METHOD AND SYSTEM FOR AUTOMATING INVENTORY MANAGMENT IN A SUPPLY CHAIN

FIELD OF THE INVENTION

The present invention relates to a method of calculating and comparing the levels of inventory to a stored set of parameters, triggering shipment and/or call for shipment/orders, automatic ordering of specific inventory and calculation of freight, shipment documentation processing & transportation costs based on the said order being triggered.

It is no longer simply a efficient supply chain that extrudes cost and operational advantages for manufacturers, suppliers and just about any business organization that relies directly or indirectly on such supply chain lines.

But rather, the introduction of automated processes that are independent of human intervention will add another dimension to the supply chain's ability to reap efficiency benefits.

For example, shipment documentation & processing is now a manual (although there are already efforts to semi-automate them) task, dependent on the actions of human operators (such as to approve of the need to order from suppliers more inventory).

In many instances, such processes can actually be fully automatic, so long as such processes meet several rules based on the level of inventory and its forecast of balances.

In such circumstances, automated processes can also provide a crucial link to existing supply chain software, processing systems, third party shipment information servers etc.

If ordering for more inventory based on specific rules is made automatic, the ordering can also provide a basis for shipment documentation to be simultaneously via electronic means, thereby reducing the latent time between order being trigger to a supplier and order-related documentation being prepared

and ready for freight & transportation approval, cost estimate etc.

SUMMARY OF THE INVENTION

It is the object of the present invention for a method of calculating and comparing the levels of inventory to a stored set of parameters, triggering shipment and/or call for shipment/orders, automatic ordering of specific inventory and calculation of freight, shipment documentation processing & transportation costs based on the said order being triggered.

The invention consist of some basic components as follows:

1. Inventory tracking and forecasting module
2. Multiple location visibility of inventory upon trigger/rule activation
3. Electronic ordering of inventory and automatic documentation processing and cost of transportation/freight calculation

Inventory tracking and forecasting module

The invention has a rule-based system whereby inventory levels are classified according to the following classes;

Minimum stock level (MSL)
Critical stock level (CSL)
Current stock committed by single supplier (CSGL)
Multiple supplier commitment level (MSCL)

In the first embodiment of the present invention, the system will accept electronic input of data relating to the mentioned forecast data (Minimum, critical stock levels & multiple supplier commitment level), and generate a result or output data based on the following manner;

CSGL – MSL = CSL

Where CSL (1) + CSL (2) + CSL (3) = MSCL

Preferably, each CSL derived will be added to other values that are obtained from other suppliers within a pre-determined database of suppliers to a single or group of manufacturers.

The said system whereby inventory levels are calculated can be in a XML formatted document that is then stored on a suitable server that is capable of allowing a registered computer account to view the consolidated or entire XML document via a electronic communications network such as the Internet.

This is preferably secured with a connection between the computer account and the said server via a SSL encrypted communications link via the Internet.

Multiple location visibility of inventory upon trigger/rule activation

The present invention can, upon several conditions that are stored onto a computer server (via a electronic database), compare and calculate the output values obtained, and generate a electronic signal to cause a suitable software program to display the contents of the values derived from the data inputs.

Electronic ordering of inventory and automatic documentation processing and cost of transportation/freight calculation

The present invention can allow for the generated output values to immediately look for another database containing detailed specifications on each physical component of the inventory concerned.

Upon the collection of detailed specifications of each inventory component that corresponds to whatever short-fall and/or order requirement that is the result of the said value calculation, the present invention can make use of the said specifications to calculate the cost and rates of transportation and other related logistics and handling charges needed to order and transport the said inventory from a named seller to a designated collection hub.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the invention may be more clearly ascertained, preferred embodiments will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a schematic view of the entire process whereby a forecast of inventory levels required by a customer will be automatically fed into an electronic system which will in turn calculate the level of inventory available in all registered storage facilities, and compute any excess or shortfall levels for escalation to another connected electronic system for further action.

