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**Logistic platforms: proposal of an implantation methodology**

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## **Abstract**

*A way to integrate the logistics activities is by developing logistic platforms. A logistic platform is the place where everything concerning the logistics efficiency is gathered, receiving logistics zones for undertakings and infrastructures of transport and storage, thus improving the competitiveness, making possible the logistics activities, de-bureaucratizing and hastening trade operations. The objective of this study is to develop a logistic platform implantation methodology. In order to carry it out, an exploratory and qualitative study was led, by using the case study techniques. The strategy used was the study of sites in Brazil that implanted, with relative success, a logistic platform. It was intended to develop a methodology based on existing literature and case studies, which permitted to identify and map the steps of an implantation and the modus operandi of a platform.*

## **1. Introduction**

With the advent of the globalization and the increase of free commerce agreements between countries and blocks of countries, the external and internal commerce had been favored. However, much of the commerce has been predominantly regional although the rates of commerce between distant regions geographically have increased of significant form. With the increase of the commerce, it is natural to imagine and to observe the growth of the transportation sector, since it is responsible for the movement of goods, people, and also of capital and information.

Transportation represents the most important element of the logistics cost, since the freight is going to absorb two thirds of the logistics cost – then the necessity to reduce this cost. A developed transportation system contributes to increase the market competition. After all, without a structure of adequate transport, the extension of the market limits itself to the

proximities of the production place. The development of the transportation sector is, then, straightly connected to the regional and global development and to the competition between companies and regions, evidencing the importance of the transportation sector and consequently of the logistics and of the supply chain management.

Logistics, in turn, can only be a factor of competitive advantage for companies and cities if it enables an optimization in all stages of the production chain: acquisition, manufacturing management and distribution. The challenge is in managing the activities related to those functional areas, in a way to integrate them, with the objective to generate the necessary capacity to attend the logistics requirements.

Brazil is the tenth worldwide economy and is currently between the 20 worldwide biggest exporters, second data of the Institute of Mathematics and Statistics of the University of Sao Paulo -USP (2006). However, while the world accumulated in last the 10 years a 46% rate of expansion, the country registered only 25% in the same period. Brazil, even being between the 20 biggest exporters and presenting exportation records, possesses a participation of 1% of the worldwide market.

The lack of planning and investments in the transportation sector in Brazil implies in incapacity to attend the demand and generates a high country's cost, turning on a stretching factor for its regional and international development. The percentage of the GDP invested in infrastructure regressed from 1,2% in the decades of 70 and 80 to 0,1% in 2004. In Brazil, the transportation cost is equivalent to 7.5% of the GDP, whereas in U.S.A. the cost is equivalent 5.1%. The public power needs to drive more actions to improve the infrastructure of transports, embodying investments on the different modals, making the increase of efficiency and the intermodality possible.

## **2. Logistic Platforms**

With the geographical growth of the supply chains the changes in the organization of the territory, it is important that logistics locations development attends the needs of the company, from suppliers to the client, reducing the costs and speeding up the flow of information and circulation of goods (DUARTE, 2004).

According to Boudouin (1996), the recognition of this problem is very important since the logistics locations consume more and more space. For the organization of these spaces, politics arise, for Colin (1996), characterized by two kinds of investments: (i) investments of logistic character, oriented to receive activities that value the circulation of goods and integrate the market; (ii) investments of kinetic character, that study the movements, independent of its causes, oriented to improve the circulation of goods, accelerating and organizing the flow of transports, the quality of the infrastructure and the geographical location of the terminals.

A form to integrate the logistics activities is the development of logistic platforms. Meduité (2005) stands out that the logistic platforms are a relatively new phenomenon, and by that still did not receive a name that was unanimous among the specialists of the transportation, logistics and supply chain areas. In Europe, terms for logistic platforms vary from country to country: in the England, logistic platforms are called "Freight Villages"; in France, "Plate Forms Logistique" or "Plate Forms Multimodales"; in Germany, "Güterverkehrszentrum"; in Italy, "Interporto"; in Denmark, "Transport Center". The term more utilized in U.S.A., Japan, China and Singapore is "Logistic Center", although still have not unanimity regarding the term.

