

THE USE OF ICT IN SUPPORT OF PUBLIC ADMINISTRATION TO THE DEVELOPMENT OF LOGISTICS

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***Abstract:** Development of logistics in transition countries has to be supported by public administration which must increase awareness of logistics' importance to the general country development. Available tool is implementation of information telecommunication technologies (ICT). Not only application of ICT technologies to logistics systems is important, but the use of ICT to improve visibility of logistics is significant. Financing of logistics' centres is the base of their function. New financing model, the use of public private partnership (PPP) offers new capabilities. Incoming domestic and foreign investors must have approach to data about present state and future plans of logistics' centres which make them attractive for financing. First insight could be performed through interactive maps of logistics' potential attached on public administration sites. The paper presents activities to create an interactive logistics' potential site performed at Secretary for economy of Government of Vojvodina and proposes new multimedia means for logistics' promotion.*

Keywords: multimedia, logistics potential, interactive map.

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1. INTRODUCTION

Information communication technology is recognized as an important tool in the global economy of today. Internet, as global computers' network is a base of global flow of information, messages and communications. Flow of goods is closely linked with information interchanges. This makes logistics a parallel process to the global information flow and strictly dependent on ICT.

There are more components of ICT connected to logistics, like shown in Figure 1:

-ICT involved into the core logistics activities, **goods flow** (IRFD, Video surveillance...)

-ICT in logistics **information flows** (database, handling with databases, interchange of data)

-ICT which supports **customers** (websites, social networks, blogs...)

-ICT in the process of **long life learning** for:

- employees and
- services consumers

-ICT as tool for general increase of **awareness** of logistics importance.

From given above follows that ICT has different tasks in logistics systems.

This paper refers to the role of ICT during first and the most important phase of establishing logistics system process. This first phase is task of the political system to recognize and support introduction and strengthening of logistics within other socio-economic systems in society. Innovative ideas in new products should shape the life cycle of a company according to changeable extern demands. Companies will stay profitless if the logistics does not follow their activities. Awareness of logistics should be increased on different levels. These levels refer to companies', local, regional, national and international-global area.

This paper presents a project elaborated by support of the Secretary for economy of Vojvodina which objective was to find method to involve public administration into improvement of logistics' importance visibility. Authors contribution is a solution elaborated by the use of multimedia communication platform. Interactive and attractive logistics multimedia map was an outcome of the project. It gives a good public promotion of logistics'

current state, needs and future plans through media. Interest and use of provided ICT tool by stakeholders is significant and their reaction shows indisputable value of implemented technology.

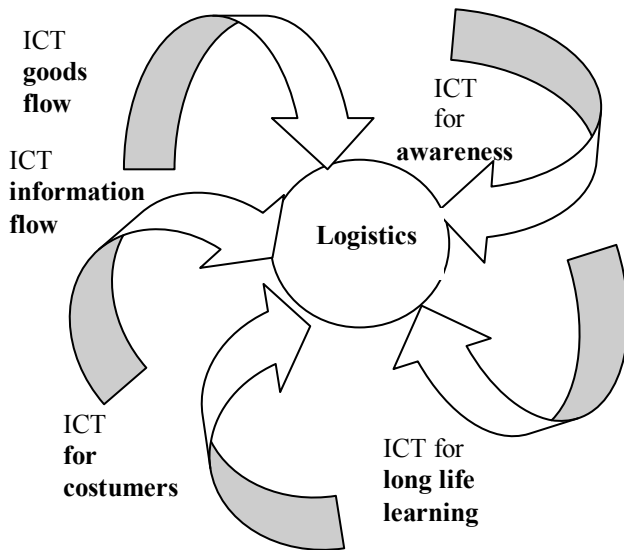


Figure 1. Components of ICT in logistics

2. LITERATURE REVIEW

Logistics is even according to its definition “transaction oriented”. This results in fast exchange of information, appearance of lot of new information and data, involvement of new types of database, permanent filling of database, often analysis of database and continuous monitoring and corrections. Number of transactions and operations is big. This implies that logistics is very dependent on ICT [6].

