Solvo's WMS is an application suite designed to optimize warehouse operations. Solvo's solutions manage the entire warehouse operation cycle in a real time mode.

The System controls warehouse personnel as well as material handling equipment, and operatively generates tasks for users based on a current situation.

Solvo.WMS is a leading-edge system capable of generating recommendations on the optimization of the technological operations in a warehouse as well as manage personnel and material handling equipment in order to achieve highest performance.

The system eliminates the need for paper documentation. All documentation is generated, transmitted, processed and optimized in the system and transformed into precise tasks sent individually to operators' RF terminal screens. Every operation is confirmed and logged into the system by the operator through either scanning a bar code, or entering data via the RF terminal keyboard. Therefore, information on product quantity and allocation in the warehouse is always accurate and up-to-date, so any mistakes or exceptions can be noted and immediately corrected.

The objective of Solvo.WMS is automation of the entire warehouse management cycle - from the point that goods are received at the warehouse up to the delivery of customer's orders. The scope of implementations can vary from basic warehouse control (management system based on paper task-lists) to a complex, full-scale warehouse management system in real time mode using barcode, RF data transmission and material handling equipment that positions technologies and other automation means depending on the customers' needs.

The Warehouse Management System optimizes the putaway and storage of inventory through dividing the warehouse into designated areas and utilizing space in the most efficient way.

The ability to conduct cycle counting during the regular workday reduces or eliminates the need to shut down operations to conduct a physical inventory count. Solvo.WMS allows customers to increase quantitative and stowage data accuracy to 99.9% while reducing the duration of receiving and shipping operations by 2-3 times.

Adaptability is one of the most significant features of Solvo WMS. The system can be configured in order to meet the specific operational and business requirements of the customer. The system is integrated with RF and barcode equipment, electronic scales, printers and scanners.

During the development of the software, particular attention was focused on integration issues. The system integrates with both Russian corporate system and western systems.

Functions

Solvo.WMS includes basic as well as additional functionality, depending on the business technologies used in the warehouse and the type of material handling equipment utilized.

Functions

Optimization principles

- Automatic identification of loads/identity control
- Warehouse zoning
- Control operations in real time mode
- Workflow optimization
- Remote personnel management
- Authority levels and privileges control
- Labor standards
- Keep record of any event and action
- Material handling equipment control
- Routing optimization and load tracking and tracing
- Order staging by optimal vehicle routs (task interleaving)
- Graphical representation of the warehouse layout
- System configuration
- Report generation
- System of help
- Support of RF and bar code equipment
- Integration with ERP system
- Statistics exchange
- OLAP (online analytical processing)

Inbound management

- Advanced notification
- Receive the nonstandard, unpacked product and returns
- Cross-docking

Operations on product in stock

- Automation and goods stocking and warehouse operations
- Putaway and inventory storage rules
- Inventory allocation priority definition
- Inventory control
- Product age and expiration date control
- Load status control
- Load reallocation
- Sorting
- QC & quarantine
- Inventory management
- Inventory management by FIFO or by expiration date/shelf life
- Inventory by various units of measure
- Warehouse balance management/optimal safety stock level
- Stock inventory
- Physical counting
- Cycle counting
- Writing-off scrap and rejects
- Inventory update and elimination of load lost

Order processing

- Order planning
- Goods reservation/backup
- Picking
- Staging
- Reserving for special orders
- Kitting/assembling
- Wave processing
- Shipment
- Direct loading regardless of order continuity
- Prior consolidated orders shipment
  - forward picking and replenishment
  - order re-planning
- Order cancellation and processing changes
- Handling exceptional situations
- Screening

