



**Workpackage WP3:  
Joint strategy for collaboration in logistics**

**Action 3.1.: Good practices & experiences**

**Output 3.1.2:  
Overall picture of significant good practices  
and successful experiences**

**Responsible partner:  
Institute of Logistics and Warehousing**



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# 1 An overall outlining of PP's regional context best practices

## 1.1 Generally information about cases

This report summarises practices and experiences on ICT-based collaboration in logistics established in 7 countries: Italy, Slovakia, Slovenia, Hungary, Germany, Czech Republic and Poland as 19 cases. 7 of them are real broker experiences. 3 of them fulfil broker system conditions only partially, e.g. a lean management structure planning the work of the associated small truck owners or it optimizes single company fleets.

In many cases the ICT tool are without broker function, e.g. companies from Slovakia has more experience with logistic databases (Rael trans, Timocom, Trans) than with broker realizing. But in Italy the broker collaboration model was studied together with other P2P collaborations models between manufacturers, logistic operators and logistic platforms. Also the cooperation model was based on the broker approach. Potential improvement was studied at the single company level.

Cases were realized on different impact levels. Very often it was transnational and international level, e.g. one case is European wide, and many of them are carried out on national level in Poland, Czech Republic, Slovakia, Hungary, Germany, Austria. 5 cases are organized in local and regional area e.g. Tuscany, Marche, Valencia, Andalusia, Modena or Reggio Emilia province.

The cases were created between 2000 – 2008 and 6 of them are still working.

More than half projects organize road transport and the rest try to combine road with rail transport and sometimes with water transport or Maritime. One case is typical for urban transport (Bestufs).

The destination point is to reach the aims working together and form long-term and tight cooperation between small and medium enterprises of researched regions e.g. countries Slovakia, Croatia, Slovenia, Germany, Austria or in an area of about 200 – 300 kilometers.

In some cases were tested also intermodal transport. For example connection road and water transport with reloading in Budapest or road and rail transport (Sassuolo – Dinazzano) but some of them precluded intermodality from the project scope.

## 1.2 Actors and they role

### Involved actors

| Involved actors                          | How many? | What branch?  |
|--|-----------|---|
| Small and medium manufacturing companies | 11        | Wide scale of branches, especially mechanical sector                |
| Big manufacturing companies              | 10        | Wide scale of branches, especially automotive and mechanical sector |
| Unimodal logistics operator              | 11        | Mainly road transport   |
| Intermodal logistics operator            | 8         | -   |
| Associations of companies                | 11        | -   |
| Public bodies                            | 11        | -   |

## Roles of involved actors

| Involved actors                          | Users | Managers | Promoters |
|--|-------|----------|-----------|
| Small and medium manufacturing companies | 10    | -        | -         |
| Big manufacturing companies              | 12    | -        | -         |
| Unimodal logistics operator              | 11    | -        | -         |
| Intermodal logistics operator            | 6     | 1        | -         |
| Associations of companies                | 3     | -        | 7         |
| Public bodies                            | 3     | -        | 8         |

Small and medium manufacturing companies are mostly users of some electronic solution. They are sending transportation and warehousing orders to logistic operators, platforms and brokers systems and also they can plan optimal use their own fleet.

The role of big manufacturing companies is similar to the role of small and medium companies.

Unimodal logistics operator receive single transportation orders directly from manufacturers or complete routes from logistic brokers, they plan their own fleet and interact with the travelling truck to monitor route execution.

The role intermodal logistics operator is similar to the role of Unimodal logistics operator, but one of them function also as a manager. Additionally they can carry out customized analyses and in-house implementation of dedicated software.

Most of the associations of companies are promoters of best practises, e.g. development of logistics chain as e-fulfilment system or development of a multivalent system.

Public bodies, like associations of companies, are promoters of best practises.

### 1.3 Further information about cases

The projects were initiated by different organization. Mostly it was public body, e.g. Technische Fachhoch Schule Wildau. Other types of organizations initiating projects were, e.g.: intermodal logistics operator or logistics departments of big manufacturing companies.