Very important component of supply chain management is ICT, since “no product flows, until information flows”. ICT is “global nervous system” which is linking suppliers with costumers. ICT is a platform to implement “green logistics” systems which by use of multimedia ICT succeed to protect environment and support sustainable logistics activities [4].

Effective use of ICT into logistics assumes integration of logistics process participants. For example, shippers request integration with their suppliers.... Integration demands adequate training process which is dependent of appropriate training polices. The use of ICT tools requests good knowledge and skills [2].

Some authors refer to the new intermediately organization with ICT as their core activities which set up “virtual business webs”. Such way of Internet use creates new values to customers and stakeholders [9].

Authors distinguish “soft” and “hard” part of ICT but consider both as the same important. “Soft” part refers to information management, ability to assess the economic, organizational and technical feasibility, business, communication and design, the development of information systems, their maintenance... “Hard” part refers to software engineering and implementation of technical infrastructure [10], [1].

Some authors consider that the awareness of ICT as a success factor for logistics is evident. But, there is a low level of ICT adoption with particular reference to the Internet and e-business tools [2]. ICT platform as an e-business tool for the development of logistics must be included particularly into logistics' promotion and training of logistics' experts in transition countries [8]. This must not be theory, ICT system within logistics system should be practice, regularly way of logistics' functioning [12].

Information technology trends turn to be very intensive and powerful and will intensively influence logistics future [3], [5].

Web site design is discussed and detailed elaborated by some authors and stressed as powerful promotional tool which can be used in deferent sectors and logistics, too [11], [7].

3. PUBLIC ADMINISTRATION AS AN INFO MEDIATOR

The whole project which was performed is consequence of the strong need to attract domestic and foreign investors and to activate economic development of Vojvodina. The need is recognized by the Government of Vojvodina who imposed realization of a project which would make logistics' information and data available for use. Logistics' data should be offered to investors, big companies, SMEs, experts, researchers, professors, students and pupils. Public administration took role of info mediator which would offer data and focus all stakeholders to the importance of logistics as a system which is usually subsystem of many socio-economic systems.

- General objective of the project is:
To increase awareness of logistics' importance and to attract investments into this sector.
- Specific objective of the project:
To collect, organize, present and make available to all stakeholders, important logistics' information of the Autonomous Province of Vojvodina.

- Methodology (presented in Table 1):
 - Phase 1 - preliminary activities:
 - (These actions were performed by logistics' experts and were directed towards creation of valid data base structure)
 - selection of factors which determinate the most important logistic centres of the Vojvodina region
 - selection of the most important logistics' centres of the Vojvodina region
 - selection of the cluster of logistics' information which are representative for a logistics centre
 - Phase 2 - collection activities:
 - (These actions were performed by logistics operationals who collected right data already defined in the preliminary phase)
 - collection of data as defined within the preliminary phase
 - Phase 3 – presentation activities:
 - (These actions were performed by external ICT experts who created concept of interactive logistics map and entered collected data)
 - creation of the interactive logistics map concept and collected data entry
 - Phase 4 - Web activities:
 - (These actions were performed by internal ICT experts from public administration who included new interactive logistics map into the existing web portal of the Secretary for economy which was investor of the whole project)
 - Fitting the new interactive logistics map to the existing web portal

Table 1. Phases of interactive logistics map creation

Phase	Description	Responsibility
1	Creation of valid data base structure	Logistics experts
2	Collection of logistics data	Logistics operationals
3	Creation of the interactive logistics map concept and collected data entry	External ICT experts
4	Fitting the new interactive logistics map to the existing web portal	Internal ICT experts

- Target groups: Investors, big companies, SMEs, experts, researchers, professors, students and pupils
- Multiplying effect: Spreading the created ICT tool to other logistics and non logistics areas.