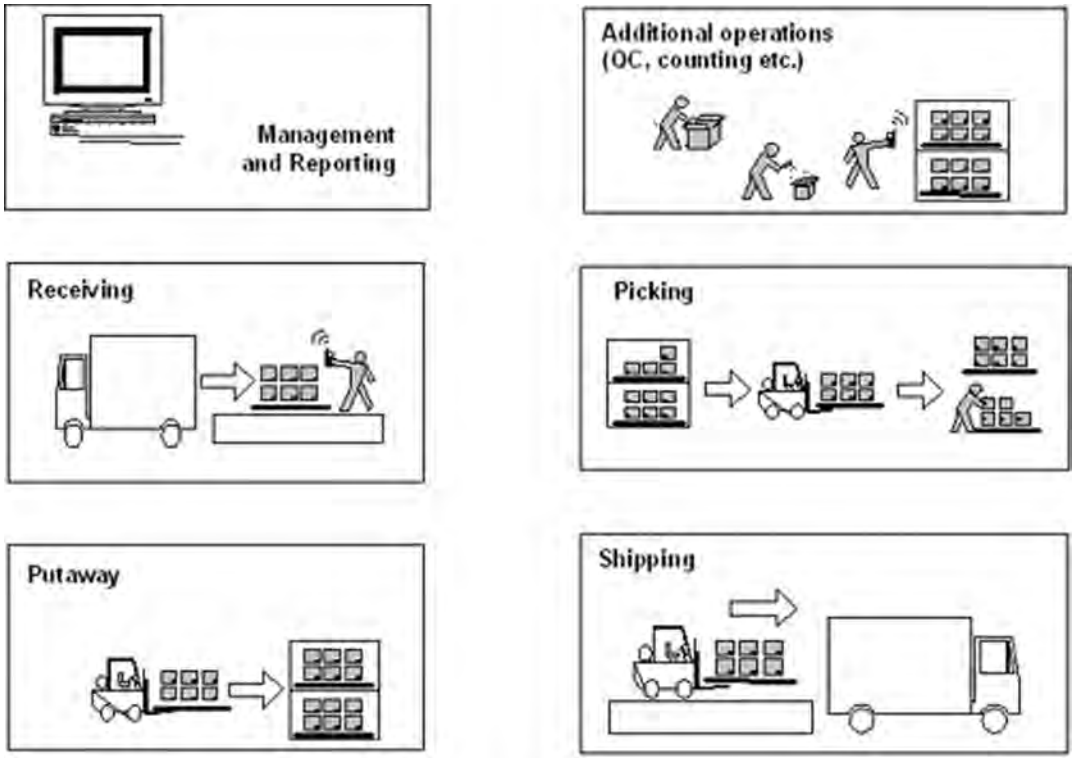
Personnel management

- Labor productivity analysis
- Reports on every warehouse operation during certain period of time
- Keep record on every fulfilled task

More available functionality

- Virtual warehouses (stocks) support
- Preparation of the warehouse for putaway
- Receiving extra ware
- Receiving measuring product by parts
- Weight control
- Certification control
- Control during process of manufacturing
  - Random control
  - Single control
- Integration with the product manufacturing processes
- ISM (instock manufacturing)
- Integration with conveyor (interfaces to control conveyor diverts and other MHE requirements)
- Goods compatibility control
- Handling loads of extreme dimensions
- Loads labeling
- Palletizer and Applicator handling
- Vehicle loading optimization
- Re-loading

Operation Technology



The warehouse is divided into specified areas according to technological operations in order to automate inbound, outbound and in-stock operations. The system enables the client to create a series of work algorithms to assign personnel in the most efficient manner, to accomplish warehousing and inventory movement responsibilities.
Solvo.WMS controls task fulfillment through the scanning of a bar code. Storage locations/storage units, loads and vehicles are all marked with bar codes. The system supports any bar code type, and labels with internal bar codes can be printed out.
Material handling equipment and operators are equipped with data collection devices - RF handheld scanners and vehicle mounted terminals that wirelessly transmit data to the system.
The system considers many storage condition requirements while assigning product to putaway. Temperature and humidity modes, product age and expiration date, vendors and suppliers, compatibility rules and many other parameters are considered by Solvo WMS.
Through following designated putaway rules, Solvo.WMS automatically chooses the appropriate storage place for loads that are received and generates tasks for operators to move the loads. The tasks are sent to the specific operator's RF terminal screen according to the sequential elementary commands. The operator confirms that the task was completed by scanning a bar code. The system controls the operator's actions to eliminate the misplacement of loads as well as errors during order picking.
When generating tasks, Solvo.WMS considers the most optimal vehicle routs and subsequently reduces empty runs. Solvo.WMS then optimally assigns the appropriate vehicle to the task.
The system controls the movement of every employee and is able to eliminate errors in order picking, inventory putaway as well as the periodic movement of goods in the warehouse.
Information on load allocation, availability of products, personnel activity and completed tasks are continuously updated in the system. A two-dimensional graphic representation of the warehouse layout is available at the warehouse manager response.
The system generates reports on current warehouse status or fulfilled operations. The reports can be printed out or sent to the client's ERP. The customer can choose the type and number of reports during the requirement specification and development stage.

