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THE PRACTICE OF BUSINESS AND INFORMATION TECHNOLOGY INTEGRATION IN THE TRANSPORT COMPANY USING ENTERPRISE ARCHITECTURE FRAMEWORK

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ABSTRACT

Supply Chain Management in modern conditions requires close integration of business processes of transport companies and information technology. We know that today there are a large number of applications and information systems for the automation of logistics activities. Currently there is no complete and consistent classification of software products of the Transportation Management System (TMS). Their diversity is relevant in the context of the fourth industrial revolution ("Industry 4.0"). It's difficult to navigate existing and emerging information systems and choose the most appropriate. The most important class TMS products are designed to plan, organize, and account for the operation of the vehicle fleet. However, their practical use is often ineffective for several reasons. One of the common problems in the implementation of the information system is the lack of or inadequate investigation of all operating activities of the enterprise and its strategic position in the market, the analysis of information flows, evaluation of employees of business roles, mechanism of decision-making. The reason for this is the lack of logistics management competencies in the field of information technology, and on the other hand, often poor understanding of IT-managers of the transport processes. Therefore, a practical approach synchronization strategic goals, objectives, business processes, supply chain management with business logic implemented information system. The paper discusses the use of proper Zachman enterprise architecture framework as this approach. This proper framework is simple enough to understand, and is known for a long time in the IT industry. Therefore, its use in the development of the information supply chain management system in practice, it seems appropriate for small and medium-sized freight enterprises. It is known that the business processes of all transport companies in general are often very similar. However, in practice often requires a flexible adaptation of the information system for each of them.

Keywords: enterprise architecture, Zachman framework, Supply Chain, strategic alignment, transportation management system

1. INTRODUCTION

In the contemporary world, it is rather difficult to imagine any human activity without the use of information technologies (Powell, Dent-Micallef, 1997). Computers and the Internet have evolutionally transformed business processes and the entire business landscape in a number of industry branches, such as tourism, banking. Nowadays, mobile technologies and social media radically change the business processes of organizations, the models of relationships between suppliers and customers, and give promising opportunities to the companies as to holding stable positions in the markets and reaching new frontiers in competitive struggle.

Significant changes took place under the influence of information technologies in the field of supply chain management (SCM), where information technologies are used to cope with a wide range of tasks with the purpose of improving the efficiency of logistic business processes (Waters and Rinsler, 2014). The use of IT-solutions makes it possible to do the following:

- to collect and store data on the logistic activities for the purpose of organizing a unified information space of an enterprise;
- to analyze the data collected in order to obtain the information required for effective managerial decision-making;
- to minimize or eliminate duplication of information;
- to standardize and automate routine operations;
- to develop staff competence through the exchange of information;
- to find new customers and suppliers, etc.

Logistics activities embrace a variety of business functions, including distribution, warehousing, inventory management, transportation, etc. ERP-systems that appeared in the 90's as the extension of MRP and MRP II concepts were aimed at addressing this range of tasks and a number of other important issues related to management and enterprise planning (Renko, 2011). As a rule, they are used by large industrial enterprises. SAP and Oracle are the most well-known ERP-system manufacturers; besides, a supply chain management module was implemented. At that, SCM-applications were developed as a separate class of software and repeated the design of “big” ERP-solutions in terms of their concept (Farahani, Rezapour and Kardar, 2011). This concept provides for three management levels: strategic, tactical, and operational levels, at each of them the respective business functions are implemented (Gulledge, Cavusoglu and Kessler, 2001), i.e.:

- delivery planning and timetable scheduling;
- demand planning;
- customer relationship management;
- inventory management;
- business analysis and forecasting, etc.

At the same time, despite the fact that a number of functions of the SCM-application correspond to the tasks of the ERP-system, ERP is an integrated solution and covers a wide range of managerial issues (Fig. 1).

Today, the complexity of industrial ERP-systems is often one of the main factors leading to the failure of automation projects (Misra, Khan and Singh 2010). The vast possibilities of these information solutions are used in practice not to the full extent. The reason for the low efficiency of the use as to supply chain management information systems (both as ERP and SCM) is the fact that often the selection of a system is based not on the analysis of business processes and the needs of organization but, for example, on the popularity of a software developer, the cost of an application, etc. Very often this is due to the fact that many supply-chain managers are extremely technologically-challenged, and many IT-specialists do not have comprehensive competence in logistics. In this regard, the implemented information system fails to become the strategic asset of the enterprise contributing to its sustainable growth and development, it only addresses the issues of operational accounting and automation of routine tasks. Thus, significant investments in IT-solutions for supply chain management turn out to be useless. In this connection, the study as to the methods and approaches of more effective and coherent integration between the logistics business and IT is a crucial task.