Figure 2 is a diagram showing how the electronic system can determine the level of inventory that should be ordered from suppliers connected to the said system under the condition whereby the forecasted level of inventory required by the customer is assumed greater than the critical and/or minimum level of inventory.

Figure 3 is a systemic diagram showing how the said electronic system will trigger an electronic order from any number of registered suppliers more inventory composing of any number of individual items or components automatically upon the calculation of a shortfall of inventory that is required.

Figure 4 is a systemic diagram illustrating the method and process whereby the automatic ordering action by the said system will cause any number of connected computer devices to calculate the estimated cost of shipping a specific number or level of inventory from any number of registered suppliers to any number of storage locations that will subsequently make available the said inventory to the customer based on the system's ordering specifications.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

According to a first embodiment of the present invention, there is provided a method of calculating and comparing the levels of inventory to a stored set of parameters, triggering shipment and/or call for shipment/orders, automatic

ordering of specific inventory and calculation of freight, shipment documentation processing & transportation costs based on the said order being triggered.

The implementation of the first embodiment is via a series of apparatus that includes the following;

A master remote server comprising of a database, operating system & software application capable of transmitting and receiving TCP/IP data (such as an Internet browser);

A server registry that contains another separate database detailing information such as freight rates published by another third party, shipping and transportation data etc.;

A inventory registry that contains another separate database detailing information relating to inventory levels and/or availability as electronically published by any registered user or other remote server that is connected to the said inventory registry;

With reference to Figure 1, and according to the second preferred embodiment of the present invention, a party will route (01) XML data (or data in other formats such as EDI, text file, HTML, SQL, DHTML etc.) to a master remote server that will perform authentication with both server registry and inventory registry prior to submitting said XML data to either registry for further processing.

The server registry will perform a look-up from at least 1 database containing (02) a 13 week rolling forecast data, and perform a pre-determined set of operations and/or parameters as stored in the said server and/or registry.

The said registry will subtract the (02) 13 week forecast data from a (03) critical stock level data that is stored onto either the said registry or another database residing within another inventory registry and/or remote server.

The subtraction will yield both the (04) receiving status buffer data and (05) automatic stock position data, of which both will determine the actions the present invention will perform onto another series of remote servers connected to

any number of registered users.

According to the third preferred embodiment of the present invention, the master remote server may make reference to data parameters stored on the said registry server (by matching database data to received XML data for processing using database operations such as SQL functions including but not limited to search, add, subtract, compare etc.).

In this preferred embodiment, the master remote server may make use of information received to further process using stored database parameters to generate a set of action messages for implementation by the same master remote server or any connected information system.

The master remote server may also make use of secondary data from any connected database containing information such as shipping information, freight rates, inventory forecast data etc. to calculate and yield a final (07) consumption status report of the supply chain under monitoring by the present invention.

According to the fourth preferred embodiment of the present invention, the (07) consumption report data generated by the said master remote server will be used to further process by sending electronic purchasing information to a third party such as inventory suppliers and/or customers (consignees).

With reference to Figure 2, and according to the third preferred embodiment of the present invention, the master remote server may cause any number of connected servers to send and receive data for execution with another third party, such as triggering inventory ordering or generation of stoppage of additional orders directly to a pre-determined number of suppliers adapted to receive said orders.

Using (A1) a 13 week forecast information of the expected quantity and details of inventory material required by a single or group of customers connected to the operator of the present invention, the master remote server will also compare the total forecast data to (A2) critical stock level and (A3) receiving status buffer to arrive at a order quantity that would be suitable for triggering to said suppliers.

The master remote server may build a database containing the following data for further processing in order to perform and implement the third embodiment of the present invention;

A master remote server;
Main server memory;
At least 1 permanent data storage device;

With reference to Figure 2, said server shall load (A4) data representing level of forecast inventory required according to stored parameters that will determine the said level according to further data that may be provided by said server or any number of separate processing systems.

The (A4) data may be compared against the minimum level of inventory required (MSL), critical stock level (CSL) and current stock committed by single supplier (CSGL) data.

