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THE ESSENCE OF MAGENTA SCHEDULING SOLUTIONS FOR PRACTICAL APPLICATIONS

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Transportation management systems continue to be in demand; however, the effect of information systems implementation is limited. On the one hand, the software is assigned to provide service functions in order to help business to keep up with competitors. On the other hand, the use of transportation management systems is not a unique competitive advantage that may affect the company's competitive position on the market. The main purpose of Magenta Scheduling Solutions [1] is to provide a significant competitive advantage for transportation companies. We believe that this goal can be achieved through the synergy of three components:

- Modular architecture, which allows to customize the product for the unique requirements of a client;
- Multi-agent technology, which allows to solve the problem of complex transportation network planning;
- Implementation of new business principles of company management and complex systems management.

This article describes a new approach of management that was extracted from the Theory of Constraints (TOC) and implemented in our scheduling solutions.

Right target choice

Each organization strives to achieve a certain goal.

The key step in the design of our solutions was to choose the right target. Most transportation management systems set a goal to optimize resources. Magenta Technology has extensive experience in development and implementation of complex systems aimed to optimize logistics companies' resources. From our experience we have found that resources' optimization allows saving up to 10% of the expenditure, which does not give the company a significant competitive advantage.

It is also said in the Theory of constraints that it is necessary to shift the focus from resources optimization to achieving the "true" purpose for any company – the profit. For this reason, we set two goals when developing Scheduling Solutions: to optimize resources usage and to provide a tool to increase profits.

Sources of profit

It sounds surprising but we claim that increasing dynamics and uncertainty of the company's external environment contains the key opportunities to raise company's profits.

The external environment of a logistics company is extremely unpredictable. Suppliers, who can no longer predict the volume of orders, as well as logistics chain units involved in delivery, can be sources of uncertainty. Most companies understand the problem but consider increasing the reserve capacity, which can be activated in



case of unforeseen events, as the only way to solve the problem. Consequently, idle resources fleet rises, fleet utilization falls and staff increases.

What has been implemented in our solutions is the set of practices that allow business to respond quickly to external changes and take advantage of working in complex external environment. The implementation of these practices is aimed at changing the planning process without increasing resource capacity.

The fundamental difference between Magenta Scheduling Solutions and the traditional approach of planning is the following. Traditionally the actions and opportunities that are presented in the planning of each order are determined by a single predefined formal process. Magenta Solutions are based on adaptive scheduling process that goes through all the stages of order processing. This allows decision making that is not based on predefined rules but on the current situation and the particular order.

Some approaches implemented in Magenta Scheduling Solutions:

- Early planning. When a new order is received, pre-planning phase runs. This allows the system to make a decision on acceptance or rejection of the order. This decision is based on the current state of transportation network, and the influence of the order on transportation network KPIs;
- Continuous planning. Planning for each order starts immediately as soon as an operator confirms the order and it appears in the system. This reduces scheduling time and gives an opportunity to schedule delayed orders
- Backhauls planning & Event management. The events that occur at the stage of execution are handling in real-time mode. It is also possible to receive new orders at this stage in case it is KPI beneficial and does not violate existing restrictions such as service level, driver working hours limits, etc.

Reference

1. New Magenta Papers: Scientific papers, Volume 2, Ed. A. Ivaschenko. – Yelm, WA, USA: Science Book Publishing House, 2013. – 54 p.