In many cases initiator also plays the role of an operator or a manager and co-operator of the broker solution/ ICT cooperation. Thus, they are operating the broker solution. Other users can exploit the tool in accordance with the ascribed entitlements.

The projects were set up between 2000 and 2008. 7 of them are still working. The rest of the cases is already finished but, as a result of carried our work, collaboration models were created. As an example in Italy, during work on the Regional virtual logistic pole, the logistic broker functions were developed and substantially extended in the CORELOG project. The domain ontology embryo will be taken into consideration within the KASSETTS WP4 workpackage.

The implementation was carried out according to several steps procedure:

1. Need analysis.
2. Market requirements specification and business processes designing.
3. Creation of the architecture of the tool.

4. Modification of prototype.
5. Testing of the system in the real market/pilot.
6. Ending events like seminars and conferences (regional stakeholders).
7. Dissemination by logistics platforms.

The main reasons why the projects were set up:

1. firstly to identify, describe and disseminate best practices, secondly to enable access to information and new technologies in transport and logistic field to SME's (e.g. to make the companies aware of the advantages of ICT-based route planning at the individual level as well as at the district level) and to exchange information about logistics,
2. to rationalize the operation of the single small truck owner through collaboration with its colleagues and to form long-term and tight co-operation between small and medium enterprises,
3. to harmonize the planning process at the individual level as well as at the district level, to manage (planning, invoicing, accounting, purchasing) services by their members and also to have better control over transport orders,
4. to optimize the use of internal fleet to better resource usage,
5. to introduce overhead costs that should be kept to a minimum threshold and to reduce transportation costs,
6. to plan transport, which implies traffic reduction and reduced congestion, which have direct positive consequences on the environment, e.g. low emission,
7. to prototype fleet monitoring by mobile Internet,
8. to support critical decisions in terms of internal management vs. outsourcing, truck purchase vs. rental, price list negotiation and also as logistics chain organizers' and logistics service providers' disposal to support their strategic decision making,
9. to centralize logistic processes of the group within the logistics department to optimize the transport flows of the group.

The effects on optimizing transport and logistics activities.

1. A better awareness of SME's about relevant EU projects and new aspect of collaboration. The collaboration habits were very positively affected, and the district internal relations increased in number and improved in quality.
2. The proposed collaboration ensure the continual orders, because there is a wide range assignments to choose among, so users can organize their transports in an effective way.
3. Increasing of the profit from the transport and minimizing transport costs.
4. Increasing of the trucks utilization.
5. The highest effect is simplification of a process through optimizing of freight process.
6. The Broker System as a Computer Tool Based On Internet Data Interchange Supporting The Transportation (Logistic) Activities Of Small And Medium-Sized Distribution, Production, Transportation And Logistic Companies
7. Development of Decision-Support Systems.
8. IT knowledge development in small and medium-sized companies as well as the increase in IT interest among employees of these companies.

The effects on the increasing the competitiveness of SMEs in their local systems.

1. Stimulation of international co-operation to create partnerships for future European research collaboration.
2. Raising advanced awareness of current issues of European transport policy.
3. Promotion of participation in EU Framework Programs at SME's and key industrial stakeholders.

4. Increasing of the profit thanks to using the database, in the way to reduce transport costs by increasing the number of transports – building the competitiveness.
5. Small truck owners involved in the project became more aware of their mutual collaboration potential and this increased their contractual power with respect to big logistic operators.
6. Load factors could increase of about 8% - 13%, number of kilometers could decrease of about, depend on projects, 7% - 9%, 12% - 20 % or 15% - 45%, and costs can decrease of about, depend on projects, 5-10% or 10% - 40% depending on the applied price list, and also reaction times could reduce of 20%.

