loads (difficult to standardise), unreliable logistics service providers, mistrust among the market players, reluctance to share know-how, lack of neutrality among the exchange providers, problems in finding appropriate pricing mechanisms, etc. [Polzin; 1999]. After a period of enthusiasm, B2B marketplaces in general are currently experiencing a

backlash. A study by Mercer Consulting Company locates three main reasons. First, companies want to establish long-term customer relationships rather than fighting endless price-wars. Second, by focussing on the price aspect e-marketplaces are by far more attractive for demanders than for suppliers who fear transparency and forcing down of prices. Finally, there is no need for several identical marketplaces. [Heuer; 2001] All this indicates that the market for this price competing transport is probably not too big.

Transport in B2Ce-commerce

B2C means business that sells products or provides services to end-user consumers. Online-shopping - or home-shopping - is the main business model for B2C activities and often used as equivalent term, although it often includes B2B relations too. Online shopping today accounts for less than 20% of the e-commerce market and its share of overall economy sales is still infinitely small. However, it's a fast growing business and its potential for revolutionising whole lifestyle patterns and traditional business models is not to be underestimated. Concerning the physical distribution channels in general three categories of products have to be considered:

- For certain products there is no physical distribution delivery (e.g. downloading of software or music).
- For many products there are existing physical distribution channels along which the products can flow. (e.g. books purchased over the internet are handled by existing physical distribution channels of express companies and postal networks).
- For some products there is no existing physical distribution channel and it is necessary to establish entirely new means of supplying goods to customers (e.g. grocery home shopping which might require investment in and the operation of entirely new distribution platforms and vehicle fleets).

Figure 4 shows the main categories of goods purchased by German online-shoppers today.

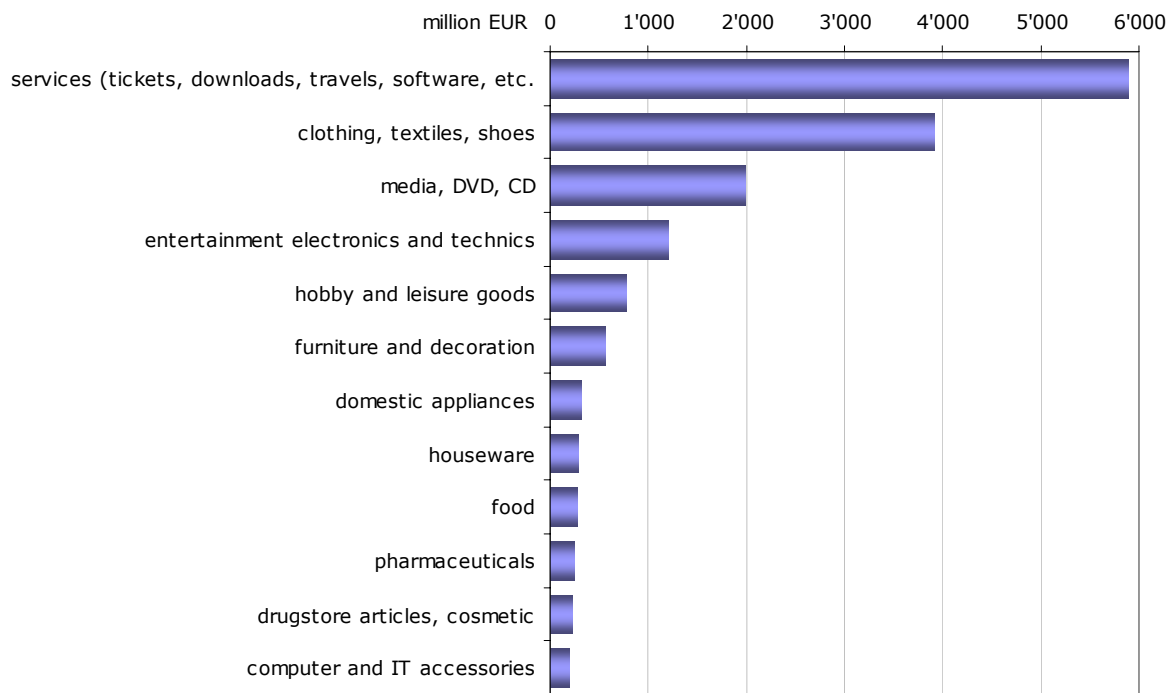


Figure 4: German online shopping turnover 2007 [bhv, 2008]

Consumer-at-home problem

A crucial question for the delivery channels is whether the addressee has to be present at time of delivery, whether for signing the receipt or for lack of storage facilities. Delivery to workplaces or pick-up points such as local stores, gas stations, restaurants, etc. can be another solution to the consumer-at-home problem.

Impact on urban traffic

Whereas the impact of B2B-e-commerce on urban traffic might well be neutral or positive it seems obvious that home shopping will lead to an increase in urban freight movements due to the related home delivery services. This is especially important as the additional freight traffic will occur in highly sensitive residential areas. On the other hand private passenger transports and shopping trips might decrease. If direct home delivery would succeed at a large scale even the deliveries to retail-shops within a city might be reduced. There could be a net benefit for the public, i.e. less traffic, if high levels of freight vehicle utilisation can be achieved and if former private shopping trips are not substituted with other car-related activities.

Fast changing information

Material regarding the situation of e-commerce in general and e-commerce related projects in different European countries were collected by the different BESTUFS contractors and members. Further input came from the involved experts and the workshop. The following chapters summarise the main findings of the material collection on country and project level. As e-

commerce is a fast growing and quickly changing market the available information and its assessment represent last and today's situation only. It might change rapidly depending on the future evolution and further diffusion of e-commerce.

Other related projects

The following other European or national research projects dealing with ecommerce and urban freight have been identified: [BESTUFS; 2001]

- EUROSCOPE (Efficient urban transport operation services co-operation of port cities in Europe: Traveller information, logistical information and communication, traffic management)
- IMAURO (Integrated Model for the Analysis of Urban Route Optimisation)
- PDS (Forum for Physical distribution in Urban Areas)
- French national research program on urban freight (Enquêtes quantitatives TMV)
- SURFF (Sustainable Urban and Regional Freight Flows)
- UFMB (Urban Freight Management in Barcelona)
- SULONGTRA (Effects on Transport of Trends in Logistics and Supply Chain Management)
- Euro-CASE (The European Council of Applied Sciences and Logistics) study on freight logistics and transport systems in Europe

3.2 Situation at country level

14 countries
represented

Material on 14 countries has been collected, covering the whole European Union except Portugal, Ireland and Luxembourg, plus Switzerland and Norway.

Fast growing
importance of
Ecommerce

Among all the countries participating in the material collection there seems to be one general consensus about e-commerce, namely that its importance will be growing. In a survey the German E-Commerce and Distance Selling Trade Association ask its members about their assessment of the actual situation and the future development of e-commerce (see Figure 5 and Figure 6).

Although single countries' judgements might differ slightly, 3 general findings can be stated:

- E-commerce is still a little part compared to the whole economy but growing very fast. In the last years the importance had been growing more and more and the awareness of the rising importance of e-commerce and its impacts on society is very high.
- B2B business covers a much larger share of the e-commerce market than B2C. But in the last years B2C grew must faster than B2B e-commerce.
- In spite of its still low overall importance B2C e-commerce (online shopping) is considered more important with special regards to urban freight movement because of its higher potential for changing the urban transport patterns.

The spread in the assessment of B2C e-commerce importance reflects rather different assumptions and personal biases of the answering experts than real differences between countries, because in any of the European countries the turnover created by B2C online shopping represents less than 10% of the total retail commerce. This small percentage explains the frequent rating "very low" whereas those who attributed a medium or high importance to B2C e-commerce probably had its potentially large influence on urban transport in mind. In any case, no clear pattern is visible among the different answers.

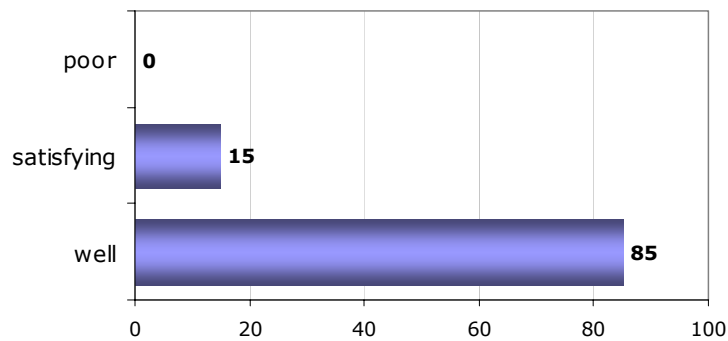


Figure 5: Assessment of actual situation of e-commerce in Germany

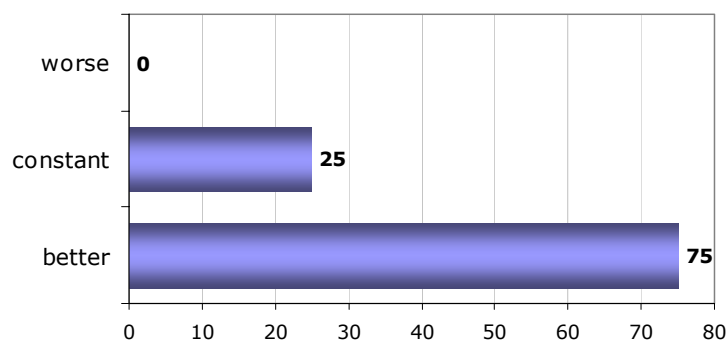


Figure 6: Assessment of future situation of e-commerce in Germany

Existing national studies

In all European countries e-commerce is considered a highly innovative issue and a big variety of national studies on the topic have been elaborated. However, most of them focus rather on consumer behaviour, companies' strategies, market potential, electronic payment issues, etc. than on transport. Although some studies do assess e-commerce with regards to transport and traffic there is no study available so far focussing on urban transport patterns.

Legal framework conditions

On European level the following directives provide a framework for national legislation:

- Directive 97/7/EC on the protection of consumers in respect of distance contracts
- Directive 2000/31/EC on electronic commerce.

Since 2003 there exists an international standard. The CEN Workshop Agreement 14842:2003 is the only official and European wide e-commerce standard. The standard is divided into three parts:

- Regulatory requirements
- Requirements for the business processes
- Demands on the ICT security

The standard was approved by the Comité Européen de Normalisation for all EU-countries and Switzerland. This standard allows a uniform and optional compliance with the rules. It is based on the principle of the market self-regulation. Through the standardisation of e-commerce by the e-commerce directive authoritative standards can be fixed without special legislation.

At the moment there is no special legislation concerning e-commerce in any of the participating European country. However, legal issues are discussed in most of the countries, especially with regards to electronic transactions and consumer data protection. In some countries legal frameworks are currently being implemented or draft versions are being discussed:

- Belgium putted in place a “framework” based on EU directives.
- In Greece a Presidential Decree has been drafted by a special expert committee in order to strengthen security and transparency in electronic transactions.
- Norway has set its objectives and strategies concerning e-commerce in the White Paper No. 41 1998-99.
- In Spain there is a normative draft in order to regulate the services around e-commerce.
- In 2005 the Swiss Federal Council rejected a new law which was going to be established to give Swiss consumers the same protection concerning e-commerce as European consumers.

Of course, the existing city access regulations can result in constraints for the distribution of products ordered electronically by consumers or businesses in (inner) cities.

Private initiatives

In Austria a consumer oriented quality certification system concerning ecommerce has been established.

In Belgium, the Belgian Business Federation (FEB) published a voluntary Code of Conduct for e-commerce in August 2000.

Different levels of development: North-South digital divide

There are substantial differences between the countries’ levels of online shopping activities, although a general pattern among European countries is hard to recognise from the collected data. However, the southern European countries seem to show less online-shopping activities than the northern countries, confirming the existence of a so called “North-South digital divide”. This finding corresponds with the results of a study on e-commerce by the Boston Consulting Group, Forrester and a recent OECD study. According to the latter, the Scandinavian countries, the UK, Germany and the Netherlands are among the online-shopping pioneers in Europe (depending on which indicator is used). However, this is still far behind the US figures. The United States remain the largest market for B2C e-commerce, currently accounting

for more than three quarters of the world's total. [OECD; 2001] The low online-shopping activities in countries such as Greece, Italy, Spain, Belgium or to a lower extent France are at least partly explained by one or several of the following reasons:

General IT
development

The countries differ in their level of using IT applications, whether B2B or B2C. This is due to their different level of economic activity but also to their different economical structure. Large companies have been drivers to the e-development, whereas small companies usually lack financial resources to be pioneers. The fact that e.g. in Italy Small and Medium Enterprises (4/5 of them with less than 15 employees!) account for 92% of the Gross Domestic Product partly explains the country's backwardness towards e-commerce. [Ruberti; 2001]

Public Internet
access

Obviously Internet access for the consumers is a key condition to online shopping activities. But whereas 88% of the Norwegian population have Internet access at home or work, this is true for only 63% of the Finns and in Greece Internet access is still limited to 36% of the population. [2007, www.internetworldstats.com] However, although easy Internet access is the key to online-shopping it does not necessarily mean that the online-community also does so. Whereas in Sweden only 10% of all Internet users also shop in the Web, this percentage almost doubles for Norway or the UK. [OECD; 2001]

Logistics
capabilities and
costs

People's propensity to use home shopping possibilities depends heavily on the price-quality relation of the service offered, i. e. among other quick and cheap delivery. Thus, the absence of a large number of distribution networks and big logistics operators in countries like Italy is a barrier to the development of e-commerce. Whereas in the UK an average home delivery takes 4 days at a cost of 4 EUR, in Italy it takes 16 days and still costs 7 EUR. As a consequence home shopping is still to be developed in Italy. [Ruberti; 2001]

Shopping habits

Even with all other factors being equal online shopping activities would still differ between countries due to different shopping habits. In Belgium consumers prefer to touch products before buying them and are reluctant to choosing products either on a catalogue or on the Internet, whereas in France, especially in the northern cities and in medium size cities there is a strong tradition of mail-ordering. Also home delivery after traditional shopping in a physical store is quite common in France. In the UK there is still door step delivery for milk.

Often neglected is the social aspect in shopping which in some countries is more marked than in others. In Spain shopping trips are often done on

Saturdays including the whole family and are perceived as social networking.

Confidence in new forms of payment

Lack of confidence in forms of electronic payment is another common hurdle to online-shopping. In countries with a widespread use of credit cards where consumers could build up confidence in non-cash-related financial technologies one would expect less resistance to new technologies like e-cash or e-signatures. This is rather true for the Nordic than for the southern countries (Scandinavian countries were among the first with a dense network of Automatic Teller Machines).

Online shopping baskets

In general the shopping baskets of online customers look quite similar all over Europe. Clothing, media, music, software and travel related products are dominating, probably not least because they can be delivered using existing distribution channels. When it comes to food and groceries the picture is less homogenous. Whereas in countries like Austria, France, the UK, Switzerland and the Netherlands online shoppers also buy food via Internet (growing market), this sales channel is far less used in other countries - if at all. For instance Greek consumers are very reluctant to buying food, furniture and clothes via Internet, although this might be due to the country's general low level of e-commerce development.

Although e-commerce brings along the possibility of borderless trade, online sales continue to take place mostly within the consumer's home country or region: 80% of European B2C e-commerce takes place within Europe. [BCG; 2000]

Heterogeneous data

There are many figures available on national e-commerce development, but the available information is very heterogeneous. Statistical data is referring to different samples of different sets. It is therefore very difficult to directly compare these figures. This applies not only to the material collection for the present Best Practise Handbook but to statistics on e-commerce in general, as stated by a recent OECD study. [OECD; 2001]

Effects on national transport patterns

Information on national particularities concerning the effects of e-commerce on logistic chains and passenger as well as goods transports is generally scarce or even non-existent. In Germany the market is dominated by the so called Portal Strategy where a web-portal aims at generating a sufficiently high volume of sales in order to make the delivery (to workplace, home or pick-up points) from a central warehouse economically viable. Many home delivery services are provided by large parcel services such as Deutsche Post. The German parcel market is expected to almost double within the next 5 years. [Vastag; 2001] In France, most grocery online shopping solutions rely on dedicated picking warehouses, although some operators have chosen to go back to shelf picking in the physical shops in order to

save money. However, this business is nowhere profitable yet. [Dablanc; 2001] The same process can be observed among British online food retailers. [Mortimer; 2001]. In Switzerland, the City of Zurich is aware of the problems which might be generated by online-shopping (e.g. additional traffic, increase of small consignments, etc.). A first step is therefore the integration of pick-up and delivery points within the land use and traffic planning (reservation of special areas).

Single countries

A more detailed report on each country's situation concerning e-commerce and urban freight distribution is given in Annex I.

3.3 Regarded case studies (project-level)

33 projects collected - focus on B2C online-shopping

Within the material collection on the theme e-commerce 33 projects were collected (for a description of all projects see Annex II). The majority of the collected case studies are B2C online-shopping projects. The following analysis will therefore focus on this segment. The high number of studies highlights the avant-garde character of the topic. Many projects are internal projects of private companies. As they want to protect their innovation lead against competitors these projects are often classified confidential and access to information is restricted. Furthermore, information on the economic success of the projects is scarce. Therefore, projects should be seen rather as examples of innovative business solutions than as best practise cases in the usual BESTUFS-definition.

Approaches for the last mile solution

The B2C-shopping examples can be further divided according to their solution of the last mile distribution problem. Figure 7 shows the number of projects using different approaches to this key problem. Annex III lists the collected examples and their applied last-mile solutions in detail. Usually not only one possibility is offered, but the customer is given the choice among various possibilities. However, for some projects the applied approach was not very clear from the available information. Furthermore, the border between time-slot delivery and non-timed delivery is blurred as the time window expands.