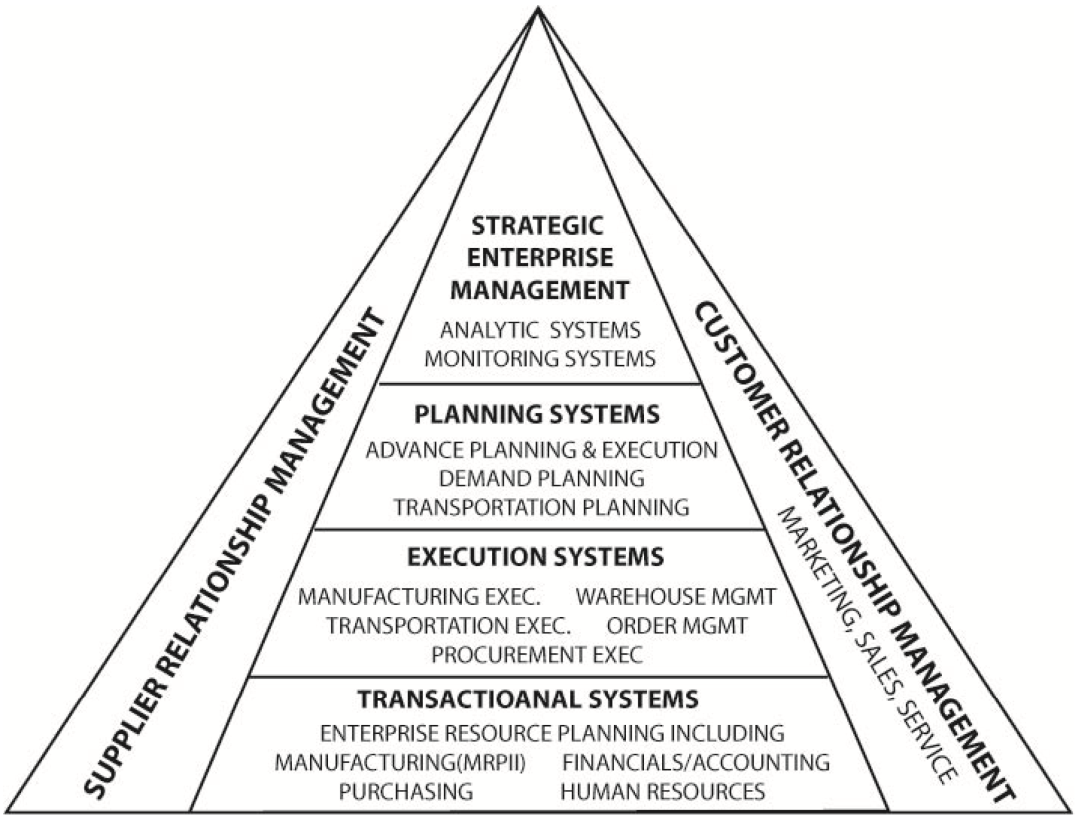

Figure 1 Model of the ERP-system (Gulledge, Cavusoglu and Kessler, 2001)

2. ENTERPRISE'S ARCHITECTURE AS A MEANS OF BRIDGING THE GAP BETWEEN BUSINESS AND IT IN SUPPLY CHAIN MANAGEMENT

The gap between information technology and business needs has been discussed for quite a long time since the 1970's, for computers became one of the most important enterprise's management tools (Luftman and Kempaiah, 2007). A significant number of studies are devoted to the analysis of the influence of information technologies on the development strategy of this or that business (Luftman, 2000).

