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▸ Inventor Soft - Solutions for effective inventory management

Inventor Soft is a Russian developer of automated inventory control systems.

We offer a method of increasing enterprise profitability through improved inventory management with Inventor Soft solutions.

The re-order point (ROP) and re-order quantity (ROQ) are determined for each SKU in Inventor System. This is done by solving an optimization problem that takes into account all the financial parameters of the business such as selling and purchasing price, accounts payables and receivables, borrowing costs, shipping costs and customs, the cost of warehouse operations and lease, cost of supply organization, etc.

The criterion of optimization in Inventor System is the "company's net profit". All the existing features of the business and resource constraints are taken into account for optimization problem solution. Among the available resource constraints are: the warehouse capacity, the volume of credit line, the throughput of the warehouse acceptance.

Using the optimization Inventor System answers the following questions:
1. What is the optimal inventory level and service level for each SKU?
2. What is the optimal turnover for each SKU?
3. What are the optimal planned costs of the storage, out of stock costs and replenishment costs?
4. What is the optimal planned profit (for each SKU, for cluster of SKUs, etc.)?

Inventor System is applicable to all SKU regardless of the SKU ABC-XYZ-classification. Inventor System allows you to manage assortment policy on the basis of the profitability of each SKU.

Inventor System is not only instrumental support of the purchase process, but also a means of objective control of the inventory KPI.

We are ready to make a presentation for you and your colleagues with the justification of Inventor Soft approaches to effective inventory management.

We provide links to the leaders and specialists of the companies in which the Inventor Soft products are installed. We are also ready to help in organizing demonstration visits to the enterprises in order to show the practical Inventor System work of tuners, operators, buyers and assortment specialists, as well as managers at various levels.

Sincerely, Aleksey Potashev, potashev@inventorsoft.ru

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P.S.: More information about Inventor Soft solutions is on the next page…

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Inventor System. The functionality

Probabilistic demand model

1. Verification and "scrubbing" of source data
2. Filtration model construction
3. Demand emissions filtration
4. Specific transactions filtration
5. Out-of-stocks filtration
6. Demand recovery

Lead time model

1. Deterministic lead time model
2. Probabilistic lead time model
3. Specific lead time models for each supplier
4. Specific lead time models for each SKU
5. Back-order lead time models

Financial modeling

1. Financial model building
2. Budgeting and financial planning
3. Activity Based Costing
4. Separation of costs for each SKU
5. Calculation of profitability for each SKU
6. Calculation of financial parameters of the optimization model

Demand forecasting

1. The choice of the averaging method.
2. Random component filtration
3. Isolation of a nonstationary medium
4. Spectral analysis
5. Seasonal and trends analysis for each SKU
6. Seasonal and trends analysis for SKU clusters
7. Auto-selection of the best forecasting models and forecasting parameters
8. Ex-post evaluation of the forecast

Inventory Optimization

1. Optimization model construction
2. Calculation of the optimal threshold strategy
3. Simulation modeling
4. Retrospective analysis
5. Identify the reserves of profit

Resource constraints

1. Warehouse capacity constraints
2. Financial stock constraints
3. Borrowed funds limitations
4. Throughput of the warehouse acceptance

Current stock needs and operational purchasing (SCM)

1. Automated rating and selection of suppliers
2. Automated rating and selection of delivery types
3. Automated rating and selection of carriers
4. Calculation of order, taking into account one-time discounts or projected decrease (increase) prices.
5. The calculation of the optimal complement to the minimum order quantity.
6. The calculation of the optimal complement to the volume of the container (truck).
7. The calculation of the optimal order in the local limits on the amount of purchase.
8. The calculation of the optimal order to get an annual bonus.
9. Accounting for the special price, depending on the multiplicity of purchase (multiple boxes, multiple pallets, etc.)

▶ Effect of Inventor Soft solution

The main effect of the Inventor System implementation is achieved by reducing the out-of-stocks, reducing storage costs and optimizing the frequency of replenishment. It also frees up resources of purchasing department and warehouse acceptance by reducing the replenishments.

Inventor System allows you to manage assortment policy on the basis of the profitability of each SKU. Inventor System is not only instrumental support of the purchase process, but also a means of objective control of the inventory KPI. Thanks to Inventor System the purchasing process becomes absolutely transparent and objective. Also Inventor System allows reducing the dependence on human factors.

Use of Inventor System allows you to:

- **In sales**

1. Significantly increase the Company's price list.
2. To work successfully with the SKUs of the rare demand.
3. Significantly improve the service level.
4. Increase customer loyalty through a high percentage of availability.
5. Make a KPI control more convenient.
6. Quantitatively justify the policy of discounts and payment delays.

- **In finance**

1. Release the excess inventory in the frozen funds.
2. Reduce the size of the debt or equity in working capital.
3. Plan for profitability, turnover and frozen assets, and other parameters.
4. Plan the need for borrowing and payables.