One of the aims of the logistics cooperation was to reduce transport cost among involved manufacturing companies. The calculation of costs were different in different cases. In some cases transport companies cooperate only theoretically, in the other cases companies worked with their own price lists. But mainly the prices depend on route length and number of stops. For example in some projects created calculation models or the cost distribution policy where number of stops, weight/load and distance between origin and destination for each order were taken into account.

ICT tools used in the projects generally consist of a few components. The first component enable truck owners to search for additional goods to achieve a full truck load or they can offer transportation orders. The second component allows via GPS or a mobile web interface truck localization and communication of possible exceptions. The Applications supporting also planning of internal fleets, route optimization, route pricing, assignment to the more convenient logistic operator, optimization of local routes by applying a progressive refinement mechanism. Every ICT tool is based on an inbound logistics model. ICT tool in the project ECO4LOG Toolset was “Logistics Chain Generator”, which provided the user with alternative intermodal routes between source and destination. On the basis of data on infrastructure and intermodal services, 3-layer network for intermodal routing is being modeled. Data such as geographical data and information on infrastructure (rail/ road conditions, capacities, restrictions etc.), costs, journey and transshipment times were considered. The routing calculation was based on different sets of criteria such as costs, journey times and external effects. Selected logistics chains or details of chain segments were displayed in a GIS module. Information on road capacities, bottlenecks and restrictions was shown.

Most of the ICT tools were created specially for purpose of projects and some of them are free, but the other not, because in the meaning of the brokers, users pay a month charge. A few ICT tools were created in open-source technology and they are released under licenses, e.g. L-GPL licenses.

Realised projects were financed by cooperated companies as a private and individual initiative. In many cases they were supported within the confines of the INTERREG or FP5. The support were fully or partially.

Data available from the case studies:

1. Analyses of the possibilities of cross border cooperation regarding the road, train and water logistic activities.
2. Best practice handbook. Inspiration in propagation and dissemination of knowledge new trends to SME's and in the field of intermodal transport.
3. Almost all the software with the related manuals.

## 2 Obstacles to the success of the KASSETTS brokering system

- **Misunderstanding of broker idea**

Misunderstanding of broker idea and goals of broker system could bring out that the approaches and advantages will be not achieved. It could result in wrong project realization, what brings fast termination of the works. Participating partners and companies have to understand new concept of organizing transport processes, which assume cooperation between involved actors.

- **Companies will compete and not cooperate**

Very important factor, which has huge influence on success of the projects, is cooperation between small and medium production companies and trailer owners. Only mutual planning and optimization of all transport processes, where the volume is larger, have sense and give possibilities to achieving planned goals.

- **Lack of the system of additional incentives**

New concept which has been developing within the project might be difficult to accept for the enterprises at the very beginning and promise of possible savings in total logistics cost might be not enough to convince companies to use the idea. Thus, Broker solution with support of incentives for participating users and operators has chance to be more successful. Lack of the active support from local authorities (usually financial incentives for companies taking part in broker solution) might be obstacle to the success of broker solution.

- **Passive attitudes of potential promoters**

Passive attitudes of potential promoters of projects is imminent their failure. It is very important to develop the project properly and as wide as it is possible. Lack of promotion unfortunately has a negative influence on expanding. As a next come lack of new stakeholders, what effect on lack of new orders. This situation has a direct influence on broker core activities, who has limited possibilities of better managing and optimizing of transport processes. One of the example is not efficient usage of fleet. And in the end they can not achieve definite targets.

- **Difficulties in division into subregions/clusters**

One of the main assumptions of the Broker solution is joint organization of haulages to different points of destination within group of companies. Number of this points might be very significant and finding rational solution without any additional restrictions concerning regions might last for days. Thus, to speed up the whole process Broker has to divide his area of activity into subregions/clusters. This task might be very difficult at the very beginning and need to be tuned after a few months of real activities.