However, rapid development of information and telecommunication technologies result in delay in businesses' use of the potential benefits that innovative solutions may give them. Heads of enterprises often consider information technology as a magical tool that makes it possible in to turn an ugly duckling into a beautiful swan in a short time, i.e. to instantly solve all current problems of the enterprise with the help of the most famous (the latest, the most expensive, etc.) information system. At that, there is little understanding of the fact that the introduction of innovative information technologies, as a rule, is the prerequisite for the transformation of business processes, employees' mentality, organizational structure of the enterprise. Thus, we see the attempt to use the latest innovative IT-solutions together with out-of-date business models. Obviously, we need the approach that would be based on the strategic business goals and business processes and would form the concept of the required information system, with due regard for the opinions of all employees concerned. Based on this information model, the contours of the information system required by any particular enterprise would be specified.

Such a concept, in which an enterprise is considered to be a complex system with various elements interacting with each other according to certain rules for the purpose of obtaining specific business results is called Enterprise Architecture (Li Da Xu, 2015). The founder of this approach is John Zachman, who in the early 90-s introduced the method that nowadays is known as the Zachman Framework. Today, there are about 50 frameworks (e.g. DoDAF, TOGAF, CIMOSA, etc.) to assess an enterprise with different degrees of detalization (Luisi, 2014). It is evident that in order to describe the architecture of an enterprise in a particular industry, for instance, a bank or a steel plant, it is necessary to have complete understanding of the organizational structure, business processes of the organization, all operations of the production chain, business roles of each employee, etc. Thus, if we look at an enterprise as a system, it is necessary to describe and classify each of its elements, the links between them and the nature of their interaction, in order to obtain a model of the organization.

From the analysis of literary sources it is known that nowadays SCM is one of the industries where the introduction of innovative IT-solutions faces a number of significant challenges due to the fact that this area of human knowledge is quite complex in itself, and it is of multi-disciplinary nature. In practice, the knowledge in the field of logistics theory is not always used (Giannoccaro and Pontrandolfo, 2001). Therefore, for the fast and effective integration of logistic activities with information solutions in the course of implementing supply chain management we need kind of a "road map" enabling managers and logisticians at different managerial levels, as well as IT-professionals, to use common terms and to be in a single semantic space in order to have a common vision of the project and then consistently build up all the levels of future architecture.

A number of implemented projects are based on the Zachman's Framework as one of the simplest way to describe the Enterprise Architecture. The TOGAF Architecture is no less popular. For example, it is offered to sequentially go through the following stages of development at the intermediate levels of EA (Marques, Borges, Sousa and Pinho, 2011):

- Development of the Process Architecture;
- Development of the Information Architecture;
- Development of the Application Architecture;
- Development of Technological Architecture;

The first stage is the most important one, because in the course of a joint discussion with heads of companies, logisticians, IT-managers, the determining of the future architecture of contours takes place based on the strategy, goals and objectives of the enterprise. Identification of business processes, specification of business roles, information flows take place at this stage. In fact, this work results in a set of knowledge or a business model that describes the processes and the ways of how to enable an enterprise to carry out its activities for the purpose of earning money (Osterwalder, 2004). The term "ontology" is often used to describe this business model (Lu, Panetto and Gu, X., 2010). It is evident that the experience of staff members, their personal skills, abilities, business relations play a very important role in the formation of a set of the "best practices" for the effective and sustainable development of the organization. Business processes may be identified "as is", or more efficient ones can be offered. For this purpose, the SCOR-model is often used as a model sample (Scheuermann and Leukel, 2014).

Therefore, at the first stage we get an ontological business model comprising the identified business objects as well as the nature of their relationship that form a semantic dependence. Further on, this business model at the second stage is transformed into an information model that consists of entities and links between them. At this stage, information flows are identified, data structure is determined, logical and physical design of information system tables is carried out. If an enterprise has several information systems, the nature of the interaction between them shall be determined. At the third stage, application architecture shall be determined, i.e., the architecture of the software components, of which an information system consists (Giachetti, 2010). Then, the technological landscape that includes hardware and network equipment shall be designed.

3. "SMART LOGISTICS" IN THE "INTELLECTUAL ECONOMY"

Informatization has led to the emergence of new concepts of economic development. If earlier we spoke about the "post-industrial society", now the term "neo-industrialization" is considered to be more to the point. It reflects a new stage of penetration of software products and communication systems into production activity control. Scientific and business communities use such terms as Industrie 4.0, Internet of Things (IoT), Smart Factory, Industrial Internet , Integrated Industry, Smart Industry or Smart manufacturing (Hermann, Pentek and Otto, 2015; Tolkachev and Rachkovskaya, 2015; Rachkovskaya, 2016).