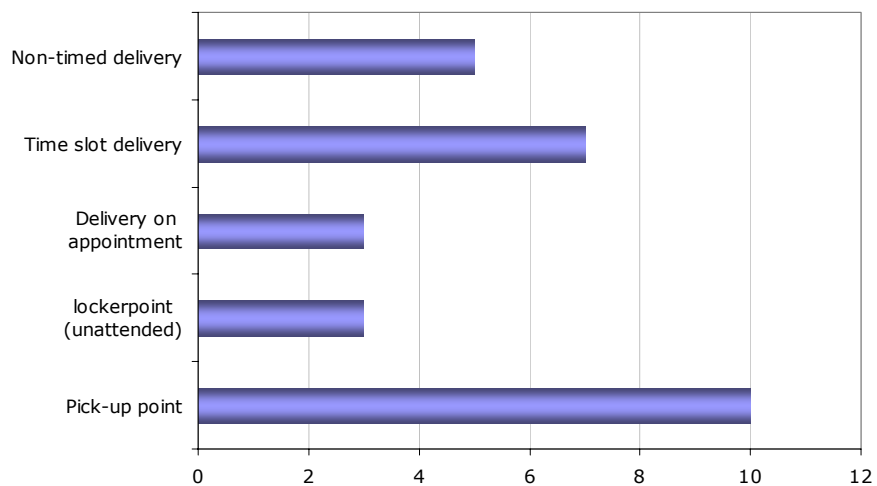


Figure 7: Different categories among the collected projects

Online-shopping projects

Almost all of the 13 online-shopping examples offer the full range of supermarket products, food and non-food, some on a national level; others

are restricted to certain cities and regions. As groceries are perishable goods a majority opted for developing new distribution channels instead of contracting the existing post and parcel services. Some combined existing logistics services with new concepts of delivery. Old distribution channels alone are only used for non-food items (e.g. books, CDs, etc.). Many of the online-shops are affiliated to existing brick-and-mortar shops or supermarkets, only two are purely online. Although some claim to be profitable it is quite probable that most of them aren't so far. These might be considered as strategic investments in a future market (knowledge development) or as marketing tools for image creation.

Assessment of the
projects

The following project descriptions show examples of planned or implemented e-commerce projects and assess the experiences made. As many innovative projects are planned or set-up a selection had to be done. The following aspects were considered:

- Relevance for BESTUFS, innovative character and contribution to solve problems
- Success / failure and important experiences
- Balance among countries and approaches
- Availability of further information.

Example 3.3.1: Benelux and UK	Example 3.3.1: RelayStar (Benelux and UK) [Quispel; 2001, Dujardin; 2001]
Key words	fuel stations, pick-up points, open to all e-shops, limited to motorised customers
Framework conditions and objectives	RelayStar is a pick-up point solution for e-retailers and their online customers aiming at solving the last mile delivery problem including reverse logistics. It is a joint venture between the global energy company Texaco and the world's largest express and package carrier United Parcel Service UPS. RelayStar tackles B2C challenges using B2B logistics by combining Texaco's large network of retail outlets with UPS' world-wide expertise in logistics and e-fulfilment. The service is limited to products that weigh less than 15kg. Furthermore products must not be perishable and must not exceed the value of 2000 EUR.
Basic approach	RelayStar is using the Texaco fuel stations as delivery / pick-up points for products ordered online at the participating retailer's website. The delivery itself is done by UPS. During the process of delivery the customer is informed about the whereabouts of the ordered goods by means of the package being scanned. Due to the good coverage of Texaco fuel stations in the Benelux and their long opening hours the consumer can easily pick up the package. The whole process is organised as follows: <ol style="list-style-type: none">1. The customer orders the desired products at one of the participating retailers' web-site. He chooses the desired pick-up point among the network of 400 (Benelux) and 600 (United Kingdom) Texaco fuel stations. Thereby, he is assisted by a map based overview on the whole network, giving additional information such as the Texaco station's phone number, opening hours, etc. (see Figure 8). Payments are handled online at the site of the retailer at the time of purchase.

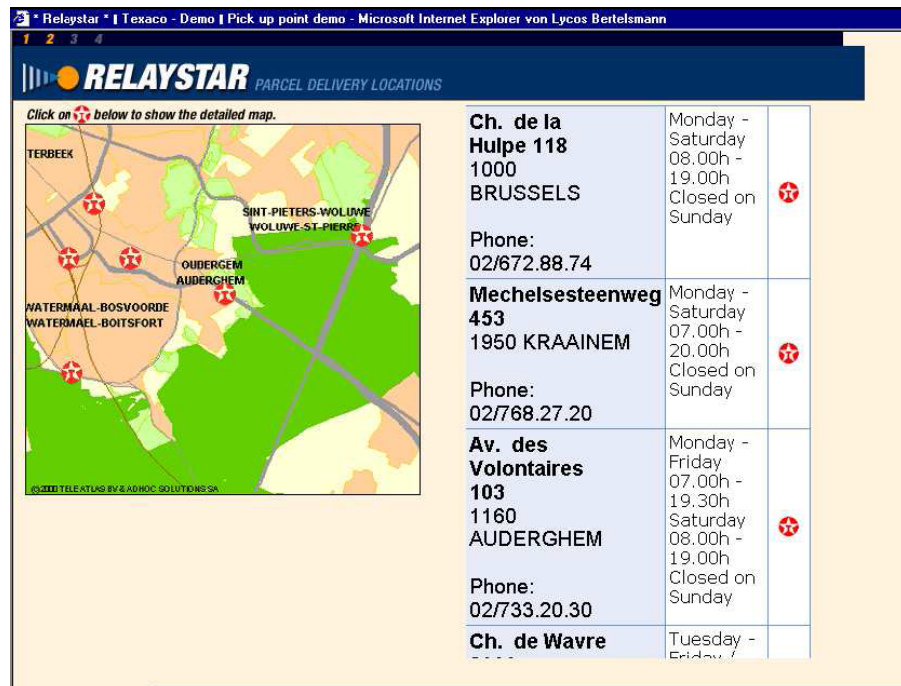


Figure 8: Choice of pick-up point [www.relaystar.com]

2. An e-mail notifies the customer that his order has been registered with the retailer who sends the parcel with UPS. This e-mail contains a link to the customer's own customised tracking page where he can trace the delivery status of his package at any time via the RelayStar tracking system. The package is identified by a unique tracking number and a scanner system.
3. When the package arrives at the Texaco fuel station, the RelayStar manager signs for delivery. A delivery confirmation by e-mail informs the customer that his goods are ready to be collected. The package is fully insured and safely stored for a maximum of 14 workdays until the customer arrives for collection. After 14 days the package will be automatically returned to the retailer.
4. Upon arrival the customer presents the order number mentioned in the confirmation mail and a valid form of identification and picks up his package.
5. The customer can also return the goods via the same pick-up point.

Future plans
development

RelayStar is currently operational in the Benelux and is being rolled out in the United Kingdom. It is foreseen that in the near future other countries will be added and that other high quality retail networks will be included in the RelayStar solution. Currently four e-retailer are using the RelayStar solution,

namely dvdzone2.com (Media), redcorp.com (Computer products), printclub.nl and winesmart.com (Wine). Six other online retailers are announced to offer RelayStar delivery in the near future. It is not known how RelayStar influences urban transport patterns. However, by relying on gas stations as pick-up points the projects addresses car users only. Customers of public transport are out of its focus.

Results and experiences

RelayStar is currently operational in the Benelux and is being rolled out in the United Kingdom. It is foreseen that in the near future other countries will be added and that other high quality retail networks will be included in the RelayStar solution. Currently four e-retailer are using the RelayStar solution, namely dvdzone2.com (Media), redcorp.com (Computer products), printclub.nl and winesmart.com (Wine). Six other online retailers are announced to offer RelayStar delivery in the near future. It is not known how RelayStar influences urban transport patterns. However, by relying on gas stations as pick-up points the projects addresses car users only. Customers of public transport are out of its focus.

More information

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See also References and contact persons!

Example 3.3.2:
Germany, Austria,
UK

Example 3.3.2: PickPoint AG (Germany, Austria, UK)

[Huschebeck; 2001; Schubert et al.; 2001; Bischofs / Riemer; 2001; Eichner; 2001]

Key words

integrates different pick-up points, open to all e-shops and customers, network entry barriers, mapping tools for location

Reasons,
framework
conditions and
objectives

The idea for the PickPoint AG was born when its founder, a young and busy business consultant, got sick of always being absent when the goods he had ordered on the Internet were delivered to his home. He therefore founded the company which aims at making life easier for online-shoppers: instead of the customer's home the ordered goods are delivered to nearby pick-up points. Thanks to the long opening hours of these facilities they can be picked-up at almost any time. Also the goods can be paid upon collection. PickPoint is a subsidiary company of the German D.Logistics AG and was founded in June 2000. For the goods transport they co-operate with the logistics specialists DPD (Parcel Service of the German Post), UPS and TNT.

Basic approach

PickPoint is a delivery, storage and payment solution open to all kind of online retailers. Web-shops can join the system by paying licenses to PickPoint AG. Customers of online-shops that offer the PickPoint solution can choose delivery to the pick-up point of their choice instead of home delivery. After ordering the goods are transported to the desired pick-up point by the logistics partners. The customer gets a notice per e-mail or SMS when his parcel is ready for collection. After 5 days the customer is reminded of collection by another message. If the goods are not collected after 10 days, they are sent back to the sender. The additional costs for returning are charged to the customer. During the delivery process the customer can check the current status of his order (status messages: order processed – parcel being delivered – parcel at pick-up point – parcel being returned).

As an additional service customers can also use their preferred pick-up point as delivery address for any other orders, independent from web-shops.

Currently there are about 1700 pick-up points all over Germany and 35 in Austria. In the United Kingdom the subsidiary company Collectpoint is operating over 5000 pick-up points. However, more important than the sheer number of pick-up points is their location at the main arterial roads, says PickPoint founder Bischofs. [Eichner; 2001] 80% of all pick-up points are gas stations, others include fitness gyms, video-tape libraries and kiosks. So far, none of them offers special storage facilities e.g. for frozen goods. However, one web-shop is delivering fresh meat in chilled Styrofoam-boxes. Payment (cash or sometimes credit card) is currently possible at more than 80% of the

pick-up points.

The license fees for the PickPoint service are currently between 1.5 and 3 EUR per delivery (depending on size and weight) plus a proportional fee for the payment services similar to the ones charged by credit card companies. These license fees do not include the actual delivery costs. Some webshops do pass on the license fees to their customer. However, the charges are not a problem for the targeted customer group of busy singles and working couples, says PickPoint co-founder Björn Heyden. [Eichner; 2001]

With their solution the PickPoint AG aims at overcoming various barriers with various actors within the value chain: [Bischofs / Riemer; 2001].

- The client has easy access at almost 24 hours to the ordered goods and does not have to worry about the safety aspects of payment by Internet if he chooses the PickPoint payment option
- For the Web-shop PickPoint handles return flows
- For the parcel delivery company the goods can be delivered at once instead of trying several times when the consumer is not at home. Access to the delivery points is easy. There are no uncertainties about the delivery address. Consignments can be bundled and an efficient delivery round set up.

Results and
experiences

According to the PickPoint AG the concept is growing very fast. About 100 additional pick-up points complete the network each month. Currently around 30 web-shops are using the PickPoint service selling all kind of things from music and books to bike components or toys. For some of them more than 30% of their total turnover is made using PickPoint delivery.

For establishing the pick-up point network (as in all networks) network effects have to be overcome. The number of clients and the number of pick-up points are interdependent: the denser the network of pick-up points and web-shops, the more it is attractive for customers; and the more customers the system attracts the easier it is to convince new web-shops and pick-up points to participate. To lower these entry barriers the initial effort for customers as well as for web-shops should be kept low. On the other hand a denser network causes higher delivery costs as more points have to be delivered. From the economic efficiency view there seems to be an (unknown) optimum number of pick-up points. Furthermore, the communication of the PickPoint-possibilities in the shops' web-sites and the use of road maps for locating the pick-up points turned out to be crucial.

More information

www.pickpoint.de

The PickPoint initiative is described in detail - in German only though – in Schubert et al (2001), p. 160-171.

Member of BESTUFS who did the material collection:
Marcel Huschebeck, PTV

See also References and contact persons!

Example 3.3.3:
Berlin

Example 3.3.3: Internet House (Berlin)

[Huschebeck; 2001; Morgenpost; 2000; ct; 2000; GSC; 2001]

Key words

dedicated individual delivery infrastructure, 3 climate storage compartment, e-living

Reasons,
framework
conditions and
objectives

Due to excess supply in Berlin's real estate market the real estate company Quadriga AG was looking for new business approaches in order to stand out against its competitors. In 1999 it founded the subsidiary enterprise Q24.net mainly for promoting what they call e-living, a combination of e-commerce and real estate business. A pilot Internet house was to be built by the end of 2000. In case of positive response another 800 apartments should be equipped with the e-living technology.

Basic approach

In the Internet house all apartments are equipped with Internet communication links and devices. With a password the tenants have access to an exclusive house community e-commerce portal with a wide range of commerce offers from grocery shopping to Internet banking. For home delivery of ordered goods the house is equipped with a special home delivery installation. "In the cupboard-like box in the wall outside the apartment the ordered groceries will await the tenant when he comes home from work at night. The cleaned suit and the freshly ironed shirt are hanging in a separate compartment" explains Quadriga-speaker Antonios Goros. The e-living concepts also include "intelligent installations" such as light, heating and cooking devices controllable via Internet. A special mobility concept including car-sharing among the inhabitants is also part of the concept. Co-operation contracts with UPS, Colt Telecommunications, Telekom, Siemens, Techem, Smart and Amazon.com have been established.

Results and
experiences

It is not known whether the pilot has been built, as the Quadriga AG went bankrupt in 2001 for unknown reasons. However, the approach to provide integrated services and to use specific delivery infrastructure and equipment is very innovative and could have some potential in the future.

More information

Member of BESTUFS who did the material collection:
Marcel Huschebeck, PTV

See also References and contact persons!

Example 3.3.4:
Dortmund

Example 3.3.4: Tower24 (Dortmund)

[Huschebeck, 2001; Petz, 2008]

Key words

unattended pick-up and delivery infrastructure, fully automatic, bundling of goods flows

Reasons,
framework
conditions and
objectives

Due to the atomisation of consignments transport costs have risen disproportional to the order volume.

This calls for the development of an optimal fine distribution. The present time windows for home delivery of about two to four hours are by far not precise enough. The situation becomes even worse if the customer is not at home at the fixed delivery time. Decentralised pick-up terminals are economically sensible alternatives for the door-to-door delivery. Here, goods flows are bundled up to a suitable location near the customer where he can collect the goods himself. This helps to reduce logistic costs considerably.

In this context the Fraunhofer-Institute for Material Flow and Logistics IML in Dortmund developed a concept for a decentralised pick-up terminal which meets the requirements of the sellers, the logistic service providers and above all of the final consumer. This concept is called Tower24 - fast, secure and reliable.

Basic approach



Figure 9: Tower24

The Tower24 concept is a fully automatic storage system for small consignments. The system is open to different suppliers and service providers. The access for supplier and customer is much easier than with

conventional locker systems. The supplier can drive his van directly in front of the Tower24 for delivery. The window for entering the goods is designed in a way that 100 parcels can be stored within 20 Min. The customer is informed by SMS or e-mail about the arrival of the ordered goods. He has a 24-hours “drive-in” possibility to pick up his parcel without leaving the car. As different temperature zones can be generated in the tower, different commodities can be stored from frozen, to chilled and non food goods. The customer pays in front of the tower with bank or credit card or by using his handy. The suppliers are informed about goods that have not been collected. Tower24 also handles returned consignments and empties.

Future plans
development

The pilot project was in operation from September 2002 until 2008. The reasons for stopping were mainly financial problems.

Results and
experiences

E The main logistic advantage of a pick-up and delivery point system such as Tower24 is that goods flows can be bundled. Tower24 combines quick and cost efficient delivery and picking-up with minimum land use. However there is a certain risk that such towers will mostly be realised at car oriented locations without considering the access to public transport. A disadvantage is that a Tower24 once built cannot be enlarged.

More information

www.iml.fhg.de

www.tower24.de

Member of BESTUFS who did the material collection:

Marcel Huschebeck, PTV

Cornelia Petz, Rapp Trans

See also References and contact persons!

Example 3.3.5: **Example 3.3.5: Magasin de Quartier (Ile-de-France, Paris)**

[Dablanc; 2001]

Key words **delivery depots, for both shop keepers and private end-consumers**

Reasons,
framework
conditions and
objectives

The “Magasin de Quartier”-project is one of the leading projects on urban goods transport for the Paris region. Its main objective is reducing the number of home deliveries in dense commercial/residential areas of Paris and the surrounding municipalities using local delivery depots. The project has been proposed in the regional transport plan of 2000. The first delivery depots are planned to open not before end of 2002, with a possible involvement of Paris CCI, transport operators and public governments.

Demand for such an initiative is coming from two sides:

- Demand by transport operators who fear an increase in home deliveries and subsequent problems (delivery hours, closed doors, stairs, etc.)
- Demand by public institutions (City of Paris, Regional Council) in order to alleviate traffic congestion due to commercial traffic and deliveries in dense areas

Basic approach

Magasins de Quartier are drop-off zones for transport operators delivering parcels ordered by any kind of communication means: mail order, telephone, fax or Internet. The local delivery depots are small scale terminals (no more than a few hundreds m²) and are located in dense commercial or residential areas. Each could be operated by 2 or 3 full time employees. The local delivery zones will be opened from early in the morning till late in the evening. Carriers will be able to leave parcels and goods in this depot instead of delivering them all the way to their clients (whether shop keepers or households). Clients will then be informed about the availability of their products. They either come and pick them up themselves or the employees of the Magasin de Quartier will deliver them at an extra cost. From the Magasin de Quartier the delivery to the client will be very short distance making it possible to deliver without motor vehicle.

The special thing about Magasins de Quartier is that they should service both private (end-) consumers as well as (retail-) shop keepers.

Results and
experiences

The project implementation status is not known. But the experiment was strongly supported by transport companies and their organisations.

More information

Member of BESTUFS who did the material collection:
Laetitia Dablanc, INRETS

Example 3.3.6:
Brussels

Example 3.3.6: Caddy-Home (Brussels and surroundings)

[Van Isacker; 2001; www.caddyhome.be]

Key words

online supermarket, time-slot delivery, pick-up point with short time parking in the city centre

Reasons,
framework
conditions and
objectives

Caddy-Home is the online-supermarket of Delhaize, one of Belgium's main supermarket chains. The initiative started already 14 years ago, at that time based on telephone and fax. Deliveries are made in and around Brussels.



Figure 10: Caddy-Home home delivery service
[www.caddyhome.be]

Basic approach

New e-shoppers on the site need to fill in a form to become clients of Caddy-Home. They are then provided with a client number and a password.

Once the client number and the password are received, the customer may order products by telephone, fax, or via Internet. He may choose among thousands of products sold in the Delhaize "Le Lion" supermarkets.