3.1 Phase 1 - preliminary activities

In the first phase experts selected factors which are of the biggest importance for selection of the

most important logistics centres of Vojvodina region.

The main criteria for rating the logistics centres are agreed as following:

- Position nearby the Danube river
- Position on the railway line

Additional conditions are:

- Nearness of high and main roads
- Transport, water, sanitation and communication infrastructure
- Warehouse facilities

As a result of previous carefully selected factors, there were chosen the following logistic centres, as important:

1. Novi Sad
2. Pančevo
3. West Bačka (Odžaci, Bogojevo, Apatin, Sombor)
4. Subotica-Senta
5. Srem (Indija, Stara Pazova, Ruma, Sremska Mitrovica)
6. Middle Bačka (Vrbas)
7. Zrenjanin-Vršac
8. Kikinda

Data which are declared as representative are:

- Surface
- Ownership (public, private)
- Urban planning documentation (general, detailed plans)
- Transport infrastructure (nearness, existence and quality of railway, main roads, regional and local roads)
- Nearness of a port (type of the port, quay length, handling capacity, warehouse capacity and type, additional services)
- Warehouse capacity and type
- Development plans and demands
- Additional information

3.2 Phase 2 - collection activities

In this phase was clear what kind of data should be collected. Collection was made by sending email with specific table that should be filled in.

3.3 Phase 3 – presentation activities

External ICT experts selected adequate ICT software and created core of the interactive map according to description and request made by logistics professionals what is a good example of cooperative work of experts of both sectors. External experts entered collected data, too. Software which was evaluated as suitable was Adobe InDesign CS5. It is the most robust professional document-creation

tool on the market, an ideal platform for creating rich interactive documents. These documents can be navigable, enhanced versions of existing materials (catalogs, brochures, promotions, and so on), or they can be created as original interactive pieces that are never destined for print. Creating interactive documents, presentations, and prototypes in InDesign gives designers the control over format and typography they demand, in the application with which they're most familiar, but with enhancements like slide shows, button navigation, video, live hyperlinks, and more.

3.4 Phase 4 - Web activities

Internal ICT experts, employed at the Secretary for economy (public administration) who are in charge of maintenance of the Secretary's web site, incorporated new interactive logistics map into the existing web portal of the Secretary which was investor of the whole project. Web site address of the site which offers interactive logistics map of Vojvodina in Serbian and English languages is: http://www.spriv.vojvodina.gov.rs/images/flash/Map_Serbian.swf.

4. INTERACTIVE MAP OF LOGISTICS POTENTIAL OF VOJVODINA

The map consists of (Figures: 2, 3, 4):

1. General data about Vojvodina region (geography, demography, economy)
2. Map which shows position of Serbia in Europe and position of the Autonomous Province of Vojvodina in Serbia
3. Gravitation zone of Novi Sad as regional center and gravitation zone of each selected logistics centre
4. Map of railway tracks (main tracks, regional and local tracks with their maximum speeds and axial pressures)
5. Map of roads (main, regional, local roads with their lengths)
6. Map of rivers and channels
7. Map of the most important logistics centres
8. Map of small logistics centres
9. Map of ports with description of ports facilities

I Map of the most important logistics centres

When a logistics centre is selected, all relevant data appear like: surface, ownership, nearness of transport infrastructure, existing communal infrastructure, urban spatial plans, future plans. Photos are imposed to present current situation and

future urban plans. There is a coat of arms of the town, its representative photo and web site.

II Map of small logistics centres (which have given their data)

When a small logistics centre is selected, all relevant data appear like: surface, ownership, nearness of transport infrastructure, existing communal infrastructure, urban spatial plans, future plans. There is a coat of arms of the town, its representative photo and web site.

III Map of ports

When a port is selected, all relevant data appear like: key length, ownership status, handling capacities, volume of handling, warehouse facilities, additional equipments and services, future plans, needs and demands.