In Brazil, as well as in Portugal, platform logistics is the term more utilized, which according to Boudouin (1996), " is the place of meeting of everything that concerns the logistics efficiency, receiving logistics zones undertakings and infrastructures of transport and storage, improving the competitiveness, making possible the logistics activities, de-bureaucratizing and hastening trade operations".

In his work, Meduité (2005) shows yet that are two views between specialists regarding the logistics platforms concept. One defends that the logistic platforms is a part of the transport infrastructure, whereas another one defends that the platform is a "business generator".

Figure 2, represents the phases that composes the model of organization of a Logistic Platform, proposed by Duarte (2004A).

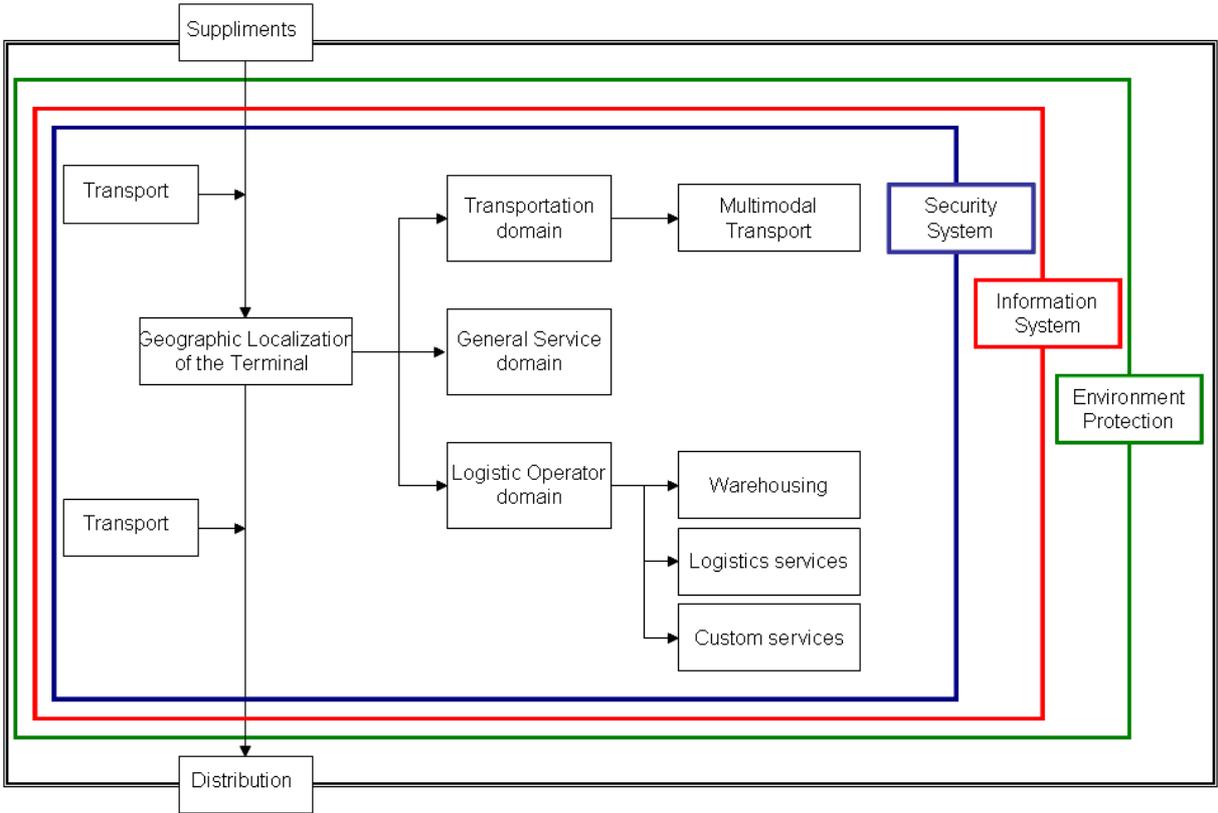


Figure 2 – A model of a Logistic Platform (DUARTE 2004A).