Purchased products are delivered to the customer's home. Delivery is charged at a flat rate of ca. 7 Euro. The day and time of delivery may be chosen by the client at the time of order. Caddy-Home immediately confirms if there is still place in the desired delivery round. If it is not the case, the customer is requested to select another delivery time. Caddy-Home organises four delivery rounds on week days (9 a.m. to 12 a.m., 12 a.m. to 2 p.m., 3:30 p.m. to 5:30 p.m. and 6 p.m. to 8:30 p.m.) and two delivery rounds on Saturdays (9 a.m. to 12 a.m. and 12 a.m. to 2 p.m.). Returnable bottles bought at Caddy-Home are collected on the next delivery.

Payment is made to the delivery man by cash, check, bank card or lunch vouchers (private customer) or by cash or check (companies) respectively. Companies that wish to do so may request to receive invoices to be paid within the following 8 days.

A new service called "take 'n go" has just been set up. To use this service one also needs to have a client number and a password. Orders may be

made via Internet, by telephone, or by fax before 10 a.m. The prepared order may be retrieved between 4 p.m. and 7 p.m. in the centre of Brussels, next to the new “Manhattan” Delhaize City. A “short time parking” has been organised to facilitate pick-up of orders.

Results and experiences

Caddy-Home is used by around 400 clients per day. The online-shop's turnover grew from 8.8 million EUR in 1999 to 10.8 million EUR in 2000.

However, it is not known whether the business is profitable or not. Its effects on urban freight or passenger transport have not been assessed.

More information

www.caddyhome.be

Member of BESTUFS who did the material collection:
Nathalie Van Isacker, STRATEC

See also References and contact persons!

Example 3.3.7:
Switzerland

Example 3.3.7: LeShop (Switzerland)

[Petz; 2008; www.leshop.ch]

Key words

online supermarket, no brick-and-mortar shops affiliated, targeting working parents, insulated bags for fresh products, dedicated warehouse, time-slot delivery, non-timed delivery, delivery to neighbours

Reasons,
framework
conditions and
objectives

LeShop was the first online grocery service to be established in Switzerland. The service is targeted to working people, especially women, who have to manage both family and job.

LeShop went online in April 1998 and started as part of the Bon appétit group. With the official announcement of the strategic partnership with Migros in 2004 the joint online supermarket of LeShop.ch and Migros opened its doors. The unique assortment combines over 9'000 brands and Migros products. Today Migros takes an 80% participation in the capital stock of LeShop SA. With this partnership LeShop grew from an online supermarket to an online shopping centre. LeShop delivers throughout Switzerland and Liechtenstein.

LeShop.ch aims to establish itself as the No. 1 Swiss online food market by adapting its service offering to customer needs, expanding its product range, ensuring top quality standards for all products and services, upgrading its web-site functionality and systematically implementing its one-to-one marketing concept.

Basic approach

LeShop offers over 9'000 products to meet daily requirements including fresh fruit and vegetables, meat and dairy food as well as non-food. The prices of the products are comparable to the ones at Migros supermarkets. However, the focus is on rather expensive high quality products with high margins. [Metzger; 2001] The ordered products are delivered to the customer's home (or any other address specified) throughout whole Switzerland and Liechtenstein by the logistics partner, the Swiss post parcel service. There is a flat fee of 8 EUR per delivery. All products are carefully packed in paper bags. Temperature-sensitive fresh products are kept cool by insulated bags. For these a deposit of 3 EUR per order is charged which will be credited to the customers account when returning the bags. The paper and insulated bags are transported in padded plastic boxes which the postman takes with him after delivering the order (see Figure 11).



Figure 11: Shipping boxes (“Dispoboxes”) [www.leshop.ch]

For major Swiss cities (Aarau, Basel, Berne, Frauenfeld, Geneva, Lausanne, Lucerne, St-Gall, Winterthur, Zug and Zurich) there is an express night delivery service: all orders placed on Sundays through Thursdays before midnight are delivered the following day between 5:30 p.m. and 8:00 p.m. Orders placed on Friday before 4:30 p.m. are delivered on Saturday morning. For other areas of Switzerland all orders placed on Monday through Friday before 4:30 p.m. are delivered the next working day between 07:30 a.m. and 4:00 p.m. (including Saturday).

If the customer is not at home at the time of delivery the goods are proceeded according to the customer’s specifications made at the time of ordering. The postman then:

- leaves the goods at the front door
- leaves the goods with a particular neighbour
- returns the goods to the post office where they can be collected (during regular opening hours)



Figure 12: Delivery by Swiss PostLogistics [www.leshop.ch]

With rising turnovers the logistics challenges have become more and more complex. LeShop have therefore decided to take care of this important part of the value chain themselves. Since August 2001 all logistics operations are concentrated in the new logistics centre in Bremgarten. The centre is operated by 30 employees working weekdays from 06:00 a.m. to 10:00 p.m.. It is served by 60 suppliers, whereof 11 deliver daily (fresh products such as fruit, cheese, meat). Over 9'000 different products are stored on 1600 m² (chilled) or 4'200 m² (ambient) respectively. In 2006 the second logistic centre of LeShop.ch was opened in Ecublens. The company's headquarters are also transferred to Ecublens.

Each day about 1'800 orders are processed in the green delivery boxes being delivered everywhere in the country. 80% of the orders are delivered using the express service. The logistics centres are especially designed for the needs of an online grocery supermarket. All products are sorted by shelf turnover, packing sequence and requirements. The single-pick storage system enables LeShop to select and place each product in the shipping boxes individually. This manual work is supported by automated processes: first the system auto-distributes the incoming orders to packing zones. Instead of warehouse staff walking through the aisles with shopping trolleys, the shipping box makes its way to the appropriate packing zones via 700 metres of conveyor belts (see Figure 13). In this way, LeShop.ch packers process an order simultaneously at different positions, so that products are boxed up more quickly. Thus the design of the entire logistics centre is geared to the needs and buying habits of the customers LeShop's main target group are young families and working mothers. The company's partnership with The association of the Swiss Business Professional Women BPW aims at intensifying this focus.

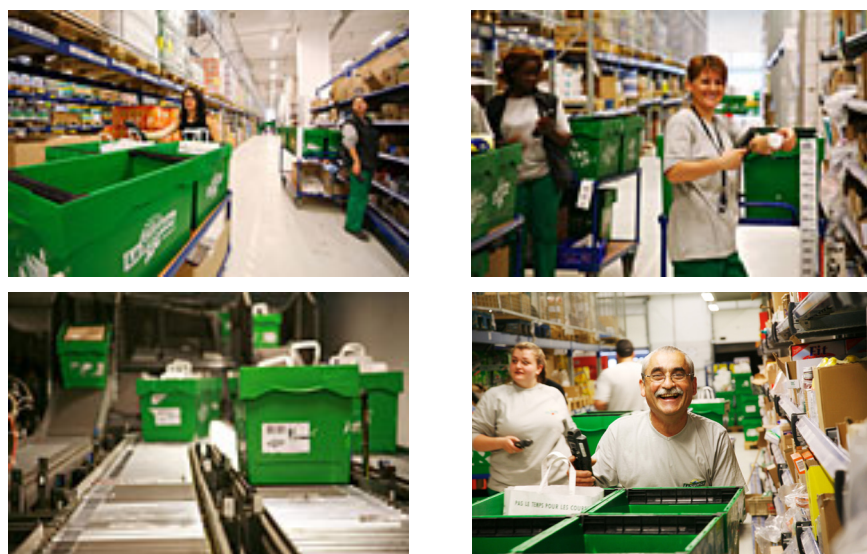


Figure 13: Picking process in LeShop's warehouse [www.leshop.ch]

Results and experiences

LeShop started in 1998 with 7 employees. In February 2008 the total number of staff was 179 people. Today, 91% of all purchases are made by 41'500 regular clients, mainly for their planned weekly shopping. LeShop handles 200 to 400 purchases per day, mostly on Mondays. Average shopping basket value is around 135 EUR. LeShop received several awards as best website in Switzerland for food in 2001 and 2005. In March 2007 LeShop won the "Best sustainable development partnership" award at the International Logistics Solutions Show in Paris.

LeShop.ch is the leading Swiss online supermarket. The company counts 41'500 regular customers and achieved a turnover of 58 Mio. EUR in 2007 (35 million EUR in the first semester of 2008).

The supermarket and boutiques offer a unique assortment containing Migros products as well as branded goods. Groceries and other essentials, articles for home and hobby are delivered directly to the customers' door. Deliveries cover almost all Swiss regions (i. e. nearly 90% of households).

The great majority of customers are young families and professionally active people. Above all, they appreciate the time saving service and convenient home delivery because it makes their everyday life much easier.



Figure 14: Development of the turnover



LeShop.ch calculates as the world's first retailers the ecological balance of its customers. At the beginning of June 2008 LeShop introduced an environmental footprint which calculates the difference between the online ordering with collective delivery and the individual delivery by car.

The saved resources are displayed in a simple and understandable way. For

the customer the results are measurable and experience. Customers as well as experts react very positive on this new label. During the first three weeks after introduction there are 2'600 households with their own LeShop environmental footprint. It is estimated that the LeShop community can reduce more than 800 tonnes of CO2 during one year.

More information

www.leshop.ch

Member of BESTUFS who did the material collection:
Cornelia Petz, Rapp Trans

See also References and contact persons!

Example 3.3.8:
France

Example 3.3.8: PAD Nanterre (France)

[Dablanc; 2001]

Key words

Home delivery and taxi service, offline ordering, depends strongly on public subsidies

Reasons,
framework
conditions and
objectives

The Nanterre Portage et Accompagnement à Domicile (PAD, i.e. Home Delivery and taxi service) was the first of PAD projects throughout French Cities (including Paris) and the largest so far (number of shop keepers associated and number of deliveries made). The public-private experiment has started in 1998 and should continue if more subsidies are found. It is financed by its members (20% of the budget) and by the Ministry of Transport and other public and private sources (National Research Program on Urban Goods). It was initiated by Mr. Creuzet, the President of the Nanterre Association of local retailers and craftsmen because the traditional city centre shops were losing customers and because there was a strong environmental need to decrease shopping trips by private car. The projects is operating in the city-centre of Nanterre, a city with 100'000 inhabitants in the Paris region.

Basic approach

150 shopkeepers are member of the Nanterre PAD experiment. The project employs 6 persons who pick-up the goods purchased at PAD member shops and deliver them to the customer's home. Goods are either bought by physical visits in the shop or ordered by phone. For example a customer calls a liquor store which is a member of PAD. He orders 10 bottles of wine to be delivered within the next hour. The wine merchant will then call the PAD centre and ask for a delivery service. The PAD employee comes with an electric motorcycle or an electric car, picks up the wine box and delivers it to the customer. The customer is charged 1.5 Euro per delivery. The PAD centre centralises all demands and tries to organise a delivery tour in order to rationalise the use of their vehicles. However, as they have committed themselves to delivery within one hour they often cannot wait for a tour to be completed. Ordering by Internet is planned but not possible yet.¹

Customers can also ask for a taxi service, i.e. a ride. A car then picks up the customer at his home and takes him to a shop or another service provider such as a hair dresser, etc. Shop keepers pay for part of that service, their customer so far do not pay anything.

¹ The Nanterre PAD project is therefore not exactly an e-commerce example. It is nevertheless described as it deals with the last mile delivery problem.

Results and
experiences

The PAD centre executes around 100 deliveries and 20 rides a day. This is considered a success. However, financially, the PAD does not manage to be profitable without public subsidies. According to the initiator, Mr. Creuzet, "a PAD will always need at least a 25% subsidy rate from the public sector", and it is an environmental choice to be made by environmentally concerned municipalities. However, the environmental impact of the Nanterre PAD experiment is not obvious and is therefore being evaluated. There are no results available yet.

More information

Member of BESTUFS who did the material collection:
Laetitia Dablanc, INRETS

See also References and contact persons!



Figure 16: DHL Packing station

After a successful pilot phase DHL introduced this packing stations in bigger cities nearby or in stations, universities, major businesses and other strategic locations to abroad range of products and services like parcels and packages, spare parts for service technicians, online payments with credit cards and dispatch of returns with receipt.

Currently, 900'000 registered DHL customers pick up or consign their shipments themselves.

DHL is going to increase the number of their packing stations by end of 2009 from 1'500 to 2'500 and also uses rural locations (new partnership between DHL and the food retailer ALDI). After expanding almost 90% of German citizens will achieve a packing station within ten minutes on average.



Figure 17: Scheme of activities at a DHL Packing station

To use the packing station the customer has to be registered as DHL customer. This is very easy to handle via internet. After registration the new client will receive a personal charge card with PIN-code.

Send out shipment:

The postage can printed at home or bought directly at the packing station. In both cases it is 1 EUR cheaper that at the postal office. Then the packet has to be laid into the packing station like a letter into the postbox.

Pick up shipment:

At the ordering of a shipment the customer has to chose a packing station and use the address of this station as its delivery address. It consists of:

Name:	Hans Mustermann
customer ID:	12345678
Number of Packing station:	Packstation 123
postal code and city:	12345 City

The information about number and location of the packing stations are available on the internet.

When the shipment arrives at the packing station, the customer is alerted by SMS and/or email. The access to the shipment is secured by the charge card and PIN-code.

Results and experiences

The story of DHL packing station with its high number of locations and customers shows the success of this last mile solution in urban freight transport. It is an accepted solution.

In a study DHL analysed the B2C related traffic in the Greater Area of Cologne. This study shows the changes in motorised individual traffic and commercial traffic in one year.

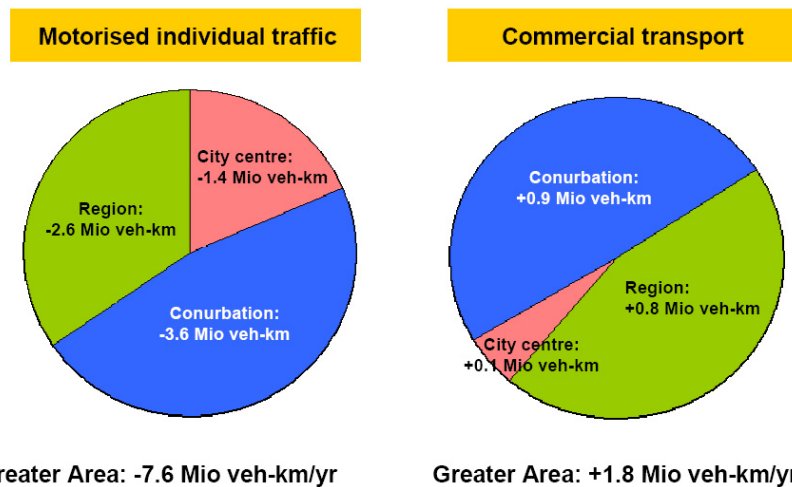


Figure 18: Results of DHL study on B2C related traffic in Cologne [Peter Sonnabed, 2005]

The introduction of the packing station results in decreasing motorised individual traffic and increasing commercial transport.

The motorised individual traffic decreases because of dispensing trips to retailers. The highest effect is achieved in the conurbation of Cologne. But home shopping has the negative impact relating increasing commercial transport as well in Cologne. There the commercial transport had been increasing because of more delivery trips. But in total traffic in Cologne decreased about 5.8 million vehicle kilometres per year.



The DHL Pack Station was awarded of the World Mail Awards 2004 as the “World Wide most innovative postal product”.

More information

Member of BESTUFS who did the material collection:
Cornelia Petz, Rapp Trans AG

See also References and contact persons!

3.4 Synthesis from the case studies

Integrating data flows

Online-retailer should aim at implementing an IT-architecture that enables a real-time integration of the various systems of his business partners. If the online-order of a toy for 25 EUR is to trigger a just-in-time order at the wholesaler's plus instructions for wrapping it in gift paper at the distributors plus an order at the parcel service, this can only be profitable within fully integrated systems. Also tracking & tracing as well as complaint management require integrated solutions. Demand peaks (such as Christmas shopping in the toy industry) would cause the breakdown of a manual system. [Schubert et al.; 2001]

2 logistics models for assembly

With online-shopping business models two logistic models for assembly are observed (see Figure 19 and Figure 20):

- locating logistics operations at existing stores (shelf-picking)
- locating logistic operations at dedicated centres which are especially designed for e-commerce operations (e.g. using conveyor belts, storage)
- according to buying frequency, packing order and storage needs).

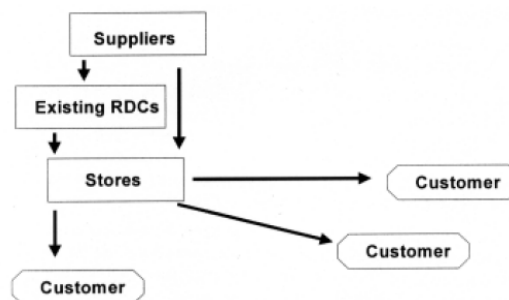


Figure 19: Store based picking model [Browne, 2001]

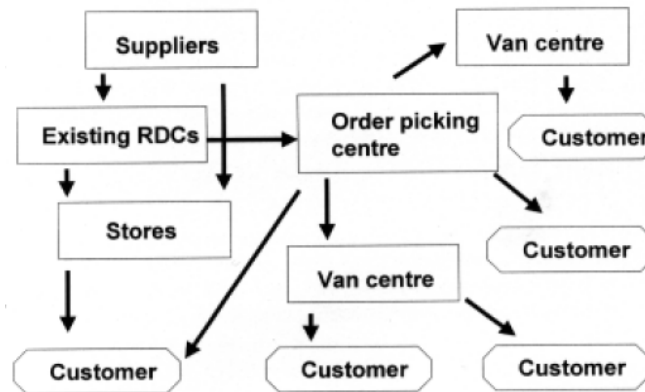


Figure 20: Dedicated picking centre model [Browne, 2001]

Shelf-picking is chosen by many retail stores which try to expand their brick-and-mortar business into the online world (low investment costs). As the online business grows they tend to switch to the dedicated picking model which offers potentials for efficiency gains but needs a high sales volume to cover the higher investment costs (see Example 3.7: LeShop). Similarly, there is a tendency to integrate logistics as the online turnover grows, whereas start-ups often outsource logistics to third party logistics companies. If the percentage of Internet shoppers is to increase in future the companies will need to adapt their distribution concepts to the demands of their online clients.