- **In logistics**

1. To improve the throughput and the rhythm of the warehouse.
2. Plan for the frequency of replenishment and load acceptance.
3. Plan utilization of warehouse space and storage areas.
4. Plan for transportation costs, costs of replenishment and storage.
5. Detect overstocks for each SKU.

- **In marketing**

1. Automate commercially attractive extension of the Company's price list.
2. Determine the cost-optimal service level for each SKU in the price list.
3. Calculate the direct and indirect effects of out-of-stocks for the sale of the Company.
4. To simplify the economic analysis of special events and discounts.
5. To conduct the pricing system analysis.
6. Calculate the commercial implications of a loss (low-profit) «beacon»-products.

- **In purchasing**

1. Make purchasing more transparent and minimize the negative impact of human factors.
2. Significantly improve the quality and efficiency through the use of the optimal purchase strategy.
3. Increase employee productivity by automating routine processes.
4. Free up staff time for more solid to work with suppliers.
5. Simplify the training of new employees.
6. Simplify monitoring and get an objective assessment of employees.
7. To simplify the analysis of KPI reporting for the formation and development of motivational schemes.

8. Provide employees with modern tools with an intuitive and user-friendly interface.

▶ Inventor Soft. The difference from our competitors

1. **The objective function.** The Inventor System has a well defined objective function - "Profit."

2. **Completeness of the financial model.** Because the Inventor System operates on the "intersection" of finance and procurement, the system constructs a full financial business model for each SKU that takes into account the following parameters of activities: buying and selling prices, fees and charges, deferred payment, accounts payable, accounts receivable, lead times, transport costs (LC), the cost of borrowed funds, the cost of rent, the cost of warehouse and office operations, the costs of organizing supplies and more.

3. **The use of actual probabilistic structure of demand.** The system does not set hypotheses about the type of the probability distribution of demand, and uses actual probability distributions. Inventor System can be applied to all items regardless of the ABC-XYZ-classification, including the rare-demand goods.

4. **Account of resource constraints.** The system solves the optimization problem in any resource constraints and their combinations such as: capacity of the warehouse, the amount of funds in the commodity, the amount of borrowed funds, etc.

▶ Inventor.Supply - the tasks of daily purchasing

Inventor.Supply solves the basic problem of the daily supply. Optimal combination of ROP and ROQ is determined with the main core of the Inventor System. All the existing resource constraints and features of the business are taken into account when solving complex optimization problems.

Often, strict adherence to the optimal parameters (ROP and ROQ) is impossible in view of additional external restrictions imposed by the supplier, transportation companies and other contractors, but also because of unpredictable realities of the business. Examples of such actions are rounds for transport packaging, minimum vendor party, limiting the volume of the container or truck, special conditions on the selected delivery, the expected increase or decrease in prices, the need of order for getting annual bonus, etc.

All these effects lead to the fact that the company is forced to deviate from standard inventory control strategy and to bear an additional loss. The main essence of the problem of delivery is to minimize loss when you deviate from the ideal "trajectory" of the purchase (the deviation from the optimal ROP and ROQ).

The solution of local problems can not be given without finding the optimal inventory management strategy in Inventor System - without a global optimal solution of the purchase.

Inventor. Supply solves the following tasks:

1. Automated rating and selection of suppliers
2. Automated rating and selection of delivery types
3. Automated rating and selection of carriers
4. Calculation of order, taking into account one-time discounts or projected decrease (increase) prices.
5. The calculation of the optimal complement to the minimum order quantity.
6. The calculation of the optimal complement to the volume of the container (truck).
7. The calculation of the optimal order in the local limits on the amount of purchase.
8. The calculation of the optimal order to get an annual bonus.
9. Accounting for the special price, depending on the multiplicity of purchase (multiple boxes, multiple pallets, etc.)

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▶ Inventor.Fresh - the effective inventory management for perishable goods

System **Inventor.Fresh** - a system for automated inventory management of stocks of goods with short "best-before" periods, so called "perishables". **Inventor.Fresh** determines the ROP and ROQ for each "perishables" SKU.

The basic optimization principle in **Inventor.Fresh** system is the same for all products by **Inventor Soft:** the calculation of commercial profit in the arbitrary nature of demand.

As an objective function of optimization in **Inventor.Fresh,** as in **Inventor System,** using the total profit received by the company.

Unlike other products of **Inventor Soft,** along with the costs of the out-of-stocks, storage and replenishment, **Inventor.Fresh** system additionally takes into account the disposal costs of expired goods. For products with short shelf-life the management options are critically dependent on the purchase of the day of the week. Therefore, special attention in the **Inventor.Fresh** is paid to the inter-variability of demand.

▶ Inventor.IMO – the effective inventory management for network and echelon systems

1. Global SCM-optimization in vertically integrated network. Inventory management at each node of the network system.
2. Optimal redistribution of stock between distribution center and network nodes.
3. Assortment problem solution. The optimal sku-mix of storage determining for each point in the network.
4. The distribution center demand calculation based on the demand and balances on each node of a vertically integrated network ("DC damping demand").
5. The deficit goods distribution from the central warehouse to branch (regional) warehouses and retail outlets.

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