"Neo-industrialization" processes are expressed not only n the transformation of industrial processes. It would be more to the point to speak about the emergence of "intellectual economy" as a modern concept of organization of business processes. In recommendations for the implementation of a strategic initiative "Industry 4.0", a lot of attention is paid to "Smart Logistics". An example of the implementation of this concept is the use of Radio Frequency Identification (RFID), which, in turn, was the starting point for the emergence of the concept of "Internet of Things" (IoT) in the USA in 1999.

It is evident that effective management of cargo transportation requires specific competencies, knowledge and experience, because the stability of the entire supply chain system depends on the transportation stage to a great extent. Nowadays, optimization of cargo transportation is of strategic importance to the logistics industry (Aschauer, Gronalt and Mandl, 2015). If from the supply chain management we emphasize the activities associated with the optimal planning, organization and control of transport operations, in this field there is a wide range of areas for implementing "smart logistics" concept. As a rule, they are united under the title "Transport Management System" (TMS) (Verwijmeren, 2004).

At the same time, consistent terminology has not been finalized in this area. In some cases, such terms as "Intelligent Transport Systems" (ITS), "Fleet Management Systems" (FMS) are used as well as others.

On the one hand, a variety of terms is due to the functional features of the systems used. On the other hand, lack of clear classification and ambiguity in terminology used make it difficult to choose the potential users of the system, because the same or similar names may contain different content both of the software products and hardware. This fact is of a particular importance due to at least two conditions. First, nowadays the modular principle of constructions of business management information systems prevails, including those in the transportation sector. Second, the increase in the scale of the distributed data processing or the use of "cloud computing" is one more important factor. Both these two conditions significantly increase the error rate at the preliminary stages of designing an information system, when the customer of the system (usually in cooperation with its prospective developer) defines the goals, objectives, functions, structure and stages of the possible development of transportation operations control system, which, in fact, predetermines its architecture.

Transporttion telematic systems are the hardware and software systems that include avionics (navigation and communication aids, analog and digital sensors, execution units, etc.), computing power and the respective software with a user interface.

The term "Intelligent Transportation Systems" (ITS) is commonly perceived as the automobile traffic management system for the purpose of increasing safety, reducing the likelihood of congestion on road network, and the optimum use of their traffic capacity .

Application of intelligent transportation systems creates favorable environment for logistics activities and contributes to the improvement of the efficiency of transportation, because their operation results in a reduced number of accidents and a reduced time of delivery of cargoes and passengers traveling due to route optimization, with due regard for traffic network congestion.

In Russia, "Fleet Management Systems" (FMS) term sometimes is referred to software products that ensure the calculation of the cost of running the vehicle fleet and document management. The systems of higher functionality help solve the problems of planning and accounting of the transportation operation, technical maintenance and repair, consumption of spare parts, fuel and tires. In some cases, the Russian companies in the field of information technologies offer "Fleet Management Systems" that are actually the systems of a complex nature. In addition to the above, they deliver the modules that make it possible to perform a number of auxiliary functions, including processing of orders for delivery, planning optimal routes for their own and borrowed vehicles, carrying out satellite control over the performance of the vehicles during transportation.

In most cases, the understanding of the "Fleet Management Systems" concept in Russia differs from that in other countries. The Western manufacturers of commercial vehicles in accordance with the FMS standard equip their vehicles with telemetry systems, which at the intervals set record the vehicle movement parameters and the data on the performance of its main units. The data obtained during telemetric observations is either recorded by onboard computer or transmitted to the control manager in the online mode. This is actually the way the "Fleet Management Systems" is interpreted in the West.

Specialized Fuel Monitoring Systems (FMS) of various types for the installation on operated vehicles have gained their popularity in Russia. In its nature, this system can be assigned to telemetric ones, because it is installed as on-board equipment of a vehicle and captures the information on the work of a fuel system for the purpose of its subsequent analysis. The systems of satellite monitoring of vehicle movement with broader functionality may be included in this class, separating from them the system designed to monitor the implementation of a planned target for cargo transportation.

A special class of systems, which appeared as a result of the penetration of information technologies into automobile construction and logistics, comprises unmanned vehicles and robotic transport systems designed primarily for the use in closed areas, within warehouses, industrial plants, or specially designated routes. Wheeled unmanned transport vehicles and systems intended for land transportation of cargoes or passengers, as well as transport vehicles intended for transportation by water or air, are under development.