- **Termination of development of the KASSETTS software in case of lack of founding after termination of KASSETTS project**

The lack of promoters and lack of financing of the projects have a huge influence on termination. Also only theoretical testing is sometimes not enough, that's way they should testing the system on real cases. A very important role plays defining advantages for all projects participants in the form of numbers. Do not shows the benefits also for projects surroundings, e.g. society, environment and so on.

- **Difficulties of reaching of critical mass of companies**

The main assumption of the project is to reduce total transport cost by organizing common deliveries of group of companies from one region to another. Companies are sending their

goods to different parts of Europe, therefore it is essential to involve at least several companies operating in the same regions. Only this allows Broker to optimize transport process and organize one haulage for selected companies. Unless number of companies and cargo to be delivered to concrete regions is enough, the Broker will not be able to propose alternative way of organizing transport process. However, companies without additional incentives, described above, might not be eager to cooperate together within the project.

## 3 A set of 25 reference indications on good practices

### 3.1 Core of the broker concept

- **Road traffic addressed**

Broker system is mainly addressed to participant of road transport market. It is because of goals of the broker systems ideas, what are: reduction of traffic jam, congestion thanks better usage of loading space of trucks and moreover decreasing of amount of kilometres run by trucks. Those factors also help in decreasing transport costs.

- **Transport of goods on standardised packaging**

To achieve broker systems goals, producers should use standardised packaging. They help better managing of loading space in planning and optimizing of processes. It makes possible to mix different group of cargo, because they are loaded to the similar packaging. In this case broker can link together different loading and unloading points into one route.

- **Cooperation with SME's production companies, and distribution companies**

Project is dedicated to small and medium enterprises, which are sending mostly general cargo to different regions. Core business of those companies is to produce and sell different type of goods. Transport organization is not the source of profit of the above mentioned manufacturing and distribution companies. The activity is supposed to support their core business and total transport cost should be as low as it is possible according to concrete assumptions (e.g. service level). If a company is convinced to have optimal transport processes in its current activity they can start the next rationalization stage and cooperate with a group of companies in organizing common deliveries. The concept assumes that companies from the same region exchange information on planned points of origins and points of destinations for deliveries of finished goods.

- **Cooperation with small and medium size transport companies**

Big transport companies or logistics operators are concentrating on cooperation with big shippers. Of course they can offer their services for SME's, but transport cost might be high in comparison to services offered by small and medium transport companies. Thus, Broker will cooperate with small and medium transport companies to get the lowest transport costs. Moreover, small and medium companies are much eager to cooperate, because they are looking for a new shipments and try to increase their load factor. Broker concept is a good opportunity to achieve their aims.

- **Big logistic operators are not direct competition for broker**

Big logistics operators are not competition for broker, because they want to serve big production companies. However broker system should make possible and easier mutual cooperation small and medium production and distribution companies with small and medium transportation companies.

- **Dependency of broker and users on efficiency base (broker works for companies (shippers))**

The manufacturing companies located in the region come across problems resulting from delivery frequency and limited contact with transport service providers. The involved companies jointly hire a person who coordinates transport processes on their behalf. One of main tasks of the coordinator is connecting routes in a way that maximizes the size of the shipped or delivered cargo (to or from certain destination). It helps negotiate better prices with external

transport service providers. Additionally, the coordinator periodically reports and issues proforma invoices which enables to control transport and service costs continuously.

- **Involvement of associations and local public administration as promoters**

Different kind of associations and local public administration should be involved in development projects connected with broker systems as promoters. They also should realize the dissemination, because they have contact with many participants of transportation process, who are interested in improvement of functionality of transport and their organisation in researched region. Associations and public administration are institutions, whose inquirers are representatives of many branch and area of activities. Thanks them information about projects could donate to others. However, they add credibility to realized projects.

- **No specific branch indications**

Broker concept can be used by different branches. However, at the first stage of the project and development of the tool branches which are dealing with hazardous materials and perishable goods should not be involved.