Last mile solutions

Apart from the chosen logistics model for assembly the solution of the last mile delivery to the consumer is crucial for online shopping business models and a key factor to economic success. A recent study in Paris showed that one of the main reasons for customers for not using e-commerce and the subsequent home delivery is that it takes too long and keeps you waiting at home. [CREDOC; 2001] There are several possibilities to address this problem, each with its specific Pros and Cons.

Non-timed delivery

When the goods are delivered without appointment or a fixed time window the consumer is often not present at delivery. This creates two main problems, a legal and a logistic one. First, there is nobody to sign for the reception of the delivered goods which could result in legal problems. Second, facilities for storing the goods are needed. They must be accessible for the delivery company but nevertheless be secure against theft. Furthermore, in the case of groceries being delivered, different storage temperatures might be necessary (e.g. so called 3 climate storage compartments: ambient, chilled and frozen; see Example 3.3: Internet House). Another solution is chosen by the Swiss online supermarket LeShop (see Example 3.7): if the customer is not at home at the time of delivery the

goods are delivered to a previously specified neighbour. Other consumers prefer to have the goods left unattended in front of their door - at their own risk of course. For smaller items such as books or CDs (still the online bestsellers) Swiss letterboxes dispose of a bigger extra compartment, the so called “milkbox”. These compartments are not locked, but apparently theft is not a problem so far. Although non-timed delivery comes along with various problems it allows delivery companies to optimise transport routes and schedules, thereby reducing overall traffic and achieving better vehicle and driver productivity for each unit delivered. Two studies in the UK modelling a home delivery service found that vehicle kilometres for trips previously made by now home shoppers could be reduced by around 80%, even if each delivery van only carried eight loads of shopping. [Cairns and Farahmand/Young quoted in Browne; 2001]

Delivery by appointment

To avoid the consumer-at-home problem some companies deliver by appointment. However, this advantage is traded against a loss of efficiency, as it is difficult to set up efficient delivery tours. In the worst case there is a single delivery trip for each order, thus private shopping trips are just replaced by reversed commercial delivery trips.

Time-slot delivery

Time-slots try to combine the advantages of both non-timed delivery and delivery by appointment respectively. However, capacity problems might occur as there are apparently preferred time windows. As shown by Figure 21 most consumers prefer their products being delivered on weekdays between 8-10 p.m. This is also peak parking hour in residential areas, creating additional delivery problems.

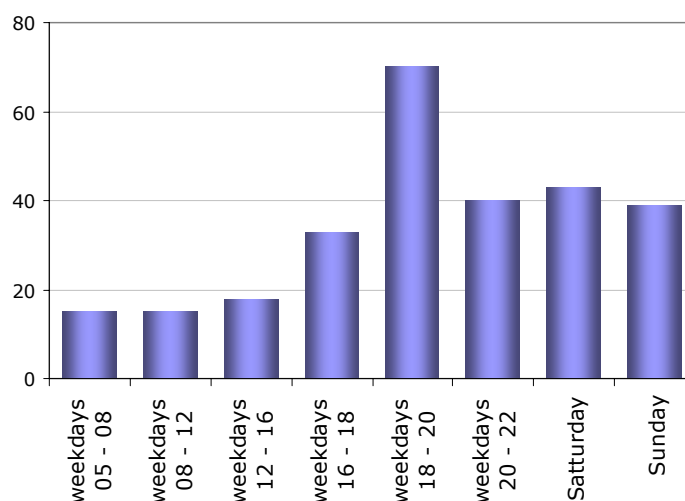


Figure 21: When people want their products delivered [Hultkranz, Lumsden, 2000]

Workplace delivery	<p>Delivery to the workplace solves the problem of the presence of a receiver, but it might create storage problems at the office, especially for frozen and chilled goods and even more with increasing popularity. With regard to transport patterns workplace delivery transfers the last mile distribution problem to the work-home journey. This might influence the modal choice of workers, as they might go to work by car instead of public transport in order to take the delivered goods to their homes.</p>
Delivery to pick-up points	<p>The delivery to pick-up points where the consumer comes to pick up his goods after notification of arrival offers several advantages with respect to the above mentioned problems. The goods are centrally delivered and can be consolidated. Delivery can be at any time of the day. Also for picking up there is usually a large time window, if not 24 hours. Pick-up points guarantee secure storage under stable temperature conditions. Pick-up points can be dedicated local urban delivery centres (see Example 3.4: Tower24 and 3.9: DHL Packing station) or use existing infrastructure such as petrol stations (see Example 3.1: RelayStar), local stores, park & ride sites, leisure facilities, schools, rail stations, etc. (see Example 3.2: PickPoint AG). The different solutions also have different characteristics and implications on transport pattern. Pick-up points which combine the activity of picking up the ordered goods with an existing activity or trip offer a potential to reduce overall traffic, although they might shift the modal choice of these activities towards private cars. This is especially true for car oriented solutions such as gas stations, which are attractive for motorised citizens only. The picture is different where the goods are picked up at retail stores or at dedicated pick-up centres. These solutions offer no or less potential to reduce traffic as their main customer service is not delivery but product assembly and flexible opening hours. They could only contribute to traffic reduction if different orders at different retailers are assembled at the pick-up point, i.e. if the consumer's single trip to the pick-up point would replace several shopping trips to different stores.</p>
Extra challenge: food delivery	<p>A particular challenge is the logistics of food delivery, especially when it comes to fresh products such as meat or dairy food that need constant cooling. An active cooling chain (delivery vehicle with freezing compartment) allows longer transport trips and fully supports frozen goods, but it requires high investment costs and is usually not offered by the general logistics and transport companies. That's why many online food retailers use insulated containers instead (passive cooling chain) in spite of the inconveniences: transport times are limited, the containers require reverse logistics, the insulation takes extra space and frozen goods can only be transported within limits.</p> <p>Also on the receiver's side special infrastructure is required for storing the goods under the necessary temperature conditions, whether it is at pick-up</p>

points (see Example 3.4: Tower24) or at the consumer's home when he is absent (see Example 3.3: Internet House).

Return flows

Reverse logistics in order to handle return flows are often neglected. Fear of damaged goods and the according return hassles can be a major inhibitor for consumers to shop online. [CREDOC; 2001] Without proper organisation they can create a lot of inefficient transports and upset customers.

Delivery fees and
transport efficiency

Delivery fees are often not covering the actual logistic costs as companies are afraid of repelling new customers by high delivery fees. The problem is related to the still limited online sales. For acceptable delivery costs and prices the volume and the number of deliveries have to attain a certain threshold. Still, the costs associated with order picking and home deliveries are not new costs. It is rather that these activities and costs are transferred from the customer to the e-commerce company. In fact, it may well be the case that order picking and transport costs are lower when performed by an e-commerce company than when carried out by the consumer (especially when taking into account the customer's value of time). The concern for the companies is whether the customer is willing to pay a price that fully covers the costs of these activities. Without appropriate delivery charges that also reflect the quantity ordered and the speed of fulfilment there may well be a rapid increase in vehicle trips involving the delivery of minimal quantities of goods. [Browne; 2001] In fact, in times of the "polluter pays"-principle and road pricing flat delivery rates look like an anachronism. With a future increase in e-commerce activities customers will react more sensitively on delivery prices. Prices should therefore be used as a demand management tool to bundle orders and increase transport efficiency.

Sensitive
residential areas

Home delivery usually takes place in sensitive residential areas. Companies could work together to consolidate deliveries for particular streets or areas, thereby improving vehicle load factors, increasing drop densities and reducing the number of vehicles. This would benefit the company (higher efficiency), the customer (lower delivery costs) as well as the other residents (less traffic). Furthermore, co-operative delivery systems for consolidation among various companies would also solve the inconvenience to the consumer when disturbed by several deliveries a day. However, experiences with City Logistic concepts and other co-operation approaches suggest that such collaboration is tricky and might cause problems of logistics, cost accounting and distribution among the partners.

Opportunities and
risks for logistic
service providers

E-commerce has strong impacts on the transport service industry:

- Change in demand patterns

- New opportunities for efficiency gains
- Rising importance of logistics within the value chain

E-commerce business solutions require different logistics than traditional businesses, from Just-In-Time orders with smaller consignments at higher frequencies to home delivery services with dedicated e-fulfilment centres.

On the other hand e-commerce offers the opportunity to realise efficiency gains through closer collaboration between logistics service providers and their clients as well as among the logistics companies themselves.

Finally, logistics become a key factor of success for e-commerce business models, even more than with traditional businesses. This gives logistics service providers a strong position and the chances to increase their share of the value chain. E-commerce requires high quality logistics which are only possible through close collaboration. This offers the opportunity to escape the fierce price competition by establishing long-term contracts and business relations. However, with logistics becoming a core business in the value chain e-retailers will try to integrate logistics into their own business in order to keep control of this important process. Nevertheless, the existing know-how of logistics service providers will be needed and appreciated.

A chance for
innovative logistic
service providers

From the above said e-commerce is rather a chance than a threat to logistic service providers. Particularly in the light of the fierce competition among logistic companies innovative actors can distinguish themselves from their competitors by adapting to the new needs of the e-economy and by making efficient use of the hereby offered opportunities. Because the new economy's logistics are very complex they are difficult to imitate for competitors. The established market advantages of the innovators will therefore be quite sustainable. [Schubert et al.; 2001]

3.5 Possible effects on urban freight and passenger transport

B2B e-commerce:
general impacts on
transport

The importance of e-commerce is estimated to grow further in the future. Figure 22 gives an overview on its possible main impacts on passenger and freight transports. With regard to freight transports 3 effects are dominating:

- Close horizontal and vertical collaboration leads to real-time demand and just-in-time logistics. Business clients make their orders at shorter notice and more frequently, nonetheless expecting punctual deliveries. This makes bundling of deliveries more difficult. Smaller consignment sizes are delivered more frequently.
- Global procurement and collaboration leads to larger transport distances and an increase in especially air freight.
- The emergence of supply chain communities and e-based platforms for logistics (e.g. transport exchanges) could lead to greater transparency which would increase competition and offer opportunities to consolidate orders and enhance vehicle capacity utilisation. Traffic volume and freight costs could be reduced.

Whereas the first two effects induce more freight transport, the third could reduce it through rationalisation and efficiency gains. With special attention to urban freight transports the first and the third effect are of particular importance, i.e. transport induction through demand for JIT-logistics versus efficiency gains through e-collaboration. Which effect will overweigh in the end is hard to predict. The mentioned problems with regard to collaboration between logistics service providers however indicate that at least in the short-term the transport inducing mechanisms will be dominating. B2B e-commerce does have an impact on urban freight distribution if at least one of the trading companies is located in an urban area. Still, the potential for overthrowing existing urban transport patterns of B2C-e-commerce is estimated to be much higher.

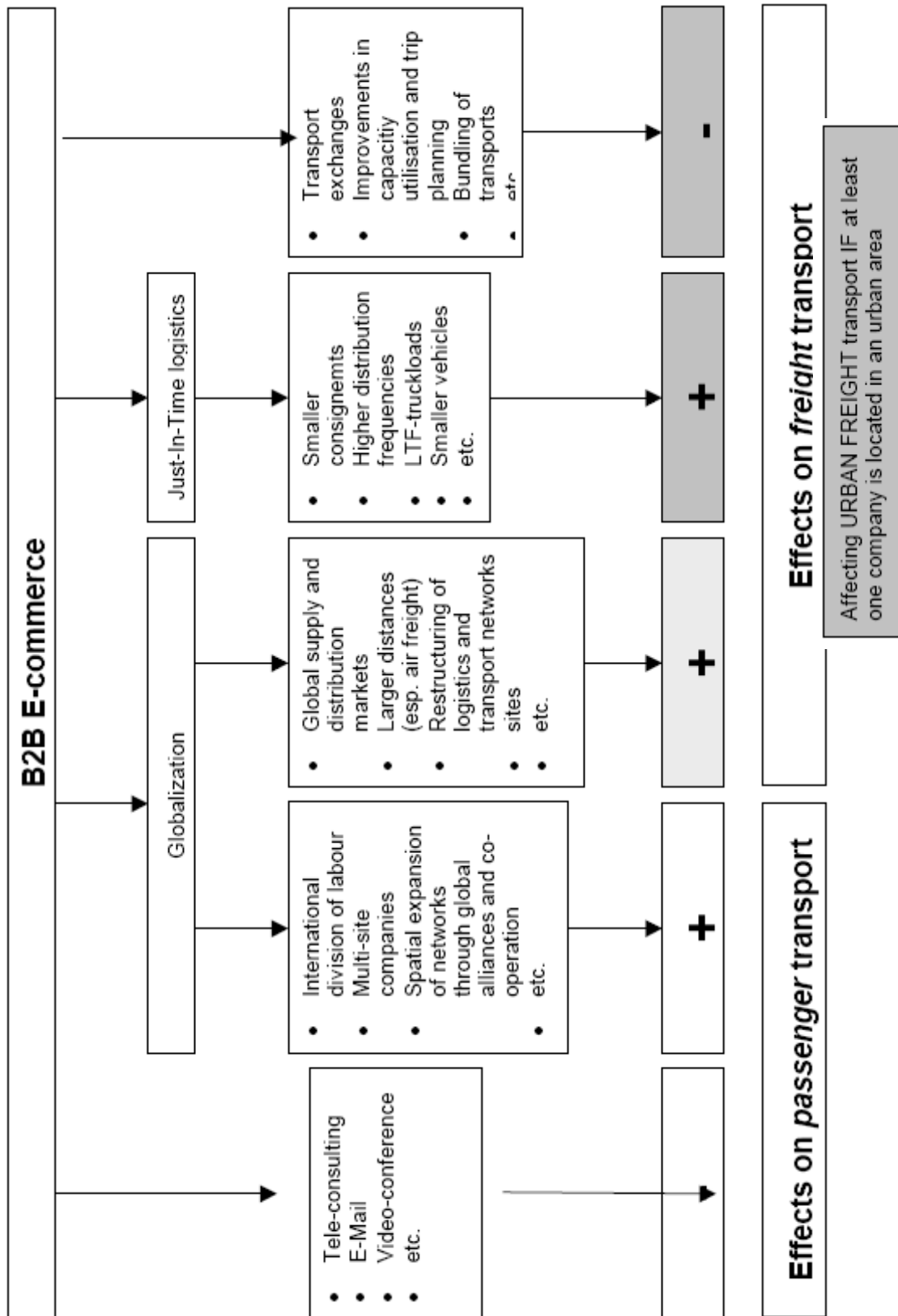


Figure 22: Impacts of business-to-business E-commerce on transport volumes

B2C e-commerce:
general impacts
on transport

The logistics of B2C-e-commerce are characterised by the following particularities:

- Online-shopping is not constrained to local areas. Global shopping increases transport distances and mileage.
- Single orders reduce consignment sizes
- Generally the orders are executed at once thereby increasing delivery frequency
- Several individual shopping trips can be replaced by a single delivery trip by van

Whereas the first three effects forecast an increase in urban freight traffic, the latter offers considerable potential for total mileage reduction.

Several influencing
factors

The net effect is not clear at all, as the transport reduction potential depends on several factors:

- ability to consolidate orders
- transport bundling capacities (collaboration among various deliverers)
- intelligent trip planning (immediate delivery, access restrictions, time constraints, etc.)
- location of the distribution depot (dedicated warehouse, store)

Furthermore it is expected that consumers will substitute their former shopping trips by possibly even longer leisure trips. Experts forecast that this traffic inducing effect might easily outweigh the whole transport reduction potential and that e-commerce will increase the total number of vehicle movements. [Schacke; 2001] Delivery to workplaces or pick-up points where the very last mile distribution is done by a regular consumer's journey might also influence the consumer's modal choice adversely.

More traffic due to
ecommerce?

It is impossible to give a general statement about the impact of online-shopping on urban transport volumes. A wide variety of different logistic solutions have been implemented, each of them having different effects. Transport patterns differ strongly between new or existing logistic channels or between home delivery services and pick-up point solutions. Two identical online shopping models differing only in the location of their pickup points (e.g. dedicated pick-up centre versus railway station) will have different impacts on transport mileage. Table 2 sketches a picture of the variety and complexity of the different impacts.

General trend		
E-commerce reinforces the general trend in logistics towards smaller consignments, single orders and thus higher delivery frequency		
Logistic models	transport increasing factors	transport reducing factors
	+	-
Use of existing logistic channels (Parcel service, post)	+ larger distances and higher mileage due to global shopping and single order processing	- better bundling and trip optimisation thanks to large volumes of goods
New logistic channel: shelf picking	+ only restricted bundling possibilities	- shorter distances for last mile distribution (making it possible to deliver e.g. by bike)
New logistic channel: dedicated warehouse	+ higher freight mileage because new distribution centre has to be served + possibly large distances to pick-up points and homes	- better consolidation and trip optimisation
distribution to pick-up points (including workplace)	+ higher freight mileage due to high number of pick-up points + possible influence on modal choice (might use car for work-journey instead of public transport) + consumers might substitute former shopping trips by other (longer) journeys	- replacement of shopping trips if pick-up point is at a location regularly visited anyhow (e.g. workplace) - better consolidation and bundling if delivered to central pick-up points - trip optimisation as delivery can be at any time of the day - assembly of different orders at the pick-up point (replacing a number of single shopping trips)
home delivery	+ higher freight mileage (replacing shopping trips) + consumers might substitute former shopping trips by other (longer) journeys + reverse logistics	- replacement of individual shopping trips by bundled goods transports - potential in overall traffic reduction depends on ability to bundle transports, set up efficient delivery trips and make full use of vehicle

Table 2: Different logistic solutions for various online-shopping models and their impact on transport volumes

There could be a net benefit for the public, i.e. less traffic, if a high level of freight vehicle utilisation can be achieved and if former private shopping trips are not substituted with other car-related activities. There has been no study so far assessing all the above mentioned effects quantitatively. Furthermore, it is not clear, which logistics solution has got the highest potential for traffic reduction. Still, experts forecast an increase in overall (urban) traffic, [Vastag; 2001] mainly because of substitution effects. Even the e-commerce companies themselves are aware that online-shopping concepts can increase traffic, depending on their design. Migros online retailer and one of the most important supermarket chains in Switzerland admits: “The current distribution concept and the increase of small quantities cause more traffic. The further development of the Migros Online-Shops will include an optimisation of logistics. (...) The main goal is to avoid as many client-trips to the shopping centres as possible and to avoid an increase of traffic in general.” [MIOSPHERE; 2001]

The key question is, whether the online-shopping market will grow to such an extent that the delivery density will be high enough to make the average trip length per delivery substantially shorter than the corresponding private shopping trip. However, the development of the online-shopping market is very rapid and the development of urban freight transport regarding distribution of online-shopped products is hard to predict.