The "Transportation Management System" (TMS) term in Russia (Kurganov and Dorofeev, 2016) and other countries (Klappich, 2014) is used in quite broad sense.

The most important features for the Russian market of software products are as follows:

- the platform of the system used;
- the possibility of adapting it, with due regard for the features of the company that is its intended user;
- the procedure for the provision of technical support during operation.

Usually, at the first stage we determine whether the development is a foreign or a domestic one. If preference is given to the Russian supplier, the choice is made between the platform 1C or any other platform.

In relation to managing the delivery by motor vehicles, TMS systems may be classified by the area of application:

- management of transport activities (planning, organization and accounting in the motor transport sector);
- management of transportation in the implementation of the transport process (planning and control of operation of transport vehicles during cargo delivery).

There are specific features of planning, accounting and control in motor transport businesses depending on whether it is a commercial carrier or a structural subdivision of a trade company, industrial company, or any other company using its own vehicle for the purpose of transporting its own goods. In the first case, a company operating on the transport market shall be involved in marketing and selection of the most profitable customers, it shall implement a flexible pricing policy, ensure fast performance of financial settlements with the customers of transportation services. For such a company, self-sufficiency and profit from transportation activity is of great importance. In the second case, it is important to know whether the system makes it possible to control only owned transport vehicles or hired ones as well.

There exist different systems of planning, accounting and control in motor transportation businesses according to the principles implemented during their creation, for example:

- Customer Relationship Management (CRM);
- Electronic Document Management System (EDMS);
- Business Performance Management (BPM).

In turn, Transportation Management Systems vary depending on transportation geography: transportation within inhabited localities; intercity (regional) transportation; international transportation. In all these cases, we may distinguish between the conditions of the transportation process organization and the requirements of normative legal documents. Information systems vary both in terms of a distance of delivery and depending on whether it is intended for planning unimodal transportation or it is supposed to be used in a single chain of several types of transport vehicles, with or without interim storage of cargo.

The "Transportation Management System" term can refer both to the systems of a local nature and the systems that make it possible to address not just separate issues but, depending on the respective loading, ensure the achievement of a wide range of purposes.

The examples of local systems used in the management of transportation process or its separate elements include the following:

- systems for the optimization s to allocation of cargo in the vehicle body or in a container for the purpose of optimal use of handling capacity and/or the internal volume;
- systems for managing transport vehicles on the territory of a warehouse (Yard Management Systems, YMS);
- systems for optimizing the distribution of orders between transport vehicles and calculation of optimal routes and their traffic schedules (routing systems);
- systems for exercising control over the performance of a planned task for cargo transportation (including the system for monitoring owned and/or hired transport vehicles, as well as the systems for exercising control over cargo traffic, regardless of means of transportation used).

Local systems of various purposes may have an option for their integration with each other, or they may be used independently or be supplied by the developer on a modularity basis.

A highly important TMS class embraces the software products intended for planning, organizing and accounting the work of motor transportation businesses. Depending on the conditions of their transport activity, their architecture may be formed on a modularity basis, increasing the functional features to the required limits and creating complex TMS system.

This concept is reflected in the functional model introduced by Capgemini Consulting (Capgemini Consulting, 2011), where the contours of the TMS in general repeat the configuration of typical SCM-solutions, and it includes operational, tactical and strategic levels (Fig. 2). However, the range of tasks is highly specialized and covers the following business processes (Stefansson and Lumsden, 2008):

- Freight Management – operates with the data as to the nature of the cargo, its quantity, volume, cost, place of loading and unloading, supplier and customer, date and time of delivery;
- Vehicle management – includes planning and monitoring of transportation vehicles, technical maintenance planning, registration of repairs and spare parts;
- Driver management – includes the records as to the drivers' working time;