- **No such type of products like: hazardous materials and waste, perishable goods**

Broker concept at this stage is dedicated to support optimization of transport of most typical goods, which do not require special conditions during haulages or are not regulate by special law. Transport of products which require special treatment like hazardous materials, wastes and perishable goods will not be optimized within this stage of the project.

- **Analysis of past flows of users should be made**

Carrying out of analysis of past flows is essential from defining of collaboration areas point of view (origin and destination points). It should simplify the consolidation process of the goods. Moreover, specific quantitative indicators should be defined to describe organization of past processes. It will help to compare organization of past and new processes by the broker. Thus, simulations performed by the Broker using the KASSETTS tool, enable SMEs to compare the situation before (based on the existence organisational model) and after (by using the KASSETTS tool, which support transport planning process). Additionally, it will enable to control and analyse level of realization of defining goals, which are e.g. reduction of transport costs, reduction of used trucks, maximization of load factor.

- **Important role of the experience of the staff of broker institution**

While planning the Broker takes into consideration lots of constraints of logistics infrastructure in the point of origin and destination. Additionally, own available trucks and trucks of external transport service providers are taken into account. Apart from this, he must know local transport market to get the lowest possible price. Therefore, to optimize transport processes and support production and distribution companies, the Broker should be either experienced in similar activities (e.g. planning, negotiating prices) or have basic logistics knowledge which allows him to become an expert working with support of the KASSETTS tool. Moreover, the Broker is going to cooperate continuously with manufacturing, so he will also acquire additional experience and improve his operational knowledge by his daily activities.

- **Broker is “hired” by all companies using it**

This fact assure impartiality of the broker and achieving advantages for all involved companies. Moreover, if the Broker works for all companies, they might treat him as their own employee which increase trust to that person.

## 3.2 Organizational indications

- **Each region where broker is established must be divided into several areas (clusters) to optimize transport processes. Neighbourhood collaboration, creating a communication channel among companies of the same district**

The Broker, to reduce transport costs, is organizing joint haulages to different points of destination within group of companies. Number of this points might be very significant and finding rational solution without any additional restrictions concerning regions might last for days. Thus, to speed up the whole process each region has to be divided into subregions/clusters.

- **Minimalization overhead costs introduced by clusters**

Minimalization of overhead costs is very important for companies, which administer own fleet. The broker system aid organization and optimization of transportation processes, what helps in better usage of loading space of trucks by consolidation of cargo from several customers. In this case the overhead costs are distributed among cargo belonging to different customers.

- **Reducing costs and increasing balanced resource usage**

Reduction of transport costs is connected with better balanced usage of available fleet. Transportation cost of usage truck will be distribute, according to established algorithm, among all companies, whose cargo were loaded on described truck.

- **Broker must be neutral (not to be forwarder)**

The idea of broker system is not selling the services, only it has to aid mutual collaboration of small and medium production companies and also with transportation companies. The brokers task is the best (optimal for each participants of the system) linking cargos with empty loading spaces. It should bring benefit for all participants of the broker system: for hauliers, better usage of loading spaces and decreasing of overhead costs, for producers, decreasing of transportation costs and for the society, decreasing of congestion, what is also very important from ecological point of view.

- **Day by day management made by broker must be flexible**

Flexibility, in case of organisation and realisation transport processes is very important feature, which has an influence on e.g. on time deliveries. Mostly the customers of broker system are interested in it. Some production branches changes their production plans depending on actual demand of final client. It has huge influence on scale or kind source material needed to production. In next step, it changes needs in transportation process, where the broker should respond quick and flexible.

- **Broker should start with regional transport to prove that the KASSETTS-solution works and afterwards the reach of KASSETTS-planning should be enlarged**

At first stage it will be easier to optimize transport processes at regional level with group of involved companies. After reaching first savings and developing rules for cooperation between involved actors the Kassetts concept should be promoted widely and gather new participants across the Central Europe.