Future
development hard
to predict

In the last years online-shopping models became more and more successful. This fact depends on marketing factors such as consumer habits, technical factors such as securer and better electronic payment facilities and last but not least on intelligent and cost efficient delivery solutions, particularly for the “last mile” delivery to the customer. An Ernst & Young study on online retailing puts it like this: “Shipping costs are the biggest concern for online-buyers; it ranks as the number one factor discouraging online buying and the number-one reason for abandoning a shopping cart”. [Ernst & Young; 2001]. At the same time consumers get more time-sensitive as they expect the delivery being as immediate as their ordering in the Internet. In other words: innovative logistic concepts are key drivers for the success of B2C e-commerce. On the other hand, the design of these logistic concepts depends again on the development of the online shopping activities themselves. An increase in Internet shopping activities requires other logistic solutions than at the level of home shopping. Additionally the new fact of increased awareness of ecological sustainability of the customers requires new and clean forms of distribution. Logistics and e-commerce form a full circle, each triggering the other’s development (see Figure 23). This interdependence is one of the main factors complicating the prediction of future e-commerce development.

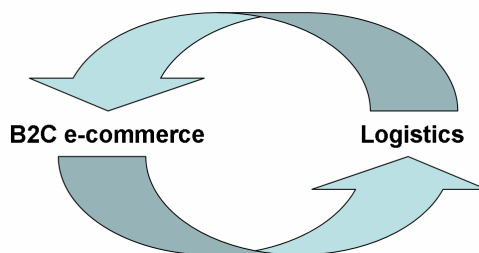


Figure 23: Interdependence of B2C e-commerce and logistics

Additionally, the success of online-shops depends heavily on the reaction of the brick-and-mortar shops towards these new competitors. Traditional shops will have to play all their trump cards such as entertainment shopping, high level advice, personal contact, etc. in order to stabilise and enhance their customer relationship. The recent trend towards retail stores which combine shopping with video watching, reading, having coffee or surfing the Internet can be seen as a reaction to the competition emerging from e-commerce. However the competition evolves in detail, the question is not whether e-commerce will grow, but rather up to which level.

3.6 Conclusions and Recommendations

3.6.1 Conclusions

Still small but fast growing market

Although B2C e-commerce still accounts for a small market share compared to conventional retail business, the online shopping market is growing very fast. It is heavily pushed by its actors, but so far economically sustainable examples are scarce. In this high potential market efficient, reliable and ecological logistics are one of the main factors of success.

Trade-off between customer service and distribution efficiency

There are different logistic approaches used, differing in customer service quality as well as in transport efficiency. Therefore the Internet shops have to find the balance between comfort for their clients (customer service quality) and efficiency of the distribution process.

Two assembly models

On the level of assembly two logistic models are observed:

- locating logistic operations at existing stores (shelf-picking)
- locating logistic operations at dedicated centres which are especially designed for e-commerce operations (dedicated warehouse picking using conveyor belts, storage according to buying frequency, packing order and storage needs, etc.).

Last mile delivery

For the delivery on the last mile there is a trade-off between customer service and efficient delivery tours:

- Non-timed home delivery and the delivery to pick-up points allow the setting up of more efficient delivery trips but are less consumer friendly than delivery on appointment
- Time-slot delivery is a common approach for balancing the two extremes
- From the city transport planning view it is rather undesirable that pick-up points and delivery depots are often car-oriented (gas stations, etc.)
- Delivery depots and dedicated pick-up and delivery centres additionally allow the bundling of goods.

Consumer-at-home problem

The problem of the consumer not being at home at the time of delivery is tackled in various ways:

- delivering on appointment

- defining time-slots for delivery
- delivering to pick-up points
- equipping (new) houses with special storage infrastructure

Demanding logistics

Efficient and reliable logistics are a key factor for the economic success of online-shopping. But the logistics of online-shops are very demanding. The following particularities have been identified:

- Food delivery: The delivery of fresh products requires special measures for cooling during the delivery process as well as on the receiver's side (at pick-up points or at the consumer's home when he is absent).
- Reverse logistics: Logistics for handling return flows are often neglected, although the fear of return hassles can be a major inhibitor for consumers to shop online.
- Delivery fees: Delivery fees are far from reflecting actual delivery costs (still small volumes, barrier to customer acceptance, etc.). Differentiated delivery tariffs mirroring the quantity ordered and the speed of fulfilment could help in bundling the orders and increasing transport efficiency.

An opportunity for logistics service providers

E-commerce is rather a chance than a threat to logistic service providers. Particularly in the light of the fierce competition among logistic companies innovative actors can distinguish themselves from their competitors by adapting to the new needs of the e-economy and by making efficient use of the hereby offered opportunities.

Influence of (e-commerce related) legislation

Product-related legislation and vehicle operating legislation on international, national and local level influence the development of e-commerce, especially on certain distribution channels and systems, e.g. [Browne; 2000].

- Time at which deliveries can be made (both in terms of vehicle access to the street concerned and unloading regulations in force on the street, e.g. night deliveries)
- Times at which customers are permitted to visit pick-up points to collect their goods
- Size and/or weight of vehicles that can be used to make these deliveries
- Special legislation concerning contracts of sales or liability
- Data protection
- Food legislation (Packaging, temperature control, etc.)

Insufficient knowledge about the impacts on urban transport

As online-shopping usually implies the delivery of goods, the growing ecommerce market has substantial effects on urban transport, both on freight transport, on business transport, on shopping transport and on leisure transport. The complex impacts depend on a number of factors:

- Logistics model
- Location of distribution centres, delivery points, etc.
- Consignment sizes
- Market volume
- Bundling degree
- Vehicles used
- Substitution of former shopping trips
- etc.

The effects of e-commerce on urban transport are very complex and not well understood. There is no general answer as every solution has to be assessed under its own framework conditions. Nevertheless many countries are pushing and promoting e-commerce activities - apparently without having thoroughly assessed its effects. On the other hand, cities and regions are still not aware of the chances and risks of e-commerce.

3.6.2 Recommendations

Challenging the urban municipalities

It might well be that e-commerce leads to an increase in urban freight transport that is not offset by an equal reduction in passenger transport. Such a rise in urban traffic would raise several problems for the concerned municipalities. These can be tackled by known economic and regulatory instruments such as vehicle and time restrictions, unloading spaces, environmental taxes, etc.. However, as e-commerce is only in its infancy a prospective approach must focus on preventive measures. From the public, i.e. ecological and town planning view some logistics solutions might be more attractive than others because they offer a higher potential for transport reduction and customer service. However, it is not known yet which ones. The municipalities have the instruments at hand (regulations, economic framework conditions, town planning) to support the development of the preferable ones. But as long as the main effects and relations are not well understood (see below) they should not interfere in market mechanisms.

Recommendations on city level	<p>It is therefore recommended that the cities and regions monitor closely the development of e-commerce activities. Furthermore, they should participate in the suggested research activities on national and international level in order to identify chances and risks for urban areas due to e-commerce and to elaborate appropriate measures and framework conditions.</p>
Knowledge gaps	<p>The present study has drawn a sketch of the different logistics models of existing e-commerce solutions and their possible impact on urban transport. As many actors in this new business do not reveal their pioneer know-how the material collection has to stay incomplete. Several knowledge gaps can be identified:</p> <ul style="list-style-type: none">▪ Different B2C e-commerce logistic solutions and their various effects on urban transport patterns▪ How to make full use of the rationalisation potential within e-logistics▪ The specific needs of B2C e-commerce logistics <p>Whereas for the last topic there is probably considerable know-how available among online-shopping companies (although not publicly available), there is particularly little knowledge about the first two which focus mainly on traffic reduction, i.e. a topic of rather public interest. From the urban transport point of view it is especially the first topic that urges for further research.</p>
Unclear impacts of e-commerce on urban transport	<p>There are many different solutions to the logistic challenges of online-shopping concepts. Those solutions have different impacts on urban transport in general and particularly on the urban ecological system and the citizens' quality of life. Quantitative assessment of the impacts of different B2C solutions has been made so far are rare. There single smaller quantitative assessments by private parties. But if municipalities are to actively prevent undesired developments and anticipate future problems they need to know the pros and cons of the various solutions.</p>
Recommendations on national and international level	<p>Therefore, it is strongly recommended that further European and national research programmes investigate the following topics (in this order of priority):</p> <ul style="list-style-type: none">▪ Analysis of the potential effects of e-commerce (particularly online-shopping) and its different logistic solutions on urban transport (freight, business, shopping, leisure). As the whole issue turned out very complex and heterogeneous it is recommended to focus on particular solutions (as "generic types") and assess their effects (preferably quantitatively).▪ Identification of chances and risks for urban areas due to e-commerce activities

- Elaboration of appropriate measures and framework conditions in order to increase the positive effects and to minimise the negative ones (e.g. road pricing, land use planning, infrastructure planning, etc.)

Identifying and analysing positive and negative impacts of e-commerce on urban transport is especially urgent in view of many national initiatives promoting and supporting e-commerce activities. Forthcoming research activity on the E-economy and its transport consequences by the European Union (Task 2.1.2/9 within the Competitive and Sustainable Growth Programme, Key Action on Sustainable Mobility and Intermodality) might hopefully further treat the issue. However, as the topic is very complex and as national and local factors differ too; this will not be sufficient for a thorough assessment of the issue.

REFERENCES AND CONTACT PERSONS

References			
BCG (Boston Consulting Group)	2000	E-Commerce in Switzerland	
bhv (Bundesverband des Deutschen Versandhandels)	2008	Homepage	http://www.versandhandel.org/
Bischofs, Christoph / Riemer, Kai	2001	Business Case Study "Adorishop": electronic ordering with delivery to pick-up points	Presentation at the E-Business Congress 2001 at the orbit fair in Basel (26.09.2001)
BESTUFS	2008	Homepage	www.bestufs.net
Browne, Michael	2000	E-commerce, freight distribution and the truck industry (Discussion paper for the 4th ACEA SAG Meeting)	
Browne, Michael	2001	Transport and local distribution	Part of the proceedings of a joint OECD/ECMT (European Conference of Ministers of Transport) Seminar about "The impact of E-Commerce on Transport" held in Paris 5/6 June 2001
Browne, Michael et al.	2001	Overview of home deliveries in the UK (a study for DTI)	
Colin, Jacques	2001	E-commerce and logistics	Part of the proceedings of a joint OECD/ECMT (European Conference of Ministers of Transport) Seminar about "The impact of E-Commerce on Transport" held in Paris 5/6 June 2001
COST 321	1998	Transport Research COST 321 - Urban Goods Transport (Final report of the action)	Office for Official Publications of the European Communities 2 rue Mercier L - 2985 Luxembourg http://eur-op.eu.int info.info@opoce.cec.be

CREDOC	2001	Livraison à domicile, le cas de Paris et la petite couronne (Home delivery, the Paris case study)	Chamber of Commerce of Paris, DGCE, 27 Av. de Friedland, 75008 Paris, France
ct	2000	Das intelligente Haus (The intelligent house)	Article in the magazine ct15/2000
Dablanc, Laetitia	2001	BESTUFS Material collection on Ecommerce	Not public available
DHL	2008	Homepage	http://www.dhl.de/dhl?xmlFile=53008
Dorner, Reinhard	2001	BESTUFS Material collection on Ecommerce	Not public available
Dujardin, Jos	2001	Presentation held at the 4th BESTUFS-workshop in The Hague (NL)	www.bestufs.net
Egger, Dieter	2001	BESTUFS Material collection on Ecommerce	Not public available
Eichner, Karsten	2001	Fleisch in der Kühlbox steht auch im Sonnenstudio (Meat in cooling boxes in sun-studios)	Article in the Frankfurter Allgemeine Zeitung, 15.03.2001 (www.faz.de)
Ernst&Joung	2000	Global online retailing	
European Commission	2001	The e-Economy in Europe: Its potential impact on EU enterprises and policies	
Firth, Daniel	2001	BESTUFS Material collection on Ecommerce	Not public available
Forrester Research	2007	"Europe's 2007 Christmas: An Online Retail Wonderland"	
Glücker, Claudia	2001	BESTUFS Material collection on Ecommerce	Not public available
GSC Research	2001	Jeserich AG	
Heufer, Stefan	2001	Der Markt ist tot, es lebe der Markt	Article in Swiss newspaper CASH, orbit special edition (www.cash.ch)
Hultkrantz, Ola / Lumsden, Kenth	2000	E-commerce and Logistical Consequences	Chalmers University of Technology, Department of Transportation & Logistics, SE 412 96

			Göteborg
Huschebeck, Marcel	2001	BESTUFS Material collection on Ecommerce	Not public available
IML	2001	Homepage of the Fraunhofer Institut für Materialfluss und Logistik	www.iml.fhg.de
Leshop	2008	Homepage	http://info.leshop.ch/php/BusinessLeShop.php?LeShopMenuId=1&lge=uk
Metzger, Daniel	2001	4 online-shops im Test	Article in the Swiss newspaper Sonntagszeitung, 09.09.2001
MIOSPHERE	2001	no title	
Morgenpost	2000	Elektronisch leben: D-Netbox statt Kohleofen	Article in the German Newspaper Morgenpost
Mortimer, Phil	2001	BESTUFS Material collection on Ecommerce	Not public available
Nemoto, Toshinori et al.	2001	Impacts of Information and Communication Technology on Urban Logistics System	Faculty of Commerce and Management, Hitotsubashi University, Naka, Kunitachi, Tokyo, 186-8601, Japan cc00330@srv.cc.hitu.ac.jp
NZZ	2001	Zugänglichere Futterkrippen im Internet	Article in the Swiss newspaper Neue Zürcher Zeitung (NZZ), 24.08.2001
OECD	2001	B2C e-commerce statistics	www.oecd.org ->e-commerce ->statistics
OECD Secretariat	2001	E-Commerce – a stock-take	Part of the proceedings of a joint OECD/ECMT (European Conference of Ministers of Transport) Seminar about “The impact of E-Commerce on Transport” held in Paris 5/6 June 2001
Petz, Cornelia	2008	BESTUFS Material collection on Ecommerce	Not public available

Polzin, Dietmar	1999	Akteure einer elektronischen Logistikbörse	Article in German journal "Logistik Heute" 3/99
Quispel, Martin	2001	BESTUFS Material collection on Ecommerce	Not public available
Ruberti, Giovanni	2001	BESTUFS Material collection on Ecommerce	Not public available
Schacke, Ivar	2001	Presentation held at the 4th BESTUFS-workshop in The Hague (NL)	www.bestufs.net
Schubert, Petra et al.	2001	Fulfillment im E-Business	Hanser Verlag, Munich www.hanser.de
Sonnabend, Peter	2001	Presentation held at the 4th BESTUFS-workshop in The Hague (NL)	www.bestufs.net
Sonnabend, Peter	2005	Presentation held at the 2nd BESTUFS II-workshop in Nuremberg (D)	www.bestufs.net
Swiss Post	2001	Homepage of the Swiss Post Parcel service	
Van Isacker, Nathalie	2001	BESTUFS Material collection on Ecommerce	Not public available
Vastag, Alex	2001	Auswirkungen moderner IuKTechnologien auf das Verkehrsaufkommen (Contribution to the 4th Swiss Forum on Transport & Traffic, 31.5.2001, Zurich, Switzerland)	Fraunhofer Institut für Materialfluss und Logistik, Dortmund, Germany
Verband des Schweizerischen Versandhandels	2008	Homepage	http://www.vsv-versandhandel.ch/

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ANNEX

ANNEX I **Situation concerning E-commerce and urban freight distribution (home-shopping) within European countries**

ANNEX II **Collected case studies (projects-level)**

ANNEX III **Overview on collected B2C case studies according to their approaches towards the “last mile distribution”**

ANNEX I: General situation within countries - E-Commerce and urban freight distribution (home shopping)

Country	Description
Austria	<p>Concerning food retail sector nowadays some of the national companies offer online Catalogue-shopping with Internet Order possibility and home delivery service. Some years ago many companies started this service, but already a short time later the majority of them stopped again, as it was not possible to charge transaction costs to the customer. These few who still have the service provide very rare information about their success, as it could be assumed, that e-commerce in this case is more a marketing and communication tool, than a customer oriented business solution.</p> <p>In Austria the percentage of households who have internet access has risen from 34% in 2002 to 60% in 2007, overall 69% of the population aged 15 or older have regular access to Internet.</p> <p>In Austria the quote of online shoppers, who do at least one transaction per year, is around 26%, mainly people between 20 and 29 years old. The calculation shows that this makes a market share of 2,8% of retail expenses in Austria. The e-commerce market is very strongly concentrated on a few product groups, especially books, electronic equipment, CD/DVD and computer hardware and software.</p> <p>The acceptance of internet shopping and e-commerce is depending on many different aspects regarding the customers. Price sensibility, social factors, product involvement, brand image, convenience, security, liability and of course risk are all factors that influence the act of shopping in the internet. Although Austria has a high internet penetration, the main reason for a low online shopping quota is the missing possibility of an internet access. A survey also stated that security reasons and the payment transactions often keep the customer away from sending an internet order.</p> <p>On the other hand B2B e-commerce importance will rise to very high importance thereby further reducing storage capacities and providing a higher level of service.</p> <p>Source: KMU Forschung Austria: "Einzelhandel im Internet", Wien 2007</p>
Belgium	<p>Existing concepts and projects in the field of e-commerce in Belgium include online bookshops (e.g. Proxis, Azur, Fnac), supermarkets (e.g. Caddy Home organised by Delhaize, Collect&Go organised by Colruyt, Allo Supermarché), clothes (e.g. 3 Suisses), travel agencies (e.g. Connection) and companies (e.g. Virgin Express, Brussels Airlines, Thalys), banks (PC Banking), insurances, computer material and auctions (e.g. Yezzz!). KIALA, a technological platform associated to a network of collection points for goods sold by distance selling (catalogues, Internet, teleshopping) has developed well since its foundation in 2001. A number of Internet sites provide directories of e-shops as for example, www.shopping.be. The Internet site www.brussels-ecommerce.com, which gathers small and medium enterprises, is online since June 1999. Small and medium enterprises on the site include agro-food, health, communication and precision industry firms. The Belgian Post has created an e-service department whose first concrete project has been the development of PostBox™, a system that allows e-mails to benefit from the same credibility as traditional mail (http://www.postbox.be/). The post has developed an e-shop where it is possible to order, amongst other things, stamps, pre-stamped envelopes and Postograms.</p> <p>The ICT study carried out in 2007 and published by the Ministry of Economy (http://www.statbel.fgov.be/ict/) shows that 67% of the Belgian households with at least one person aged between 16 and 74 years have one or more computers. A total of 60% of the Belgian households have an Internet connection in 2007 compared to 50% in 2005. The survey shows that 20% of the interviewees had ordered goods or services on the Internet in the past 3 months, 10% of the interviewees had ordered goods or services between 3 months and one year before the interview, 5% had made an order more than a year before and 65% of the interviewees had never ordered goods nor services on the Internet. Holidays and trips are the goods and services that are most</p>