With reference to Figure 2, the secondary data (A5, A6 and A7) are matched against (A4) forecast inventory data, and resulting information (whether there is excessive stock levels or shortage due to insufficient buffer stock) will determine the triggering actions to be transmitted by the master remote server to either a third party processing system or another server connected to the said master server for further electronic processing including but not limited to inventory purchaser orders, inventory stoppage instructions etc.

With reference to Figure 3, the level of (B4) buffer stock, combined with the minimum stock level (B2) is inadequate to meet the total level of forecast inventory required (B1), thereby causing the said master remote server to relay or trigger ordering of a calculated level of inventory (materials or parts) from a pre-determined group of inventory suppliers.

With reference to Figure 4, and according to the fourth preferred embodiment of the present invention, the master remote server will determine the level of buffer inventory to order (10), thereby triggering a order message from the said server to a ordering module (20), causing ordering module (20) to match each said order message (10) to each order or part specification number from a

specifications database (30), further allowing said database to consolidate all part numbers and/or inventory specification/material number/ID to be included into a look-up file (40).

The (40) look-up file will composed of message data including;

File header information
Date and file creation data
File owner

File message DTD
Message tag and/or XML tags

Inventory specification message
Inventory specification tag

File end

The present invention will also make use of the (40) look-up file to generate a separate (50) shipping, transportation and freight transcript file that will be used to calculate and provide a scope of expenses that is required for the ordering of the said inventory.

Said transcript (50) will cause master remote server to generate a file containing shipping rates and may apply additional rates to further incorporate said additional rates with said shipping rates into another document for transmission to a third party.

The present invention will therefore be capable of automatically operating the entire supply chain ordering, matching, inventory tracking, transport, storage, freight and shipping events by means of accepting suitable data from any registered user or processing system connected to the said master remote server.

Modifications within the spirit and scope of the invention may readily be effected by persons skilled in the art. It is to be understood, therefore, that this invention is not limited to the particular embodiments described by way of example hereinabove.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A method and system for calculating and comparing the levels of inventory to a stored set of parameters, triggering shipment and/or call for shipment/orders, automatic ordering of specific inventory and calculation of freight, shipment documentation processing & transportation costs based on the said order being triggered.

2. A method as claimed in claim 1, including allowing the present invention to implement calculation, comparing of received data to a stored set of parameters, yielding suitable ordering data in the form of a generated electronic file.

3. A method and system for accepting electronic data from any number of third party processing systems into a master remote server, having said server to further process said data into a data file containing ordering instructions and secondary transaction data including details and specifications of inventory, material and/or part number required and/or associated with said order.

4. A method and system for implementing a master remote server processing environment capable of accepting additional data generated from at least 1 source data connected to said server, sending said data for further processing, allowing said processing to include at least 1 database look-up and match routine to yield at least 1 electronic file containing specifications relating to inventory required for a electronic order to be fulfilled by a supplier of the said inventory.

5. A method and system for allowing at least 1 operator of a remote server to implement an electronic procurement and inventory management system, extending said system to allow suppliers, customers and registered users to input suitable data into said system, allow said system to compare, match and process said data according to stored parameters and business rules, generating subsequent electronic messages including inventory ordering instructions, inventory stoppage instructions, inventory consumption status, instructions relating to inventory pricing, shipping, transportation & freight rates, inventory ownership data, inventory financing and ownership details, inventory securitization, ownership and pricing data.

6. A method as claimed in claims 3, 4 and 5, including allowing individual

inventory data including inventory part and/or material details, shipping related details including weight, dimensions etc. to be consolidated into at least 1 file, sending said file for processing by a remote processing system to yield pricing information relating to the inventory consolidated and ordered by said master remote server according to generated triggering information due to data input and data parameters stored on any number of connected processors to the said master remote server.

7. A method and system as claimed in all the preceding claims, including allow said master remote system to extend capabilities via any electronic communications network via TCP/IP and/or any other electronic file and communications format such as GPRS, EDI, XML, SQL.