Technologies (Operation cycle)

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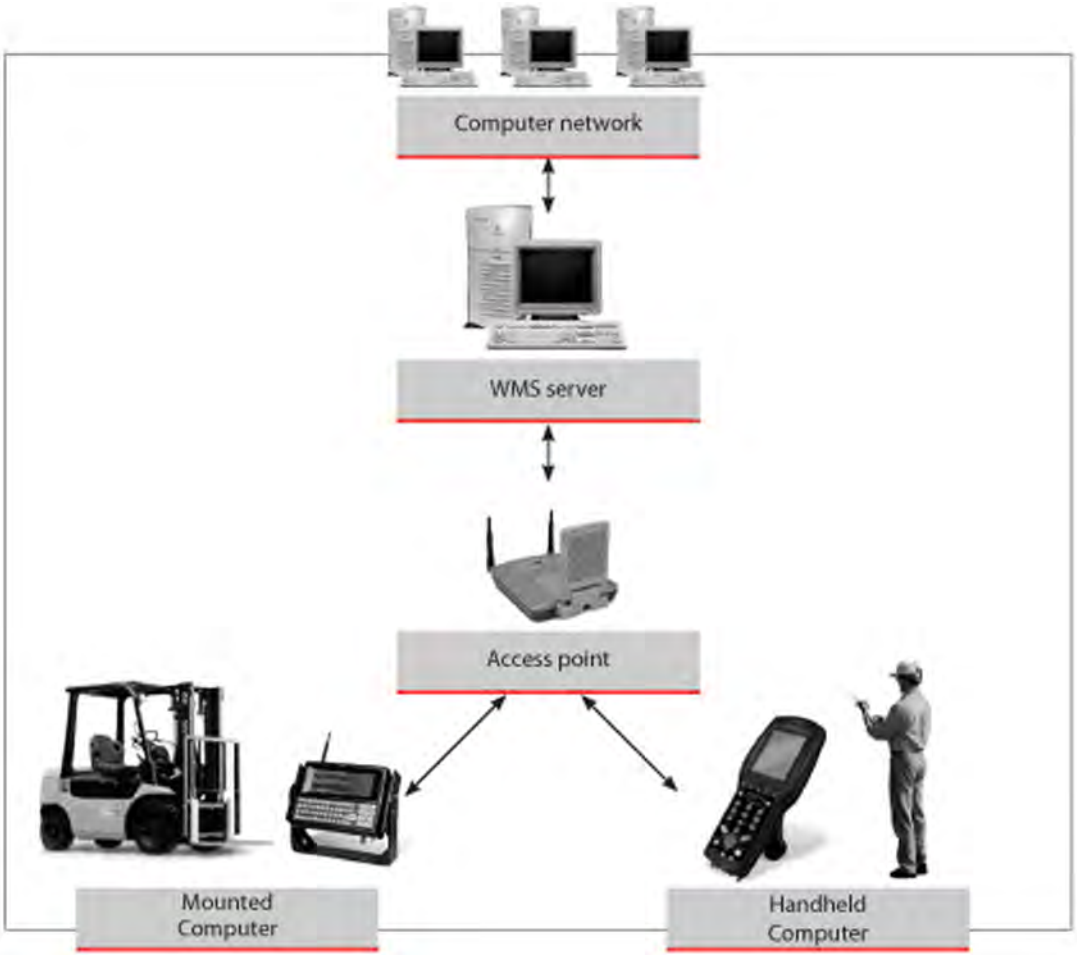

Solvo.WMS is based on automatic identification technologies (such as barcoding and others), the principle of mapping warehouse locations and assigning unique storage locations to inventory and remote personnel management.