	<p>ordered on the Internet followed by tickets for happenings (concerts, movies,...). Movies, music, books and online courses also represent a high percentage of the goods and services bought online.</p> <p>E-commerce in Belgium is regulated by the following laws :</p> <ul style="list-style-type: none"> ▪ Law of 14 July 1991 on commercial practices and on information and protection of the consumer ▪ Law of 11 March 2003 on certain legal aspects of the services of the information society (national transposition of Directive 2000/31/CE) <p>The Belgian Business Federation (FEB) published a voluntary code of conduct for e-commerce in August 2000.</p> <p>Belgian consumers appreciate personal contact when buying products and are resistant to choose products either on a catalogue or on the Internet. They prefer to have the products in their hands before buying them. Consumers are more likely to buy online products that are relatively inexpensive like books and CDs (the risk is lower). Half of the e-shoppers do not feel comfortable with the idea of providing their credit card data on an Internet site. Some e-shops provide home deliveries while others have created pick-up points. Some e-shops use both systems</p>
Denmark	<p>In 2001, 62% of the Danish population had access to the internet. 18% of those with internet access use it to shop online, 11% of the total population has shopped online. In 1999, 19% of all Danish companies with more than 10 employees had the facility to receive orders through their web sites, the majority within the hotel restaurant and catering trade (33%), motor vehicles and fuels (26%), business services (22%) and Transport (22%). Only 5% of all enterprises gain at least 2% of their turnover from e-commerce. In 1999, the e-commerce market was worth an estimated 504m EUR out of a total GNP of 177,2bn EUR (0.3 %).</p> <p>There is no special legislation for e-commerce. Consumers are protected under ordinary Danish consumer law.</p> <p>The importance of B2B e-commerce, nowadays mainly used in the motor and fuels industry is expected to increase from medium to high, thereby further reducing storage capacity and promoting JIT delivery.</p> <p>The highly relevant B2C e-commerce is today mainly used for PC hardware, electrical goods, books and CDs and will expand in the future into food, clothing and travel markets. Businesses offer high service levels including home delivery while consumers take increasing advantages of the 24 hour shopping possibilities and the greater choice provided by Internet retailers.</p>
Finland	<p>E-commerce is based on some technical circumstances like internet connection, preferably by broad band, and the suitable home page of the seller as well as logistic systems for delivery of bought items and a necessary system for the payments.</p> <p>In Finland, 99 % of the enterprises, with 10 or more employees, had internet connections and 90 % had it through broad band in 2007. Home pages did exist in 69 % of all enterprises with at least 5 employees. However, all of them were not suitable for direct selling through e-commerce but could anyway give information about the products available. In 2006 only 11 % of the Finnish enterprises sold their products through internet. In Finland, B2B e-commerce is much bigger than B2C. In 2007, B2B was worth of €50 billion compared to €4 billion in B2C.</p> <p>In 2007, four of five Finns, between 15-74 years of age, did use internet that gives a good starting point for e-commerce. However, Finnish firms have not yet provided the necessary services in large scale and therefore e-commerce B2C had remained on a modest level. Of course, e-commerce is an international business and therefore Finns bought items from other countries by an estimated level of one billion Euros in 2007.</p>
France	<p>Very rapid growth of e-commerce since last semester of 2002 (+35% of sales between year 2006 and year 2007 for example), with a total of 16 billion euros in 2007. Three quarters of revenues generated by distance selling orders now come from internet orders (the rest of orders is made by phone, fax or letter).</p> <p>A specificity of French e-commerce is the rapid development of grocery e-commerce, with 4 major private</p>

	<p>players (Telemarket, Auchandirect, Houra from Cora Group and Ooshop from Carrefour), some of them recently turning profitable. Some public/private initiatives have developed to help local retailers compete with large firms and implement e-commerce or home delivery services. Product range increased from 3000 products to 15 000 to 70 000 (for one operator) today. There is an even more rapid development of home deliveries after physical buying in supermarkets. All Paris and other large cities' supermarkets today provide home delivery services.</p> <p>A major development of home-shopping since the years 2005-2006 is the rapid growth of pick-up-points, including (to a lesser extent) automated locker banks to pick up orders made on the internet, avoiding direct home deliveries (best examples of pick-up-points in France are Kiala, A2pas and Cityssimo).</p> <p>Many conferences on e-commerce have taken place in France for the past 7 years and continue to do so. An association of distance retailers (FEVAD) gives interesting and updated statistics. A major annual conference takes place every year in Paris (E-commerce Paris) devoting one session to the urban logistics of e-commerce.</p>
Germany	<p>Most e-commerce solutions in German urban areas are related to B2C and home delivery activities. The German market is dominated by the Portal strategy where a web portal aims at generating a sufficient volume of sales in order to make the delivery (to workplace, home or pick-up points) from a central warehouse economically viable. Home delivery services are provided by large parcel services such as Deutsche Post. 2 other strategies focus on delivery hubs close to the final customer or on additional services like specialised food services or furniture delivery. There are still only a few online traders in Germany offering groceries, most deliveries consist in frozen food.</p> <p>In 2008, every fourth company is currently offering online shopping to their customer, an increase of 33 % compared to 2007. Particularly medium-sized businesses have concentrated on sales via internet.</p> <p>In 2006, Christmas trade went below the expectations, but reached the results of the previous year. Nevertheless Amazon reached their best result until then and sold 108 millions of articles while eBay sold 17 millions of articles.</p> <p>The parcel service DHL has installed to date about 1'500 pick-up points and plans to increase the number to 2'500 in 2009. Pick-up points are mainly positioned in urban and high density areas. DHL aims at offering a dense installation of pick-up points so that customers have their next point within 10 minutes walking distance. A new aspect has emerged of e-commerce within the last years: social commerce, with the active participating of customers. In Germany, eBay, Amazon, Spreadshirt and Dawanda are one of the first online traders and marketplaces integrating social commerce (e.g. www.dawanda.com).</p>
Greece	<p>Greece is the least wired country in the EU and therefore, e-commerce, although presenting a significant potential for the future, can still be considered in its infancy at the time. According to a survey by the Athens University of Economics and Business (AUEB), 17% of the population has access to the Internet. This is however considered to be quite a high estimate, as most of other surveys conducted present a lower percentage (8-10%). The number of Web-sites originating in Greece is roughly one tenth that of German web-sites and one-fifteenth of UK sites (OECD, 2000). the number of secure servers (necessary to protect online transaction from "indiscreet eyes") per capita is only one-fifth that of the entire EU. According to the same OECD data, the increase rate of the number of PCs linked to the Internet was, for the second semester of 1999, the lowest among the OECD countries. Moreover, Greece and Germany present the highest Internet access cost.</p> <p>The main reasons for the slow Internet penetration and e-commerce development in the country are:</p> <ul style="list-style-type: none"> • the relatively low standard of living (67% of the EU average) • the state monopoly on telecoms services, resulting in relatively poor infrastructure and high cost of Internet access <p>In general, measures are taken to revert Greece's laggardness. A proposed tax legislation will make respective purchases (computer hardware, peripherals, software and Internet connections) tax deductible for households. There are indications that Greece will eventually move at a more rapid pace than other countries,</p>

partly because of the low-base effect. Present forecasts put the number of Internet users at 1.5 Mio. by the end of 2001 and 3.5-7 Mio. (depending upon the source) by 2004. As a result of that, it is anticipated that 9.5% of the population will undertake transactions over the Internet by the end of 2003. This percentage however, includes the transactions also within the service sector (especially banks/financial services) which is already relatively developed.

The Greek legislative regime covering e-commerce is still rather undeveloped. A Presidential Decree has recently been drafted by a special expert committee and is currently being examined. The aim of the PD is to strengthen security and transparency in electronic transactions, as well as to establish the necessary conditions enabling e-business to penetrate the national market, encouraging electronic transactions and familiarising the consumers with the new transaction practices.

At the moment, there is no government legislation on digital signatures and certificates. Some companies of the private sector have chosen to establish their own systems rather than wait for governmental guidelines. Finally, no organisation has been established to deal with e-commerce consumer protection.

B2B e-commerce is considered of little importance with a high growth potential. With on-line payment systems widely considered insecure, the capabilities of e-commerce cannot be fully exploited. In fact, in some cases, e-commerce is "degenerated" to simple information offer and inquiries fulfilment, rather than actual purchasing ability and transaction completion. In the light of this fact, B2B exchanges tend to move more quickly than B2C. The information technology and banks/financial services sectors are clearly dominating. B2B businesses have very high expectations regarding e-commerce explosion over the years to come, however, most of them have not yet reviewed the structure of their supply chains and their intern processes in order to be ready to easily go on-line. They use e-commerce applications mainly for information exchange rather than to fulfil complete transactions. Even if some companies already claim to use e-commerce applications both for B2B and for B2C transactions, they do not yet have the two streams interfacing (e.g. an order placed on the B2C end cannot trigger a stock replenishment process on the B2B stream).

B2C e-commerce activities are still very low but are considered to grow up to medium importance. Nowadays only 12% of Internet users purchase online. This translates to about 80.000-100.000 consumers. It is interesting to note that only a 10-15% of the electronic purchases undertaken by Greek citizens are made from Greek e-shops. Online sales include mainly books, magazines, and music CDs are the main physically distributed goods sold. To a lesser extent, also PC peripherals and gear as well as other electronic goods. There is no indication at the moment that the type of goods sold today will change significantly in the future. What is known however, from recent surveys on B2C e-commerce in Greece, is that Greeks don't tend to buy cloths and furniture over the Internet. A significant percentage of a survey's respondents have also excluded food and drinks from their Internet shopping preferences, however, this might be before the introduction of e-shopping capability by a large super market (which is expected to be initiated very soon).

There are about 300 e-shops run by domestic retailers, most of them being used for catalogue publicity and ordering. There are no more than 50 "complete" e-shops offering on-line ordering and payment possibility. For all of them, the delivery alternatives are either post/courier or pick up in person by a company's branch. The relatively very small volumes of on-line sales cannot possibly justify the cost of a dedicated physical distribution channel established by the retailers solely for products purchased on-line. It must be noted here that research has revealed that physical distribution within the big cities of the country (especially Athens) is currently unprofitable even to large third-party logistics providers (handling a significant volume of freight). That means that for activities with much smaller volumes, a dedicated channel for urban freight distribution, at present, does not seem feasible.

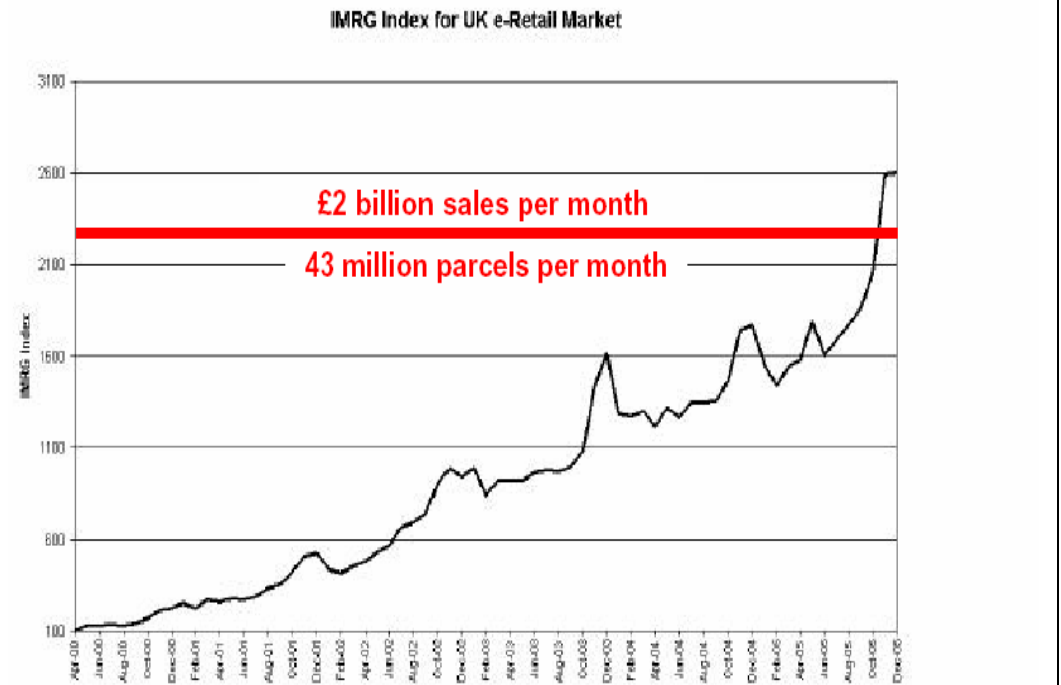
B2C companies tend to develop web sites where catalogue information and simple order placing possibility is provided. In some cases product support is also provided but not on-line (e.g. printer drivers can be downloaded). However, on-line services are not provided in these sites, e.g. quotations, stock availability, order tracking, definite delivery times, etc. On all other aspects, the traditional brick-and-mortar behaviour is maintained. Many retailers, even those maintaining also e-shops, open big stylish brick-and-mortar shops where shopping can be combined with other entertaining activities (reading, video watching, having coffee,

	<p>surfing the Internet, etc.) in order to stabilise and enhance their relationships with customers. This trend, which is most apparent to bookstores and computer gear shops, is a reaction mainly to the competition emerging from e-commerce.</p> <p>The Greek consumers tend to use e-shops mainly to acquire product and price information. Then they buy at the brick-and-mortar shop. They tend not to trust either the quality of the products bought electronically or electronic transactions, but rather the combination of printed catalogue and telephone/fax. They resent providing the personal data necessary for an electronic transaction to be fulfilled. The majority still prefers traditional shopping to e-shopping as a form of entertainment.</p>
Italy	<p>In the context of the e-evolution, Italian Ministry of Industry has established an observatory for e-commerce, called "Osservatorio per il commercio elettronico" three years ago. The main aim of this organism is to monitor and to prepare guidelines and policy measures for the e-commerce development in Italy.</p> <p>Still in this context the "legge finanziaria 1999" (financial act 1999) has allocated 120 million EUR for the period 2000-2002 for financing the e-commerce development in Italy. These funds are particularly addressed to small and economic operators. Actually Small and Medium Enterprises are responsible for the 92% of the Italian GDP; 82% of such enterprises has less than 15 employees. Therefore any initiative in the e-commerce sector must take into account this economic structure.</p> <p>Home shopping is still to be well developed in Italy and a cultural change has not taken place yet. There are several barriers to the development of e-commerce, e.g. the weight and number of large distribution networks and big economic and logistics operators being much smaller in Italy than for example Germany or the UK. In the UK an average delivery takes 4 days at a cost of 4 EUR whereas in Italy it takes 16 days at 7 EUR.</p>
The Netherlands	<p>There are no existing or planned legal framework conditions which are connected directly to e-commerce. Of course the existing city access regulations result in constraints for the distribution of electronically ordered products where it considers the situation of businesses and consumers located in (inner) cities.</p> <p>Looking at transport volumes and market shares also in the Netherlands B2B e-commerce is more important than B2C. However, with regards to urban transports B2C is considered more important as e-commerce will change the B2C segment transport patterns, whereas in the B2B segment e-commerce will not necessarily result in new transport patterns. With B2B e-commerce products might be coming from more suppliers and from longer distances, lead-times will become shorter and there will be more frequent replenishments. Vertical e-marketplaces will allow optimisation of the whole supply chain, thereby improving quality and efficiency. B2B e-commerce will increase the companies' reaction speed, the geographical scope of business and improve reliability and quality of products.</p> <p>In B2C e-commerce media products (books, CDs), consumer electronics and food are dominating. The big and medium sized businesses all have founded web sites where customers can (at least) find information about the company. Secondly the products they offer may be presented on the web site. At third stage, companies offer the possibility to order/purchase products on-line. Small (traditional) companies clearly lay behind to this development. For newcomers the main argument to participate in e-commerce is the direct market access. They start with Internet applications and link distribution to it. Distribution often causes them problems. Mail order companies do e-commerce to reduce costs and use their client database. For retailers the threat that third parties may enter their market is their most important driver. For large manufacturers and wholesalers on the other hand potential direct access to the market is a persuasive argument for e-commerce, but they lack experience on distribution to the individual customer. For the consumers themselves e-commerce offers a gigantic range of products and the opportunity to shop at unconventional times. However, payment and distribution are often arguments against e-commerce.</p>
Norway	<p>In 2001, 63% of the Norwegian population had access to the internet, with 28% of all people accessing the net at least once a day. 19% of those with internet access use it to shop online, 12% of the total population has shopped online. In 1999, only 12% of all Norwegian companies with more than 10 employees had the facility to receive orders through their web-sites, the majority within the hotel restaurant and catering trade (21%) and business services (17%). 15% of companies plan to introduce this facility during 2000/01. Only 5% of all</p>