The phases of the implementation of a Logistic Platform, based in the analyses made by Duarte (2004) and Boudouin (1996), are composed by a series of phases described in table 1.

<p>- Phase 1: Analyze the Geographical Location of the Terminal</p> <ul style="list-style-type: none"> <li>- situate the location of the region;</li> <li>- identify the intermodal connections of the region;</li> <li>- identify needs in the net logistics.</li> </ul>	<p>- Phase 6: Define Multimodal Transport</p> <ul style="list-style-type: none"> <li>- define multimodal transport;</li> <li>- define multimodal user;</li> <li>- identify activities in the logistic net;</li> </ul>
<p>- Phase 2: Define Supply</p> <ul style="list-style-type: none"> <li>- identify who are the suppliers;</li> <li>- locate each category</li> <li>- identify needs in the net logistics.</li> </ul>	<p>- Phase 7: Define Logistic Service</p> <ul style="list-style-type: none"> <li>- define logistic user;</li> <li>- identify activities in the logistic net.</li> </ul>
<p>- Phase 3: Determine the Transport</p> <ul style="list-style-type: none"> <li>- define the adequate modal to the terminal that is related with the activities of the logistic net;</li> <li>- define transportation: own or third part;</li> <li>- define internal transport.</li> </ul>	<p>- Phase 8: Define Service Customs Officers</p> <ul style="list-style-type: none"> <li>- define authority customs;</li> <li>- determine alfandegar areas.</li> </ul>
<p>- Phase 4: Define Warehouseing</p> <ul style="list-style-type: none"> <li>- define operationally in the terminal the criteria utilized for each kind of shipment;</li> <li>- confer and change information about the shipment;</li> <li>- define about the need and the kind of storage.</li> </ul>	<p>- Phase 9: Define Information System</p> <ul style="list-style-type: none"> <li>- isolate the activities;</li> <li>- locate each activity in the logistic net.</li> </ul>
<p>- Phase 5: Determine the Sub areas of the Terminal</p> <ul style="list-style-type: none"> <li>- define sub area of general service;</li> <li>- define sub area of transports;</li> <li>- define sub area of the logistic user.</li> </ul>	<p>- Phase 10: Determine Security Criteria</p> <ul style="list-style-type: none"> <li>- isolate the activities;</li> <li>- define the criteria utilized.</li> </ul>
	<p>- Phase 11: Define Distribution</p> <ul style="list-style-type: none"> <li>- identify the nature of the distribution;</li> <li>- configure the strategies and the administration of the physical distribution;</li> <li>- identify needs in the logistic net.</li> </ul>
	<p>- Phase 12: Determine Criteria of Environmental Protection</p> <ul style="list-style-type: none"> <li>- identify phases for economy of resources;</li> <li>- define plans for residues handling;</li> <li>- analyze the physical area utilized by the terminal.</li> </ul>

Table 1 – Phases of a logistic platform implementation (DUARTE 2004A).