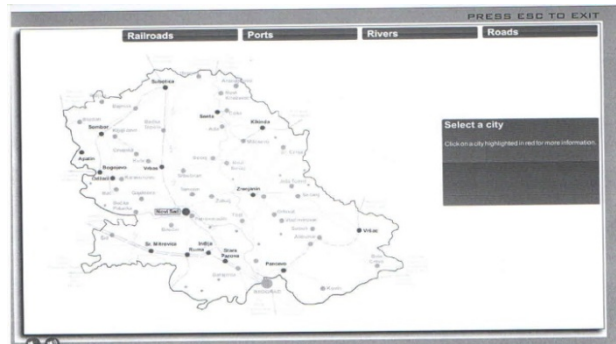


Figure 2. Interactive multimedia map - first screen

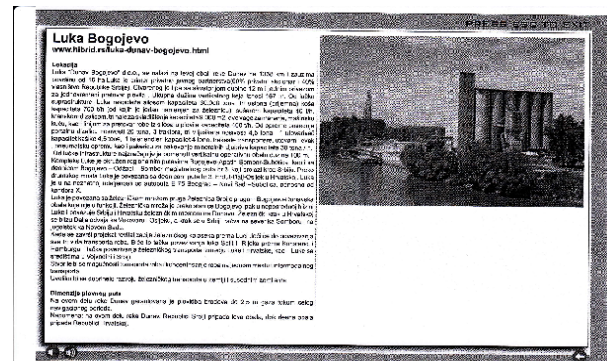


Figure 3. Interactive multimedia map – Port of Bogojevo

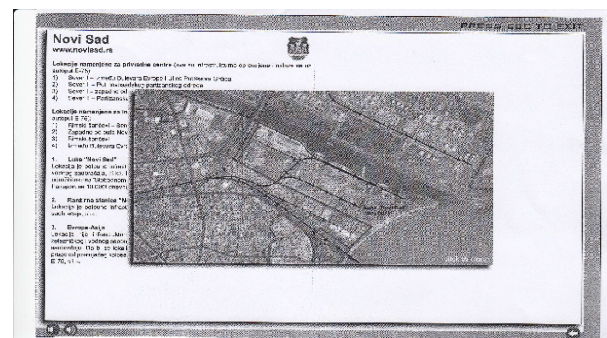


Figure 4. Interactive multimedia map – Logistics centre Novi Sad

5. AWARENESS OF LOGISTICS POTENTIAL IMPORTANCE

The whole process of interactive logistics map creation was initiated by the Council for logistics of the Vojvodina government. The Council consists of logistics experts: university professors and professionals from this area (from shipping companies, ports...). It is coupling of science, economy and public administration representatives what gave remarkable results.

Initiative was welcomed by the Secretary staff who supported the proposed idea. Even this resulted with significant increase of importance of area of logistics within public administration.

After finishing the map, there were organized few promotions which were accompanied with media reports and big interest of media related to the general tasks and goals of logistics sector. It showed that knowledge about logistics was missing.

The use of the interactive map of logistics potential of Vojvodina started with lot of comments. The small logistics centres which were missing from the map requested to be included into the map, too, and this was the next task, already done.

Investors are collecting information and addressing to the logistics entities directly. Results of their further activities will be recognized in the near future.

6. CONCLUSION

The paper refers to a good example of IC technology use in area of logistics sector promotion. This is specially important for transition countries which are under developed in this area and due to the fact that logistics is the final link in the chain of value creation within an economy (in a company, region, country and globally). Applications of IT technologies to logistics systems could be within various processes. Authors describe ITC use during a very important phase of: logistics promotion. This phase of raising awareness about importance of logistics sector consists the most of activities which focus on importance of: education, improving knowledge and skills in this area. Process must have significant support of public administration. It must

seriously prepare and elaborate promotional role for logistics as a source of big value added service .

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