	<p>enterprises gain at least 2% of their turnover from e-commerce.</p> <p>White Paper No. 41 1998-99 Electronic Commerce sets put Norwegian Government's objectives and strategies for e-commerce (English summary: http://odin.dep.no/nhd/norsk/publ/veiledninger/024031-120002/index-dok000-b-n-a.html)</p> <p>The importance of B2B e-commerce, nowadays mainly used in the computer equipment and travel industry is expected to increase from medium to high, expanding into office equipment, raw materials and courses. 45% of companies bought goods or services over the internet in 2000</p> <p>The highly relevant B2C e-commerce is mainly used for PC hardware, books, music and travel and will expand in the future into food, clothing and hobby equipment. Businesses offer high service levels including home delivery while consumers take increasing advantages of the 24 hour shopping possibilities and the greater choice provided by Internet retailers.</p>
Spain	<p>Some private initiatives begin to have relevance in the e-commerce. E.g. El Corte Ingles, the biggest distribution company in Spain, trusts hardly this new business way. Also, the most important courier companies in Spain (UPS, Fedex, TNT, ASM, DHL, Seur, Mrw or TDN) have relayed in the e-fulfilment bearing in mind, that most B2C firms delegate all the logistic responsibilities to a Third Party Logistic (3PL) company. The largest part of the important studies about e-commerce and e-logistics relies on private initiatives, such Centro Español de Logística (Spanish Centre for Logistics) with BAQUIA, or Asociación Española de Comercio Electrónico (Spanish e-Commerce Association) y la Federación de Comercio Electrónico y Marketing (e-Commerce and Marketing Federation).</p> <p>There is a normative draft in order to regulate the services around e-commerce in this country (see Project E - 01).</p> <p>In 2001 over 7000 companies are using B2B e-commerce trying to improve service, open new markets, reduce costs and optimise supply chain management. This number is estimated to double within the next 2 years, turning the business' importance from low to high. On the supply side B2B activities include ordering, logistics and negotiation. Towards clients IT-applications are used for supplying receipts, logistics and invoicing.</p> <p>The B2C e-commerce market is still of very little importance but online shopping sales are expected to grow exponentially within the near future. The average online-consumer spends 210 EUR per year mainly on books, music and traveling. Still, only 10% of all online-companies use the Internet for selling their products and services, most of them use the e-platform only for advertising and product information (virtual shop window).</p>
Sweden	<p>In 2000, 65% of Swedish people had access to the internet at home, with 80% having access either at home, at work, or their place of learning. 68% access the internet at least every other day. Around 9% of internet users purchased goods or services online in the 2nd quarter of 2000, up from 4% in the same quarter in 1999.</p> <p>There is no separate legislation regarding e-commerce. Internet shoppers and traders are protected only by existing Swedish consumer legislation.</p> <p>The importance of B2B e-commerce is expected to increase from medium to high.</p> <p>The highly relevant B2C e-commerce is today mainly used for books, music and electrical goods and will become even more important in the future. Businesses offer high service levels including home delivery while consumers take increasing advantages of the 24 hour shopping possibilities and the greater choice provided by Internet retailers.</p>

<p>Switzerland</p>	<p>E-commerce is an important issue in Switzerland. Wholesalers, shippers, logistics actors, etc. are dealing with various aspects of e-commerce. Seminars, workshops and conferences relating to e-commerce take place but they do not focus on the interaction between e-commerce and urban freight distribution. The research activities at the Federal Institute of Technology for example focus rather on payment and reliable electronic contracts than on distribution aspects.</p> <p>The City of Zurich sees some problems (like generation of traffic or influences on the whole traffic system in the city) which might be caused by online-shopping concerning the delivery of goods in the city but also concerning the connection of e-commerce with telematics applications (especially tracking and tracing). A first step is therefore the integration of pick-up and delivery-points within the land use and traffic planning (reservation of special areas).</p> <p>MIGROS (one of the most important supermarket chains in Switzerland) and its online shop LeShop is aware of the problems caused by the increase of delivery of online-shopping-goods: "The current distribution concept and the increase of small quantities cause more traffic.</p> <p>Since 1998, the Swiss government has followed six guiding principles in its activities relating to e-commerce:</p> <ol style="list-style-type: none"> 1. State regulatory measures are introduced only when absolutely necessary; 2. Business self-regulation is preferable to government regulation if it is as effective; 3. Stakeholder participation is encouraged; 4. State regulatory measures should not affect technical developments; 5. State regulatory measures should be compatible with measures taken elsewhere, in particular in the EU; 6. Online and offline activities are given equal treatment. <p>These principles are rooted in Switzerland's liberal economic policy. The state limits its activity to creating framework conditions which have a stabilising influence while helping both foreign and internal trade to develop and protecting individual freedom. In 2001 a law was is going to be passed which will give Swiss consumers the same protection concerning e-commerce (concerning e.g. electronic signature) like European consumers (draft version: January 2001). But in 2005 the Swiss Federal Council rejected that law. There is no special legislation concerning distribution of goods which were sold via e-commerce.</p> <p>B2B e-commerce in Switzerland is considered of medium importance. In general e-commerce is expected to increase. On the B2C side a lot of supermarkets have real home-delivery and internet-shopping concepts. They base on different distribution concepts e.g. via PostLogistics, car which is owned by the company, Pick-up points. They work on regional or national level (see projects CH - 01 to CH - 05). Many small shops offer also home delivery-services and online-shopping. They offer very often a small choice of specialised products. Distribution in general via post or car/delivery van which is owned by the company. (Examples: www.spruengli.ch, www.vinoversum.ch, www.hofmanns-classics.ch). Traditional pizza-services, party-services now also offer their products online. Products of international companies are often distributed via Post (Examples: www.ikea.ch, www.amazon.ch). However, the importance of B2C e-commerce is still considered low, though growing. Main products concerned are books/magazines/brochures, computer-software/CDs/further equipment for computers and travelling/hotel-booking.</p> <p>E-commerce is used by clients in rural as well as in urban regions. Both types of customers expect the same level of service.</p> <p>Many companies in the B2C e-business underestimate the efforts needed to implement and maintain their logistic models. A Swiss particularity are the so called "milk-boxes" which are incorporated in the mail-boxes and are big enough to store small parcels if the addressee is not at home during delivery.</p>
<p>United Kingdom</p>	<p>The following section notes briefly the general growth in e-commerce (and related activities of home delivery) and then goes on to address the rise of food related e-commerce and home delivery in more detail based on a recent report prepared by the Institute of Grocery Distribution.</p>

According to Mintel (Home Shopping-UK-2007), E-commerce had the biggest share of all UK home shopping market in recent years reaching over 60% and being valued at £9.5 billion (excl. VAT) in 2006. Figure 24 shows the 2600% growth of UK online shopping between April 2000 and December 2005. (IMRG, 2006. Valuing Home Delivery. A Cost-Benefit Analysis.) Monthly sales rose from £87 million to £2.26 billion while the number of shipments increased from 15 to 420 million per annum.



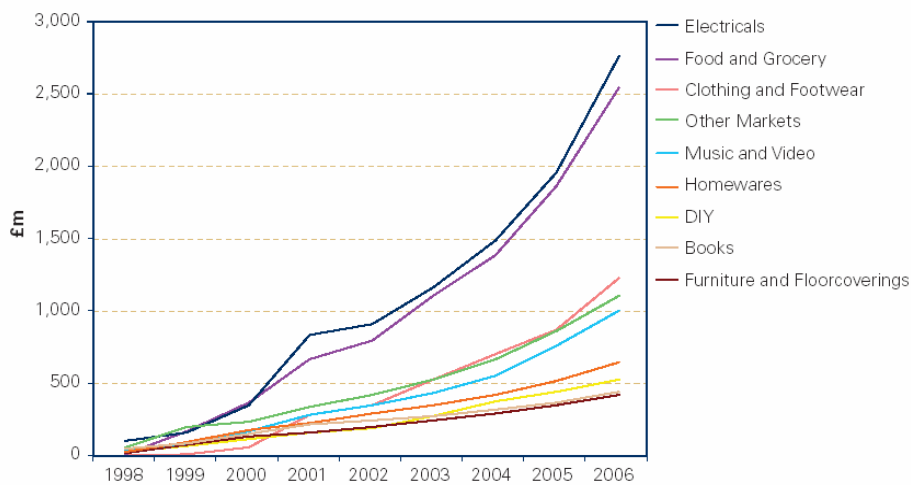
Source: IMRG, 2006. Valuing Home Delivery. A Cost-Benefit Analysis

Figure 24: Growth of UK e-Retail Market

Online shopping in the UK has been rapidly growing for the last 5 years and now forms an important element of the retail sector. In 2006, online retail spending grew by 33.4% - almost 13 times faster than the retail sector overall - to a record £10.9bn, which represents 4.0% of total retail spending (BRC, UK E-Retail 2007). Further growth of online shopping is expected in the future and according to IMRG (2006), the UK e-retail market's monthly sales, which reached £2 billion in 2005, will double again by 2010 to account for 20% of all retail sales.

Increasing ownership of personal computers, growing number of broadband services users and those who can access the internet at home, are important factors driving online sales in the UK.

At the same time recent market study by Office of Fair Trading found out that convenience, choice and perceived lower prices are the main three reasons why people shop online (OFT, 2007. Internet shopping. An OFT market study). According to the study, between 1998 and 2006, Electricals and Food and Grocery sectors enjoyed the biggest and fastest growing online sales in terms of their value (see Figure 25).



Source: Verdict, 2007(cited in OFT, 2007, p.21. Internet shopping. An OFT market study).

Figure 25: UK online retail spends by sector, 1998-2006

Recent research by IGD (2007, Tomorrow's Shopping World) revealed that the respondents shopped online more frequently for non-foods, although only one fifth (22%) shopped more than once. The study also claims that there is clearly potential for much more growth through internet channel for food retailers as 77% of surveyed adults claimed not to buy food online, 14% used it once a month or less and 5% do online food shopping once a week or more.

Considering the specific developments of food e-commerce and home delivery the role of the major traditional retailers in the UK becomes clear. B2C E-commerce activities have been taken up by the major food retail supermarket chains. The Institute of Grocery Distribution (IGD) note the following recent and forthcoming developments (extracted from Samuel, 2008. Online's Booming, available on IGD website):

"Over recent years the online food and grocery market has continued to grow strongly as consumers have embraced the convenience which this type of shopping offers. Although the market is focused around four key operators, namely Asda, Ocado, Sainsbury's and Tesco, an increasing number of smaller retailers are also embracing the online revolution including Cook, Majestic Wine and Wilkinson.

The online food and grocery market is currently valued at £3.5bn (2008). While it has offered consumers a significantly more convenient way of shopping, enabling them to maximise their home and leisure time, growth has also been driven through increasing levels of broadband penetration, consumers' appetite to embrace new technologies, and through retailers increasing the range of products on offer.

Individually, the major retailers have also been increasing their online capabilities, both in terms of reducing complexity and extending capacity. While Tesco pre-dominantly utilises a store picking model, it has also opened a depot in Croydon to serve its online food operation, Sainsbury's is currently in the process of doubling the number of stores which offer home shopping, while Ocado will be opening a new distribution centre in Leeds next month which will extend its offer into new geographic areas.

Operators have also made the online shopping experience much simpler for shoppers through improving technical reliability, faster first-time registrations and sign-posting promotions. Other features which are now commonplace include customised weekly shopping lists, the ability to purchase all products for a recipe with one-click, and social networking facilities such as blogs and product reviews.

While many operators initially enter the channel through offering food and grocery ranges, they often provide a platform for the development of a broader online offer, with shoppers now able to purchase a wide and diverse range of products including financial services, holidays and music downloads.

	<p>Over the next few years a key area of development will be non-food online. With Tesco having already established a presence in this area through the development of Tesco Direct, Asda Direct will be launched later this year, while Sainsbury's will be moving its non-food offer online in 2009. Through their strong value-based propositions, not only will these retailers be strong competition to multi-channel operators such as Argos and Woolworths, but will also challenge traditional non-food retailers as they increase the breadth and reach of their offers.</p> <p>Based on these developments, IGD forecasts the value of the market to more than double over the next five years, increasing from £3.5bn to £7.1bn (2008 to 2013). While this will provide an opportunity for suppliers to drive further growth for their products and reach new customers, it will be important that they have a good understanding of this channel, particularly in terms of shopper behaviour, how to allocate resources effectively and how to market their products in an online environment".</p>
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ANNEX II: Collected case studies (projects-level) – E-commerce and urban freight distribution (home-shopping)³

Code	City/Region	Name of concept	Short description of concept
AT - 01	Central Europe	Mondealnet Service GmbH	Start-up company founded in order to develop a special concept to provide primarily B2C-solutions for SMEs, but also B2B. Offers to SMEs chances to participate in the world-wide market via Internet and a high performance logistic system for storage, handling, transport and outsourcing of logistic services. Designs processes for outsourcing the logistic services including frontend, payment, warehousing, fulfilment, callcenter.
AT - 02	-	Study "B2C Logistics and Fulfillment"	Dissertation by St. Vlasek at Fachhochschule Wiener Neustadt developing, evaluating and describing the relevant flow of goods and its effects on the system of management and controlling (not yet published).
AT - 03	Central Europe	Reference models eLogistics	R&D project still in progress by Econsult in collaboration with the logistic service provider MondealNET aiming at the development of a reference model, definition of a concept for measuring and controlling, implementation (pilot by MondealNet), survey of outcoming results, benchmarking, optimisation. The project is funded by national organisations (ITF and Ministry of Transport).
BE - 01	Brussels	Ready.be	<p>Pick-up point concept by the GIB Group, the former owner of GB Supermarkets running from 1998 – end 2000. Ready.be did not organise any home deliveries. The purchasing procedure was organised as follows:</p> <ol style="list-style-type: none"> 1. The client ordered the products through the Internet site, preferably before midnight. 2. The Ready.be team prepared the shopping basket the next morning. 3. The client retrieved his order between 4 PM and 9 PM at one of the pick-up points (Ready Points which could be parkings of GB supermarkets, gas stations and public parkings...) located along main roads in and around Brussels. The steward handed the products to the client who signed a receipt. 4. Payment was made by credit card within the next two days. <p>Ready.be had 50 collection points. A WAP project that was to allow clients to transfer their shopping list via their mobile phones was also under development. Although customer response was very positive the project was stopped because of financial losses and the GB Supermarkets being taken over by Carrefour who was not interested as it had its own system (Ooshop).</p>
BE - 02	-	Evadix E-land	Evadix E-land is a joint venture between Alcopa (logistics service provider) and the Evadix Group (IT company). Evadix owns two large logistics platforms: one of 35 000 m ² in Vilvorde (Evadix E-land) and one of 10 000 m ² in Tournai (Evadix Logistics). E-logistics currently represents a small percentage of the turnover due to the fact that e-commerce is still low in Belgium. The company therefore intends to continue working for classical clients in addition to e-clients. Clients of Evadix are classical B2B clients who outsource their logistics and B2C clients. Two examples of clients are BBL Marketing Services (bank) and Sofures (office supplies). The contract with the BBL involved the creation of the virtual shopping centre www.bblshoppingmall.be . Evadix E-land has entirely outsourced the transport of e-products but it keeps control through a tracking and tracing system. [www.evadix.be]

³ Marked lines are treated in detail – compare also project description

Code	City/Region	Name of concept	Short description of concept
BE - 03	Brussels and surroundings	Caddy-Home: your home supermarket	Home shopping service by Delhaize, one of the main supermarket chains in Belgium, which started 14 years ago by telephone and fax orders. E-shoppers are provided with a client number and password enabling them to order products from the full supermarket's range by telephone, fax or Internet. Purchased products are delivered to the customer's home by van through Caddy-Home's own distribution channel. The day and time of delivery may be chosen by the client and specified at the time of order. Caddy-Home organises four delivery rounds on week days (9 a.m. to 12 a.m., 12 a.m. to 2 p.m., 3:30 p.m. to 5:30 p.m. and 6 p.m. to 8:30 p.m.) and two delivery rounds on Saturdays (9 a.m. to 12 a.m. and 12 a.m. to 2 p.m.). Consumers pay by cash, check, bank card or lunch vouchers, companies by cash, check or invoices to be paid within the following 8 days. A new service called "take 'n go" has just been set up. Orders may be made via Internet, by telephone, or by fax before 10 a.m. The prepared order may be retrieved between 4 p.m. and 7 p.m. in the business centre of Brussels, at the new "Manhattan" Delhaize City. Two parking places are specially dedicated to facilitating pick-up of orders. Payment is possible by Bancontact or credit card. The Caddy-Home service is used 400 clients per day and generated a turnover of 11 Million EUR in 2000. [www.caddyhome.be]
BE - 04	Benelux	www.proxis.be	Proxis is market leader for the online sale of books, CDs, videos and DVDs in the Benelux. Articles purchased online are delivered to the address mentioned by the customer after payment has been registered by Proxis. All articles are currently sent by the Belgian Post. Payment may be made by credit card, check, a prepaid money order or by using an electronic banking payment program. Proxis has a partnership agreement with SECA which allows customers to pick-up the purchased products at any SECA gas station in Belgium. In this case payment must be by credit card. Products cannot be returned to the SECA station but may be sent back to Proxis' offices in Vilvoorde.
CH - 01	Various regions	www.migros-shop.ch (online-shopping)	All articles available which are offered in the MIGROS supermarkets, one of the country's most important supermarket chains. Home-delivery, company-pick-up or pick-up at the bigger supermarkets. Same prices as in the supermarket, home delivery service by external delivery company. Standard delivery service (8-10 EUR per delivery depending on total value of ordered goods) with 2 time-slots (16.00-17:30 and 17:30-19:00). DeLuxe delivery service by appointment at 23 Euro. Goods are delivered from 1 central distribution centre in Schönbühl BE. The orders are delivered in reusable packages which are returned during every delivery.
CH - 02	Whole Switzerland and Liechtenstein	www.le-shop.ch (online-shopping)	Most important virtual online supermarket in Switzerland. Total sales in 2007: 58 Million EUR. 179 employees. Over 9'000 products. 91% of purchases are made by regular clients (41'500), mainly young families and working mothers. Most orders on Mondays for planned weekly shopping. Average shopping basket value: 135 Euro. Two central logistics centre. Home delivery via parcel post and express post at 6 Euro per order, regardless quantity and weight. Use of shipping boxes ("dispostboxes") which the postman recollects again. For the new evening delivery in large cities (between 5:30 p.m. and 8:00 p.m.), orders can be placed up to midnight for the next day. For all other areas supplied, orders placed by 4:30 p.m. are delivered on the following day (from Monday to Saturday). [http://info.leshop.ch/uk/Portrait_Facts_Figures.html]
CH - 03	Lake of Zurich region / Switzerland	www.lidomarkt.ch (online-shopping)	Online-shopping of a regional supermarket. Over 3300 products of daily requirements. Home delivery by private car (refrigerated goods, regional only) or within the whole country by the Swiss post Office's parcel service. Delivery on the same day if order was registered early enough (for delivery between 18:00-20:00 for the latest 17:00, no delivery on Saturday, Sunday and public holidays). Flat rate 6 Euro per order. Home delivery is done with a Volkswagen Caddy. Longest distance is ½ h therefore no cooling system necessary. The clients are called before delivery in order to guarantee that they are at home. Pickup point at the shop till 18.30 and from 11:00 till 17:00 on Sundays. For later pick-up a special pick-up point exists in the nearby restaurant/bar open till 24:00 every day. In general low