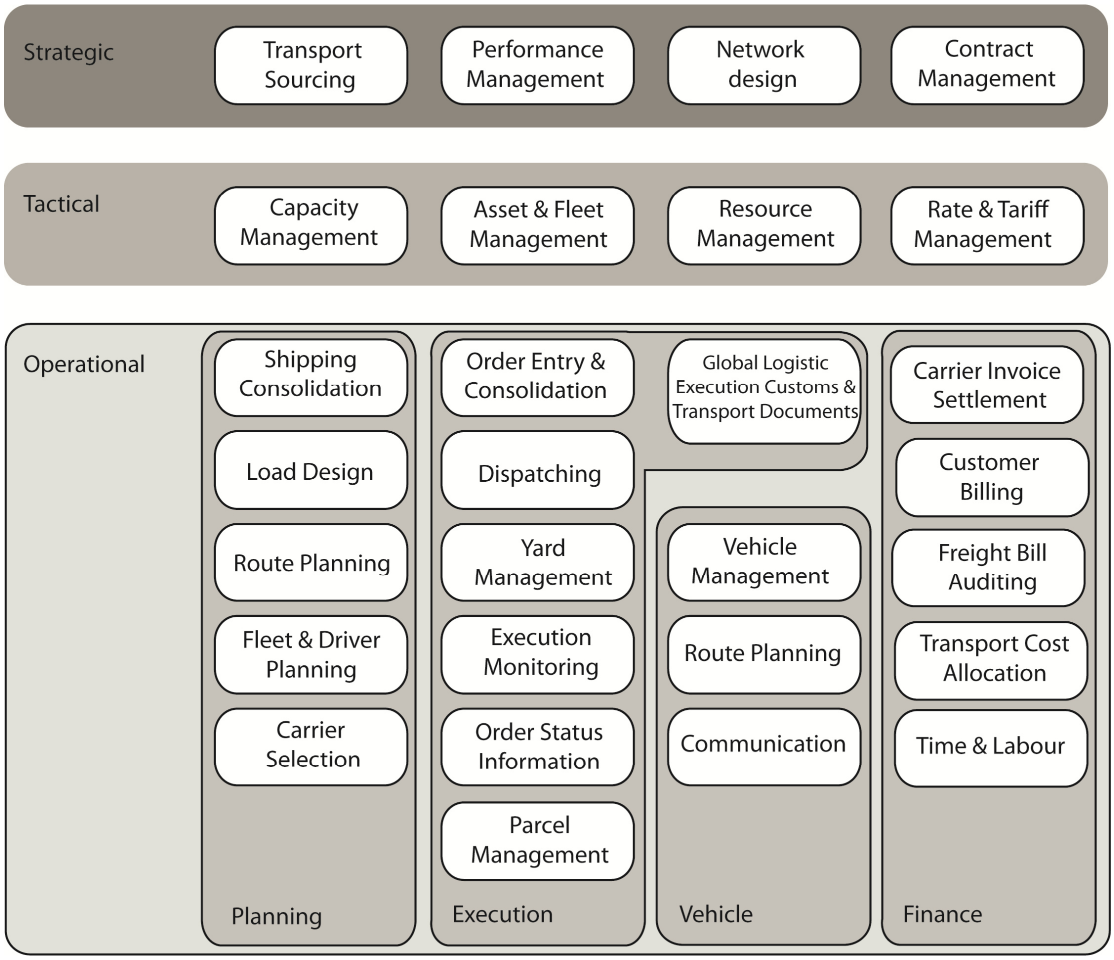

Figure 2 Transportation Management System Functional Modules (Capgemini Consulting, 2011)

Some of TMS-solutions in terms of their functionality are part of the industrial ERP-systems, such as SAP, Oracle, and help automate a considerable number of transportation operations. At the same time, the Gartner Magic Quadrant presents other vendors' systems, such as JDA Software, Mercury Gate International, C.H. Robinson (TMC), etc. However, in Russia SAP and Oracle are the most commonly used corporate IT-solutions; the market share of SAP is significantly higher than that of Oracle. It should be noted that the most popular software products on the Russian market among small and medium-sized enterprises are those made by 1C company (Russia), despite the availability of TMS-solutions of other developers (Kurganov and Dorofeev, 2015). The problems that the Russian transport companies faced when selecting and implementing TMS are basically almost identical to the problems of similar enterprises in other countries.