### **3. Strategic Planning**

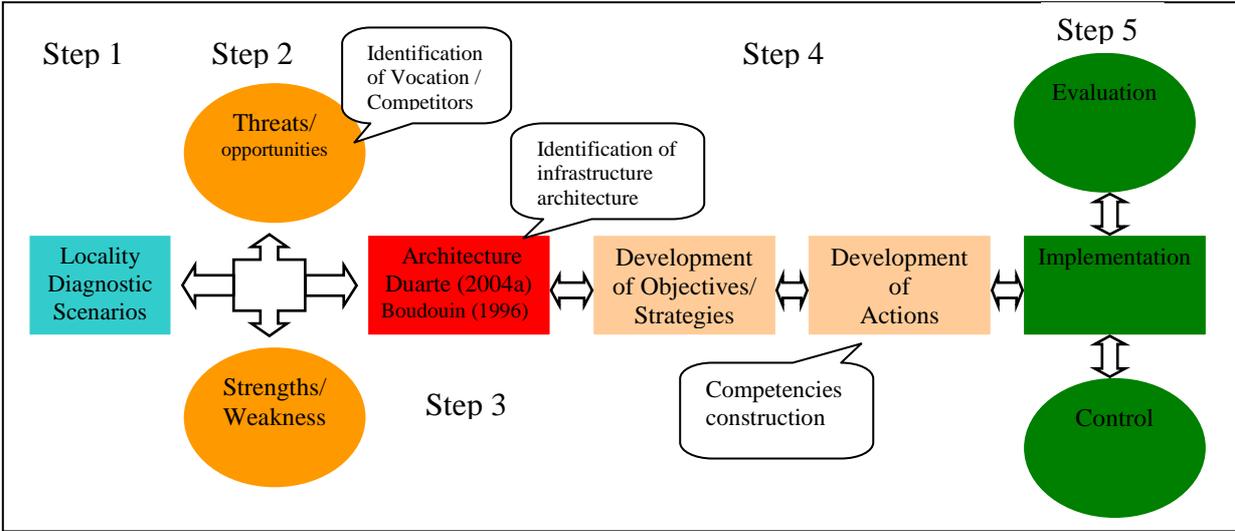
Bowersox and Closs (2001) affirm that "the implementation of the best logistic practices became one of the most interesting and challenging operational areas of the administration of private and public sectors". For Duarte (2004B), "the world tendency today for achieve and maintain the competitive advantage and reduce the costs, is to group companies of the logistic chain, avoiding in this way additional costs with internal transport, maintenance of stocks, storage, etc., creating a competitive and integrated structure".

In their work, Bowersox and Closs (2001) present a study about logistics administration, which aims to decide the location of warehouses and distribution centers. To the authors, the analyses of location can be characterized as very complex and intensive in information. The complexity is created by the multiples alternatives of places for the location, with the strategies of stock for each location. The intensity of information is created because the analysis require detailed information of the market, consumer's demand, products, nets, transport works and variables and fixed costs (expense like installations, equipment and administration supervision).

In this way, it is possible to observe that the spatial or geographical problem associated to the logistic net involves the strategic location of warehouses, which attend the needs of the company, of the suppliers and of the clients, reducing costs and hastening the flow of information and circulation and goods.

In the implementation of a strategic planning, the first step is to carry out an analysis of preliminary facts, which will supply parameters for the definition of probable scenarios of the locality where it is going to be implanted the logistic platform. The scenarios are instruments that help the strategic planning. The second step is going to analyze the strong and weak

points, threats and opportunities of a locality utilizing the procedure named analysis of SWOT – Strengths, Weakness, Opportunities and Threats (Kotler, 2003). The challenge is to change the analysis of the localities profile to its competitiveness analysis. The third step is used the model of organization of a Logistic Platform, proposed by Duarte (2004A) and Boudouin (1996) and described in more detail later. The fourth step refers to the definition of the strategies for the conduction of the projects identified in the previous phases, where the priorities of the project are defined. The fifth step refers to the phase of implementation and control, with the formation of groups for the implementation of the previously determined actions, the systematic accompaniment of the implementation and the revision, from times to times, of the alignment between the strategies and the actions (SANTOS *et al*, 2005). Figure 1 illustrates the structure for the strategic planning and development of local competences.



Adapted from Santos *et al*. (2005)

Figure 1. The strategic planning structure.

A process well developed is more than a sequence of paces, or, procedures. There are necessary characteristics has: the participation of the diverse representatives from the community; as the project is managed for a conclusion of success; how the process is introduced in the community and how the commitment and enthusiasm are stimulated. That obviously is out of the scope of this work. The procedure consists of a number of paces that occur basically through meetings. It should be developed also a series of tools and controls, to give sustainability to the process.

#### **4. The methodological approach**

The approach of this research is the case study and its objective is to develop a logistic platform implementation methodology. This approach examines in depth a contemporary phenomenon, in his context, especially when the limits between phenomenon and context are not defined. The case study, according to Yin (2001) can be exploratory, raising hypotheses and proposing questions of research for future studies; descriptive, seeking associations between qualitative or quantitative variables; or explanatory, describing the facts of interest and proposing acceptable explanations and verifications for these facts.