Code	City/Region	Name of concept	Short description of concept
			demand for chilled products but high percentage of beauty products, detergents and specialities, e.g. chocolate. So far 70% delivery via Swiss Post; 20% Pick-up at the supermarket; 10% direct home deliveries; 0% pick-ups at the nearby restaurant/bar. Problem: In the retail sector prices change very fast. It's not possible to have always the current market prices online available (update of the web-page).
CH - 04	Zurich, Winterthur, St. Gallen	www.spar.ch (online-shopping)	Online-shopping of a minor supermarket chain in the German speaking part of Switzerland. Over 2500 products to meet daily requirements. Home or office delivery within 3 hours per courier (Monday to Friday 09:00 till 19:00). Flat rate 6 Euro per order.
CH - 05	Switzerland	ServiceLog: For repairs and service	ServiceLog by The Swiss Post offers logistics solutions for sending and exchanging faulty equipment. Companies in the computer, electronics, telecommunications and related sectors appreciate this practical and efficient service. With ServiceLog the whole repair process, from receiving the faulty equipment to sending it out following repair, can be completed in just a few days. Items are sent via the quick PostPac Priority service. Four options are available. Other services such as Call Centre are available at an additional charge.
CH - 06	Mainly Switzerland	Study: e-business at logistics service providers 2000	Nearly all of the different logistics service providers focus more or less on new strategies which integrate e-commerce/ebusiness. In order to find out more about the future changes this survey was initiated by the SGL (Swiss association for Logistics) and provides good feedback and interesting information on the strategies of different logistics service providers. [info@sgl.ch]
CH - 07	Switzerland	Study "New communication media use in enterprises and its influences on traffic"	The study (elaborated within the National Research programme NRP 41 "Transport and Environment") aims at assessing the importance of the new information and communication technologies within the companies' internal and external communication processes and at estimating the consequences of this development in a qualitative manner. Written inquiry with a sample of 840 companies among all 16'000 legal persons owning a Internet-domain *.ch. (answering rate 30%) Additional expert interviews. [www.nfp41.ch]
CH - 08	Switzerland	Study "New forms of communication and co-operation between enterprises: consequences for transports"	The study (elaborated within the National Research programme NRP 41 "Transport and Environment") bases on 30 expert interviews with different companies about new communication technologies and how they are changing the companies processes. [www.nfp41.ch]
D - 01	Germany	www.pickpoint.de	Pick Point AG (in collaboration with Deutscher Paket Dienst, UPS, TNT and Agip Deutschland) provides a logistical infrastructure for all kind of webshop based transactions. Pick Point comprises the delivery of commodities to particular convenience points (e.g. petrol stations etc.). Webshops can join the system by paying licenses to Pick Point. In total about 1300 Pick Points exist presently in Germany. To the time the consignment is delivered to the Pick Point the customer receives an SMS or e-mail as confirmation. The commodity will be stored for 10 days. About 100 additional Pick Points complete the network each month. For some shops Pick Point delivers up to 30% of the webshop's turnover.
D - 02	Dortmund	www.tower24.de	Tower24 is a pilot project by the Fraunhofer Institut für Materialfluss und Logistik IML for decentralised drop off and pick up points as an alternative to home deliveries. The Tower24 concept is a full automatic storage system for small consignments. It is an open system for different suppliers and service providers. The supplier can drive his van directly in front of the Tower24 for delivery. The window for entering the goods is designed in a way that 100 parcels can be stored in 20 Min. Having the commodities delivered the customers will be informed (SMS, e-mail). The customer has a "drive-in" possibility to pick up his parcel without leaving the car. As different

Code	City/Region	Name of concept	Short description of concept
			temperature zones can be generated in the tower different commodities can be stored from frozen to chilled and non food goods. The customer pays in front of the tower with bank or credit card. Tower24 enables bundling of goods flows reducing distribution costs and the number of trips. A disadvantage is that a Tower24 once existing can not be enlarged. The project was stopped for financial reasons.
D - 03	Berlin	Internet House	Within this pilot project by the real estate company Quadriga and the communication service provider Projektbüro Q24.net a newly built dwelling house will be equipped with internet communication links and devices. All possible transactions via the web (purchases, banking, travel etc.) can be made via a "house community" operated e-commerce portal. Access to the portal will be given to each tenant via ID code. The houses have special "home delivery equipment" like cupboards installed in the house wall where e-purchases or other services products like cleaned suites can be stored in. Co-operation contracts with UPS, Colt telecommunications, Telekom, Siemens, Techem, Smart and Amazon have been made. If the concept is accepted by the customers it is planned to further equip 800 houses with this technology.
D - 04	Germany	DHL Packing station	DHL introduced packing stations – automated delivery solutions – in bigger cities nearby or in stations, universities, major businesses and other strategic locations to abroad range of products and services like parcels and packages, spare parts for service technicians, online payments with credit cards and dispatch of returns with receipt. Currently, 900'000 registered DHL customers pick up or consign their shipments themselves. DHL is going to increase the number of their packing stations by end of 2009 from 1'500 to 2'500 and also uses rural locations (new partnership between DHL and the food retailer ALDI). After expanding almost 90% of German citizens will achieve a packing station within ten minutes on average.
D - 05	US / Germany	Study "Consumer direct: home delivery for food and consumer goods IN THE Internet – a logistics view of the last mile to the customer"	Study by the Fraunhofer Anwendungszentrum für Verkehrslogistik und Kommunikationstechnik that compares home delivery services in the US and in Germany. The study focuses on the "last mile" of the consumer goods distribution (interface consumer home delivery service). The performance of companies were analysed by means of their service, customer stimulation, delivery and service variety, the way of order placing, the kind and duration of the delivery as well as the price structure and payments. The study states that in Germany no dense network for home delivery services exists. Most of the US home delivery services use distribution centres for delivery while in Germany the delivery starts at retail outlets. The consolidation of LTL is not given in the US neither in Germany or Europe. American and European show a better performance in delivery time, time windows and customer service than German services. Added value services are underdeveloped in Germany.
E - 01	Spain	Preliminary sketch for the Information Society Services and Electronic Commerce Law (30/04/2001)	Draft for a future law that will establish a legal framework, in order to encourage the electronic commerce, as well as the different services offered via internet. This Spanish law incorporates the European Directive 2000/31/EC. It will consider the Consumers' rights as well as the obligations for the providers. Another important point is the electronic agreement and the ways to regulate it.
E - 02	Spain	www.elcorteingles.es	B2C e-commerce platform by El Corte Ingles, Spain's biggest retail company for the end consumer (more than 50 chain stores). The logistics associated to the e-commerce are subcontracted to Third Party Logistics companies (3PL) which consider the business like any other courier customer.
F - 01	The centre of	Paris 3 rd PAD (Portage	Home Delivery and taxi service set up by City of Paris and the Paris 3rd Association of retailers and local shop keepers (50 members)

Code	City/Region	Name of concept	Short description of concept
	Paris 3rd district	et Accompagnement à Domicile)	because traditional city centre shops were loosing customers, and there was a strong environmental need to decrease the use of the private car for shopping. 4 persons are devoted to delivering goods purchased (by phone or by physical visits) within 1 hour. Customers can also ask for a ride/taxi service (a car comes to get them at home to drive them to a shop, or a service provider such as a beauty parlour, a hair dresser, etc.). 40 deliveries a day so far (it started in October 2000 with 20 deliveries a day) by electric motorcycle or car. The experiment has been financed mainly by the Ministry of Economy through subsidised jobs. Also the Vivendi Foundation, Electricity of France and the Paris Regional Council have provided money. Shop keepers pay for part of the service. Their customers so far do not pay anything. However, operating costs are high. [PAD, Association des Artisans et Commerçants de Paris 3, 10 rue Caffarelli, 75003 Paris, France]
F - 02	Nanterre	Nanterre PAD	Home Delivery and Taxi service among 150 shopkeepers (similar to F –1). The Nanterre experiment is the first to have opened, and it is the largest so far (number of shop keepers associated, number of home deliveries made). It is financed by their memberships (20% of the budget) and by the Ministry of Transport (National Research Program on Urban Goods). Customers pay 1.5 Euro for each delivery. 100 deliveries and 20 rides a day made by 6 employees. However, financially, the PAD does not manage to be profitable without public subsidies. According to the project's initiator Mr CREUZET, "a PAD will always need at least a 25% subsidy rate from the public sector". [AVEC, 9 rue Henri Barbusse, 92000 Nanterre, France, Pat.nicolas@Francecommerce.net]
F - 03	Strasbourg	Relais-Liberté	2 Month Experiment during Christmas shopping in 1998. The general idea was that a city service would pick up parcels and errands from shops and deliver them to customers at the end of the day. Deliveries could be made: <ul style="list-style-type: none"> - in small depot boxes close to the city centre (at a fare of 1 Euro for the customer) - in depot boxes in parking facilities of tramway Park and Ride terminals (cost : 2 Euro) - at home (cost : 5 Euro) 30 employees were hired to run the delivery services. Electric and PLG cars were used. The initiative came from the Strasbourg city Government, with a strong financial support from the national government (Urban Goods Movement national research program). 1500 deliveries made : 950 in depot boxes, 275 on Park and Ride facilities, 270 home deliveries. These results were far less than expected (20 000 expected). Bad communication (from the CCI of Strasbourg for example) is supposed to be the explanation. People who used the service however were extremely satisfied with the service. No commercial, legal or technical problem during deliveries. [Pierre Lavergne, ADEUS (Strasbourg Planning Agency), Phone: + 33 3 88 21 49 31]
F - 04	Paris	Magasin de Quartier en Ile-de-France	Planned (not yet implemented) public / private project for local delivery depots aimed at reducing the number of home deliveries in dense commercial / residential areas. These depots will be opened from early in the morning till late in the evening. Carriers will be able to leave parcels and goods in this depot instead of delivering them all the way to their clients (whether shop keepers or households). Clients will then be informed of the availability of their products. Magasin de Quartier employees will deliver the goods to the final clients (at a cost), or wait until the client comes and picks them. Both household deliveries and shop deliveries are considered together. [Carole Boublil, Direction des Etudes, CCI de Paris, 27 avenue de Friedland, 75008 Paris, France, cboublil@ccip.fr]
F - 05	Grenoble	Achat-Grenoble.com (internet web site for Grenoble shop keepers	A common web site is organised for all Grenoble small shops and services interested. They can choose between a simple presentation of their outlet (internet as a shop window), or a full e-commerce service. Deliveries are organized at home by each shop owner individually, or customers can pick up their goods in the shops after e-commerce reservation and payment. Free 15 minute parking in

Code	City/Region	Name of concept	Short description of concept
		and retailers)	city centre is provided to customers of shop keepers which are members of the web site (reimbursement of the parking fee when collecting the goods).
F - 06	Paris	Study "Home delivery, the Paris case study"	A recent survey among 1200 households from Paris and nearby municipalities (see CREDOC; 2001) on home deliveries, after traditional shopping or ordered electronically. Main findings: 12% of all Paris households use home delivery services regularly, one third out of these in connection with e-commerce (in two thirds of the cases the buyer goes to a shop to choose the products and to pay). The typical home delivery customer is a household with more children, a higher income and a higher car ownership than average. Reasons for not using home delivery are the absence of added value, the fear of being waiting at home, the fear of low quality or damaged goods, the price and the time it takes. Price elasticity for home delivery is generally low. In Paris, nearly all supermarkets offer a home delivery service. 7% to 10% of the shops' turnover come from home delivered products. In the next 5 years, about 30% of all Paris region households are expected to be regular users of home delivery services (not necessarily ordered by Internet, though). [CREDOC; 2001]
GR - 01	Athens	Veropoulos "Kat'oikon" (at home) and "online Kat'oikon" (online at home)	Currently being implemented online shopping service of Veropoulos Supermarkets, one of the most important supermarket chains in Greece. Taking into consideration the relative low Internet penetration in Greek households orders can be placed either by phone or by internet. There is a free membership (providing some personal data) and a price-threshold (orders should exceed 25.000 Drs, or 30 different products) to the service. Each order is automatically forwarded to the store closest to the desired (by the customer) delivery point and is processed there. Orders placed before 16:00 are executed on the same day, the rest in the morning of the following day. Orders are delivered to the customer's home/office address or to any other requested delivery point, within a selected time window, and only on working days (Monday to Saturday). They can also be picked up from one of the company's stores. Payment can be made either cash or by credit card upon delivery (no automatic payment available). This means that the card owner should be present at delivery.
NL - 01	Netherlands	Albert Heijn Thuiservice	Online shopping channel with home delivery service of Albert Heijn, The Netherlands' biggest retailer. Customers can subscribe to the service and order the products using a password. There is a minimum amount of products to be ordered of the value of 36 Euro. A standard delivery moment has to be chosen before ordering of products. Time between ordering and delivery is at least one working day. Big orders of single products (e.g. few boxes of wine) should be ordered 48 hours before the desired time of delivery in order to prevent "out of stock". Most products are slightly more expensive at the web-store than in the supermarket. Furthermore, one has to pay a fixed price for the delivery (Monday – Thursday 2,70 Euro per delivery, Friday and Saturday 4,10 Euro). The products of Albert Heijn are distributed by own distribution channels. They have an own vehicle fleet of light goods vehicles that deliver the electronically ordered products to the customer's home addresses. If the customer is not at home, the products are not delivered but the customer is nevertheless charged with service costs and costs for the products that needed to be conditioned. Payment is by means of cash, automatic transfer from the bank account, by mobile PIN machines (Personal Identification Number on bankcard / Eurocard) or pay on account in case of companies (B2B). There used to be the possibility to pick-up the electronically ordered products at Shell fuel stations. However the co-operation between Albert Heijn and Shell was stopped about a year ago because of conflicting interests. Shell now has developed own brand (small) supermarkets at fuel stations and Albert Heijn only provides a home delivery service. [http://ah-thuiservice.ah.nl/hss/shop]
NL - 02	Benelux, UK	Relaystar	Products purchased on various Internet sites (Tintin.com, The Body World, DVD Zone 2, IntelliHome, Relaystar, Winesmart.com and

Code	City/Region	Name of concept	Short description of concept
			RedCorp.com) are delivered by UPS to any of the Texaco service station in Belgium chosen by the customer . People are notified by e-mail when packages arrive. During the process the customer is informed about the whereabouts of the goods by means of the package being scanned. Due to the good coverage of Texaco fuel stations in the Benelux and long opening hours the customer can easily pick up the package. Returns are possible by the same means. [www.realystar.com]
UK - 01	United Kingdom	TESCO Stores Mouse to House strategy	Full electronic shopping services with 24/7 access by probably the most successful UK food retailer. Uses the Internet as primary method of ordering. Home delivery of the full store range of goods and products based on using the existing stores as the base for order consolidation and preparation. Product prices are identical to the ones in the stores, flat rate per delivery of 5 Pounds. Orders are delivered between 08:30 a.m. and 9:30 p.m. Monday to Saturday in refrigerated vans with a frozen food compartment. Published information by TESCO suggests that they are making money on this project but there are also suggestions that all the food retailers have moved into this area and have lost money on an attempt to mimic each other. The use of in store picking of orders and the use of electronic methods of order placing and payment seem to have paid off. Whether the take up rate for home shopping will move beyond the 10% mark remains to be established.
UK - 02	United Kingdom	Study "Overview of Home deliveries in the UK" (@ Your Home)	A study by the Transport Studies Group of the University of Westminster and the Freight Transport Association about the home delivery situation in the UK. The study covers e-commerce and non-e-commerce issues. In the first chapters the study analyses the home shopping and home delivery market, the logistics necessary and respective issues (customer at home problem, collection and delivery points, etc.). Three categories of goods to be delivered are studied in detail: home delivery of small packages, grocery products and large items. In a second part the study addresses environmental impacts, effects on trip generation and travel behaviour, spatial impacts with regard to urban, rural and regional planning and issues of social inclusion and technological characteristics. Finally recommendations for future research activities are given. The study (published in October 2001) was commissioned by the Department of Trade and Industry in the UK (DTI) as a result of perceived gaps in available information concerning home delivery as identified by the Retail Logistics Task Force (DTI Foresight). The research is part of the continuing work commissioned by the DTI into e-commerce and home shopping, as reflected by previous reports including "@ Your Service" (2000) and "Bricks and Clicks" (2000).

ANNEX III: Overview on collected B2C case studies according to their approaches towards the “last mile distribution”

Country	City/Region	Name of concept	Pick-up point	lockerpoint (unattended)	Delivery on appointment	Time slot delivery	Non-timed delivery
BE - 01	Brussels	Ready.be	X				
BE - 03	Brussels	Caddy-Home: your home supermarket	X			X	
BE - 04	Benelux	www.proxis.be	X				X
CH - 01	Various regions	www.migros-shop.ch (online-shopping)	X		X	X	
CH - 02	Switzerland and FL	www.le-shop.ch (online-shopping)				X	X
CH - 03	Zurich	www.lidomarkt.ch (online-shopping)	X		X		X
CH - 04	Zurich, Winterthur, St. Gallen	www.spar.ch (online-shopping)				X	
D - 01	Germany	www.pickpoint.de	X				
D - 02	Dortmund	www.tower24.de		X			
D - 03	Berlin	Internet House		X			X
D - 04	Germany	DHL Packing station		X			
F - 01	The centre of Paris 3rd district	Paris 3 rd PAD (Portage et Accompagnement à Domicile)				X	
F - 05	Grenoble	Achat-Grenoble.com (internet web site for Grenoble shop keepers and retailers)	X		X		
F - 06	Paris	Study “Home delivery, the Paris case study”					
GR - 01	Athens	Veropoulos “Kat’oikon” (at home) and “online Kat’oikon” (online at home)	X			X	
NL - 01	Netherlands	Albert Heijn Thuiservice	X			X	
NL - 02	Benelux, UK	Relaystar	X				
UK - 01	United Kingdom	TESCO Stores Mouse to House strategy					X