## 3.3 General indications concerning IT tool for the broker, IT experts and its users

- **Involvement of users in phase of IT tool specification preparation**

Involvement of potential users of broker system in phase of IT tool specification preparation is very important, because they as participants of broker system know all elements of realised processes. However, in this way could expand their collaboration, for example they can work out suitable accounting services algorithms and so on. It means, they can work out all the functions, which they can use in the IT tool. Moreover, their awareness in the range of opportunity of uses the IT tool will be better.

- **Preparation of well – working algorithms as the base for IT tool**

Preparation of well – working algorithms has a huge importance from organisation all processes points of view. Man could not forget about preparatory processes and also about processes after realisation of services. It is very important to pass all documents to proper participant of process and also to make processes optimization possible, better usage of free trucks, and in the end right accounting.

- **Matrix of distances in region where broker works must be prepared**

Matrix of distances is essential data base, without which route optimisation algorithm can not work and planning of routes will be not such efficient process as it was intended. Moreover it should help in broker work.

- **Analysis of needs should be made as the base for IT tool architecture**

Analysis of needs should be made already before IT tool architecture and algorithms planning. As a result of analysis should be conclusions, which will be goals and points to solve by using of planned IT tool.

- **Constant development of the system**

Constant development of the system is very essential point, because market situation and cooperation conditions will be change in time. Moreover, the broker system could grow and it will be used not only regional, but also on national level. The group of participants also can be growing in size and branches. And it will extract changes from the IT tool, which will be suitable to actual needs of users.

### **3.4 Indications concerning achieving the critical mass**

- **Additional incentives created by public bodies are one of the key success factor**

One of the more important factors, which will be support this kind of initiative is support from the side of public bodies. They can engage in dissemination, and also they can support users of broker systems in the other way, e.g. financial support. The goals, which are achieving in this kind of projects bring as well advantages for society.

- **Critical mass of users (at least 12)**

The main assumption of the project is to reduce total transport cost by organizing joint deliveries of group of companies from one region to another. Companies are sending their goods to different parts of Europe, therefore it is essential to involve at least several companies operating in the same regions. Only this allows Broker to optimize transport process and organize one haulage for selected companies. Unless number of companies and cargo to be delivered to concrete regions is enough, the Broker will not be able to propose alternative way of organizing transport process. However, companies without additional incentives, described above, might not be eager to cooperate together within the project.

- **Promotional activities of public authorities and business support organizations**

It is very important function for public authorities, because there intersect the roads of potential broker systems users. It is a place where the information about the project should be on the first place. Moreover, this kind of support makes the project credible.

- **Maximising the advantages brought by clustering small truck owner**

By the usage of created within the confines of the project IT tool users can increase profits by minimalization of overhead costs. What they can achieve by better usage of loading space of trucks and efficient planning of routes. Moreover exchange of orders also makes usage of trucks better, because they are used during whole route. The hauler can easier find the back order.

- **Offering a unified market image**

Presenting the same concept in different European regions looks more professional and can be perceived as one of the factors influencing on the potential users.

- **Organization of workshops for stakeholders**

It is very important point in dissemination process. Within the confines of this kind of activities it is easier to get new users of the IT tool. In this way the range of usage of the IT tool is grown and thanks to it the quantity of orders is grown. In the next step the transport processes organisation is easier for the broker. Within the confines of workshops man could speak and work on future development of IT tool, what is connected with changes of projects users needs.

- **Flyers that should be targeted at certain stakeholders**

Project can generate benefits for direct and indirect actors involved in transport chain. Therefore it is essential to prepare different materials presenting the concept and its potential results to different groups of stakeholders. For example companies are interested in reduction of transport cost. Therefore flyer should concentrate on presenting possible savings and have some real calculations of transport costs. Whereas, regional authorities are interested in finding good solution for decreasing of congestion. Thus, flyer dedicated for them should concentrate on example showing reduction of trucks delivering the goods. There is also third group, hauliers, who are interested in finding new shipments and increasing load factor. Hence, flyer for them should also meet their needs.