According to Eckstein *et al.* (1975, *apud* ROESCH, 1999), a case study can contribute for a theory in five ways: (I) it offer, for subsequent studies, a deep and specific description of the object; (ii) interpret eventual regularities in the object as evidence of more general theoretical assumptions; (iii) quiz an idea about the object in a situation deliberately built; (iv) fathom plausibly an already proposed theory about the object; and (v) support or refute a theory already tested. The present case is of the exploratory kind: to the end, a hypothesis of work resulted. The contribution is of the forth kind: an exploratory and qualitative study was lead,

using the study of localities in Brazil that had implanted with relative success a logistic platform.

To guarantee the trustworthiness of the research, the study undertook a historical analysis and used diverse sources of evidences as interviews, document analysis and bibliographical research. To guarantee the validity a research protocol was developed, and the data had been recorded for posterior examination. It was intended to develop a methodology based on existing literature and in case studies, which permitted to identify and map the steps of an implantation and the "*modus operandi*" of a platform.

The contribution of this work was, after identifying and mapping the necessary items to the implantation of a logistic platform, verify which cities would be able to follow those steps and be benefited with the implementation, supplying the managers and rulers of the city and/or of the region analytic tools that propitiate the implantation of a logistic platform in the city. Thus, it would have greater conditions to compete and to attract investments facing other competing cities.

## **5. The study case**

### **5.1. Logistic organizations in Brazil**

Some of the logistic organizations in Brazil aggregate the majority of the logistic service, as transport, storage, distribution, warehouse management and information. They are: "*Estações Aduaneiras do Interior*" – EADI; Centers of Integrated Logistics; Global Transpark and Paraná Logistic Platform.

The EADI contemplate the same necessary bureaucratic structure to the international commerce and are located in secondary zones (distant of the ports and airports). They unite the Customs Centers of commerce service, permitting the storage of the merchandise under consignment, without importing documents or exchange cover and nationalization of the merchandise.

A Center of Integrated Logistics (in Portuguese CLI) is an area that unites a series of transport functions, like logistics, operational support, industrial processing and other correlates' functions. It was idealized by the State Office of the secretary of Transports of the State of São Paulo inside the Transports Development Director Plan (in Portuguese PDDT) for the period of 2000/2020. This area is sized up for shelter an intermodal rail-road terminal and a logistic platform capable of carry out operations like warehouse, distribution, consolidation and deconsolidation of containers, service of support and alfandegar areas.

The Global one Transpark, according to Kasarda (1997), is an advanced multimodal industrial infrastructure of air transport that provides the logistic environment to production and distribution, increasing the industrial competitiveness and stimulating exportations. The Transpark Brazil will be connected to other installations of Global Transpark that are being developed in the United States, Asia and Europe, providing a global net that will link the main economic regions of the world.

The idea of transform the State of Paraná in a Logistic Platform net along its transports system was inspired in the installations of this kind in France (DUARTE, 1999). It is an opportunity for Brazil, which still possesses an outdated logistics infrastructure regarding its competitors. It shows that it begins to give conditions for such logistic organizations.

The closer to a logistic platform in operation in Brazil are the distribution centers, whose storage physical configuration is destined to the management of the movement and stock of finished products. They don't have, however, the multimodal integration, the incentives for value aggregation, the offering of connected service to the activity and the shipment management in an efficient and integrated way.

As object of study in this research, the implementation of the logistic platform of Goiás was studied. The Multimodal Logistic Platform (MLP) of Goiás will promote for the first time in Brazil the logistics intelligence head office concept, combining multimodality, telematics and freights optimization. By means of the efficient access to the road transport axes, railway and airports, will permit the integration with the main logistic routes of the Country.

## **5.2 Analysis of study case data**

As the platform is still not fully operational, some phases needed to be not considered (like the phase that will determine the information system) and will be added in a future study. Following, is described actions towards the implantation of the MLP of Goiás, inside the strategic planning structure.