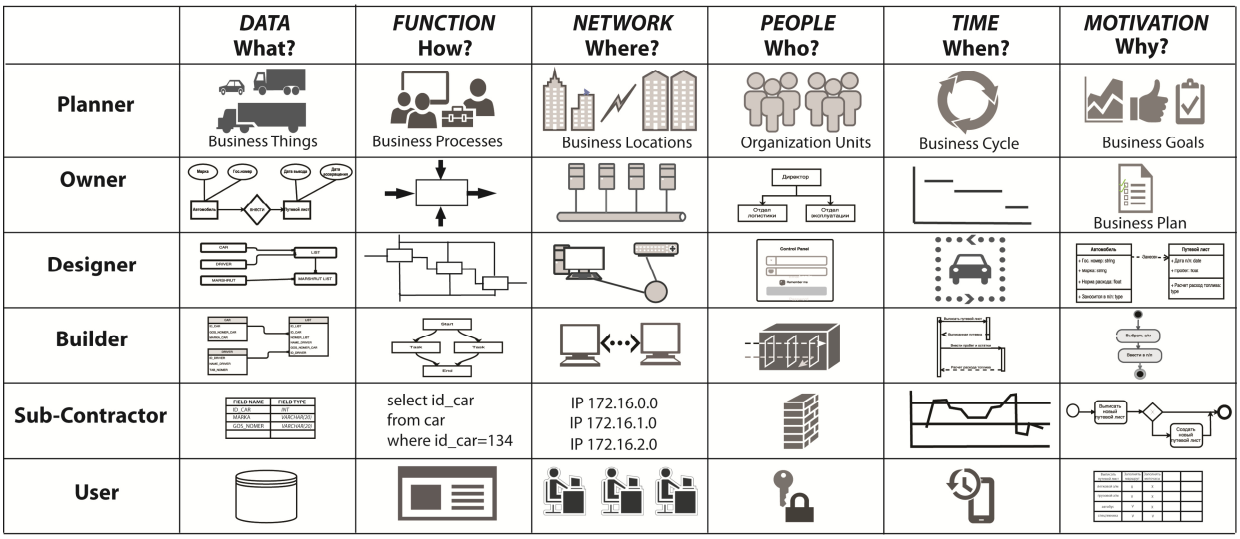

Figure 3 John Zachman's Enterprise Architecture Model

So, the work (Daithankar and Pandit, 2014) focuses on the fact that in general, many transport-logistics companies all over the world, that use various TMS, often cannot provide the reduction of expenses for vehicles with such applications and cannot understand their structure, as well as to provide the improvement of planning efficiency and management decision making and the transparency of business processes. In addition, in many cases the TMS are focused on a specific industry or market and certain business processes to the detriment of others. Thus not fully meeting the needs of customers. Furthermore, a modern trend is the need, in addition to solutions tailored to actual automation of operative business, to offer the advanced business analytics functionality as well as a set of "best practices" and case studies that many TMS producers are not ready to provide in many times. The work of (Sternberg, Hagen, Paganelli and Lumsden, 2010) shows that the close integration of information technologies and logistic processes should be a prerequisite for optimization of the organizational pattern of a transport company and improve the efficiency of management decision-making in accordance with the organization strategy. In its turn, it requires some extra efforts from the TMS developers to improve their IT solutions to meet the needs of customers. Then in practice there has been observed just the low usage of information systems for strategic planning of transport activities, in contrast with operational planning. Besides, it has been noted that the frequent factor of rather short TMS efficiency is the low standardization of workflow processes, not very accessible for online decision-making on data visualization. In addition, the vehicle monitoring facilities are mainly used to identify the position without any additional analysis (Marchet, Perego and Perotti, 2009).

For the preliminary analysis of the architecture of a transportation and logistics enterprise, before implementing TMS, we suggest using the Zachman's Framework (Fig. 3) adjusted to address the tasks of Freight Management, Vehicle Management, Driver Management, as one of the simplest models. It is known that the Zachman's Framework is a 6x6 table, the lines of which contain the opinions of the company's employees at various levels of managerial hierarchy dealing with the following issues: "What?", "How?", "Where?", "Who?", "When?" "Why?". Figuratively, the framework is divided into 6 levels of the managerial hierarchy: the Planner, the Owner, the Designer, the Builder, the Sub-contractor, the User. Consequently,

- **The Planner (business owner)** defines:

1. the number and the type of transportation vehicles as well as other business entities;
2. the key business processes, due to which the company earns money;
3. the location of the company, its divisions;
4. a list of professionals required for conducting business processes;
5. the main business activities and their place in the production cycle of the enterprise;
6. the company's business objectives, critical business factors;

- **The Owner** defines:

1. conversion of business objects of the enterprise and documents of information flow in the essence of a semantic model and the relationship between them (ER-diagram);
2. the high-level model of business processes (IDEF0);
3. the place for conducting each business process;
4. the enterprise's organizational structure;
5. the sequence of actions when conducting a particular process;
6. the enterprise's business plan;

- **The Designer** forms:

1. a logical model based on the semantic model – the list of tables of a prospective TMS and links between them;
2. data flow diagrams (DFD);
3. the topology of the corporate network;
4. the responsibilities of each employee and their responsibilities when conducting a particular process;
5. route network and time schedule;
6. business rules of transport activities;

- **The Builder** forms:

1. primary and foreign keys of tables, conducts the normalization of tables;
2. control-flow charts;
3. the list of hardware and software for network operation;
4. the system of rights and privileges for the employees;
5. the system's operation scenario (use case diagrams);

6. sequence diagram (activity diagram);

- **The Sub-Contrcactor** carries out:

1. the implementation of the designed IS in a particular DBMS (a physical model);
2. program code development;
3. binding of network devices to network addresses;
4. adjustment of user actions monitoring in accordance with granted rights;
5. development of the rules as to user interaction in the information system;
6. development of the mechanism of business rules;

- **The User** obtains:

1. TMS information database;
2. TMS software modules with a user-friendly interface;
3. consolidated information area;
4. TMS access control and user activity monitoring system;
5. operation schedule;
6. decision-making matrix according to business rules.

An architectural approach based on the Zachman framework was taken as the basis for our TMS “Autobase”, designed to manage automobile transport. A key feature of the information system is the ability to register not only cars and trucks, but also construction, airfield, agricultural and other special-purpose machinery, i.e. mixed fleets (Dorofeev, 2012). It becomes particularly true for large industrial, road building, mining enterprises and airports. Normally, these enterprises have a complex multi-level organizational structure in which a vehicle pool serves in-process activities very often kept to various schedules. It should be noted, that the Russian legislation spells out the rules for records management in the activities involving the operation of vehicles and special-purpose machinery, where the main document is a waybill. The following parameters are shown in the waybill: flow, fueling and residual fuel, mileage, hours worked. And the fuel consumption is calculated by the analytical formula (Dorofeev, 2013), which takes into account the actual operating conditions of a vehicle, operation modes, the cargo weight, the use of semi-trailer, the age of a vehicle, etc. This differs from other countries, where at present these parameters are usually obtained from the monitoring system. In Russia it is required to keep a record of paper waybills, and the data from the GPS/GSM-monitoring and RFID-solutions systems should be ancillary to management accounting.

Thus, the time of preventive maintenance, tire wear, work time and driver wages, the customer revenue are calculated from the database of the waybills for each car. In addition, the TMS “Autobase” implements the tasks of keeping records of repairs and reserve vehicles, cost analysis; it presents more than 300 reports, OLAP applications. Thus, the TMS developed by us, solves in a greater degree the issues of Vehicle management than Freight Management. This approach is not quite traditional for the Russian market of transport and logistics management information systems, as nowadays the TMS designed to manage cargo flows have gone mainstream. This is due to a certain gap of both management approaches of the Russian transport sector and the Russian transport legislation with current global trends.

CONCLUSION

This article deals with the application of information technologies in the field of logistics transportation support. The problems arise in the tideway of the processes of "neo-industrialization" and the formation of "intellectual economy", within the framework of which a concept of "smart logistics" is implemented. Possible failures may refer to the incorrect use of special terminology and the difficulties in mutual understanding between potential users and developers of software products. In this respect, the choice of software is often made without due regard for the specific features of the transportation activities and the preliminary determination of the required functional features. Classification of information systems that has been presented in the article makes it possible to reduce error probability and to choose the software that meets the objectives of strategic, tactical and operational management to the maximum extent. Examples seem to indicate that the use of architectural approach when implementing TMS helps to coincide in opinions with managers at different hierarchy levels, to successively build up the functionality of the prospective system and to achieve as close partnership as possible between IT-experts and transportation specialists. The approach that has been presented here is quite simple to be implemented and applied for small, medium-sized, and large companies, with due regard for all business, human, technological and other components of their activities.

Using this approach, we have developed the TMS "Autobase", which is a comprehensive solution for fleet management and is currently implemented in various companies, including at very large-scale production facilities. Our system has actually embodied the best practices of many Russian transport and logistics companies and allows effective managing of the transportation process.

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