Every warehouse operator is equipped with an RF terminal - a mobile computer which can either be handheld or mounted on a forktruck. Tasks are automatically generated in Solvo.WMS and are sent to RF terminal screens as a set of elementary sequential commands. Commands/directions can also be set and sent by the warehouse manager, who may control the task assignment process.

The operator confirms task fulfillment by scanning a label barcode at the processed location. If RFID technology is deployed, task fulfillment is confirmed by scanning RF mark.

Using the Solvo.WMS your warehouse will be functioning as an integrated and well-controlled complex, bringing together all the resources and capable of interaction with other elements of the logistics chain.

Solvo.WMS will be a key component of the complex.

Technologies

Data base

The system can be integrated with the following DBMS:
- Oracle
- Sybase
- MS SQL
- PostgresSQL
- IBM DB2

Integration with any of the above listed DBMS allows customers the possibility to reduce total ownership costs and use customary DBMS.

Operational System

The system is based on Unix (Linux) platform, while clients applications are run under Windows и Unix.

RF equipment

Solvo Ltd. offers the most reliable up-to-date RF equipment produced by American companies LXE and PSC, who have 30 years experience in solutions development and manufacturing of the devices based on wireless technologies. LXE and PSC equipment deployment enable you to increase performance and improve logistics management.

Barcode technology

A label with a barcode is applied to loads. Depending on the standard, the barcode can encode any information such as product profile, expiration date and others. It is used for unique identification of the loads. A barcode is a series of varying width vertical lines (called bars) and spaces. Barcode technology encompasses the symbologies that encode data to be optically read, the printing technologies that produce machine-readable symbols, the scanners and decoders that capture visual images of the symbologies and convert them to computer-compatible digital data, and the verifiers that validate symbol quality. Coupled with the improvements in data accuracy that accompanies the adoption of bar code technology over keyboard data entry, bar code systems are critical elements in conducting business in today's global economy. Tracking physical assets, inventory, and personnel with automated systems can save money and improve operations.

RFID

RFID systems work very much the same way as barcode systems, except that a clear line-of-sight between the scanner and the tag is not necessary, because product information is read by a wireless reader instead of scanning a label. The information that is transmitted via radio signals is able to travel through most materials. RF tag, RFID scanner and a decoding device (computer) are the attributes of RFID. RFID allow for non-contact reading and are effective in manufacturing and other hostile environments where bar code labels could not survive. The technology is able to track remote and moving objects and to encode more information in comparison to usual bar code label.

Wireless networking and mobile computers are an integral part of a bar code or RFID data collection systems.

Integration

Integration methodology with ERP systems was developed during numerous project implementations. Solvo.WMS successfully integrated with SAP R/3, Axapta, 1C, Monolit, Glaktica and others.

Economy efficiency

Customer Relations Management

- Eliminate non-standard order shipment, create reports of extra shipment or order return
- Reduce expired product write off costs
- Increase quality of services.

Logistics

- Optimize warehouse inventory flow
- Increase quantitative and stowage data accuracy to 99.9%
- Complete control over inventory flow
- Warehouse space optimization (increase warehouse utilization by 5 to 25%)
- Increase inventory through-put and turns
- Employ best put away strategies.

Maintenance costs

- Material handling equipment rational utilization
- Equipment deployment optimization
- Reduce transportation costs (save fuel and electricity, reduce maintenance costs and extend the life of material handling equipment).

Personnel management

- Increase employee efficiency
- Eliminate employee errors and increase accountability
- Reduce time required for warehouse processes
- Enhance labor productivity by and average of 20% - 30%

Management accounting and document circulation

- Speed up data interchange
- Data access in real time mode
- Reduce paper work
- Inventory control without interrupting warehouse operation
- Integration with corporate systems

Advantages of Solvo solutions

•Years of experience in warehouse management technologies
● Leading-edge world-wide business algorithms implementation
● Individual approach
● Use the most known development tools and operational systems
● Best world-wide business algorithms implementation
● High performance and elevated system operability
● Advanced functionality
● Integration with various processes and systems through using a developed integration methodology
● Proven implementation technology and training methodology
● Unified open standards
● Unified architecture standard
● Client-server architecture
● Cross-platforming
● Modules structure
● Scalability
● Openness