Studies based on existing enterprises in the Europe demonstrate that the multimodality of the system of transports and the functionality of the logistic platforms allow to reduce in up to 12% the logistic costs of the distributed merchandises. The region chosen for the installation of the platform is favored by the highways BRs 153 and 060, the railroads FCA and North-South highway and the civil airport of Anápolis (that it will be remodelled for International Load Airport), allowing the companies to opt to the modal one of more appropriate transport for distribution of its products in the markets national and international. The area to be

occupied is of 700 hectares and the civil workmanships already had been initiated. The Multimodal Logistic Platform of Goiás is an initiative of the state government, that is organized under the form of an anonymous society and could be managed by industries, deliverers, logistic operators and transporting services that if to structuralize in the place. The ADTP (Agency of Development Tietê-Paraná), entity that acts in the promotion of development strategies and attraction of investors, in the areas of transports, energy, telecommunications and sanitation, has assisted the government of Goiás in the concretion of the project.

The structure of the platform will offer customs services of storage, forwarding, improvement, processing and packing of products, concentration and fragmentation of loads and support services. The companies also will be favored by an ample network of data communication, with equipment and services of last generation, that will become more agile, efficient and insurance the carried through commercial transactions between the industry, suppliers and retail.

The type of network architecture identified by the phase of diagnosis of the sectors is a network detailed in table 2.

- Phase 1: Analyze the Geographical Location of the Platform
  - installed in the city of Anápolis – GO, 52 kilometers away from the capital of the state Goiânia, a geographical center of the country and of the South America;
  - intermodal connections of the region: roads, railways and airports;
- Phase 2: Define Supply
  - the main suppliers are the big plantations of grains;
  - besides the agribusiness net logistics, as suppliers it will have the leather, textile and pharmacy industry.
- Phase 3: Determine the Transport
  - a Civil Airport, located in Anápolis, that will be extended for enable the landing and the take-off of large cargo airships;
  - Access to the Centro-Atlântica Railroad, which possessed 685 km of railway lines in Goiás and terminals in Goiânia, Anápolis and Brasília. It will permit connections to the main maritime ports of the Country;
  - Future access to the Norte-Sul Railroad, that will permit the railway access starting from Anápolis (46 km already built) to the port of Itaqui - MA and also connections with the North and the Northeast of the Country;
  - main highway access: BR-153 – permits accesses to Belém (PA) and Deep Pace (RS), and BR-060 – accesses to the border with Paraguay (Bela Vista – MS) and to Brasília (Federal District);
  - Waterway Tietê-Paraná: 350 kilometers far away, in the grains transport route to the Southeast (port of Santos).
- Phase 4: Define Warehouseing
  - contains multi-temperature warehousing;
- Phase 5: Determine the Sub areas of the Terminal
  - the platform has the necessary services for its operation, such as administrative headquarters of the companies of the platform, bank services, mail, trading companies, welcome and information offices, restaurants, hotel, gas stations, garages for repairs and parking for trucks.
- Phase 7: Define Logistic Service
  - Center of Terrestrial Transports;
  - Pole of Service and Administration;
  - Railway Terminal of Shipment;
  - International Cargo Airport;
  - Air Terminal of Shipment
- Phase 8: Define Service Customs Officers
  - installation of a dry port Center-West (Estação Aduaneira do Interior – EADI)

Adapted from DUARTE (2004A)

Table 2 – Goiás multimodal logistic platform implementation.

## **6. Conclusions**

Given that the competitive advantage resides outside of the firm, it will be able to improve the competitive advantage of the clusters, we will be able to be improving the competitive advantage of our own companies. The development of the logistic platform is not automatic, despite of many times those emerge spontaneously. It is necessary the integration of the strategies and coordination of the efforts in search of the development of the community.

The strategy structure presented in this work, supplied an analysis tool for a planning process aiming for the development of a logistic platform.

This study is part of a bigger research in course, carried out by the Production Engineering Department at UNESP, campus Bauru, and is being finalized. Data regarding the procedures to implant the Centers of Integrated Logistic in the State of São Paulo are being analyzed, as well as the potential of the logistics zone at the metropolitan region of Campinas – SP.

However, it is already possible to observe that the implementation of a platform is a tool for the reduction of logistic costs and of promotion of shipments integration.

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