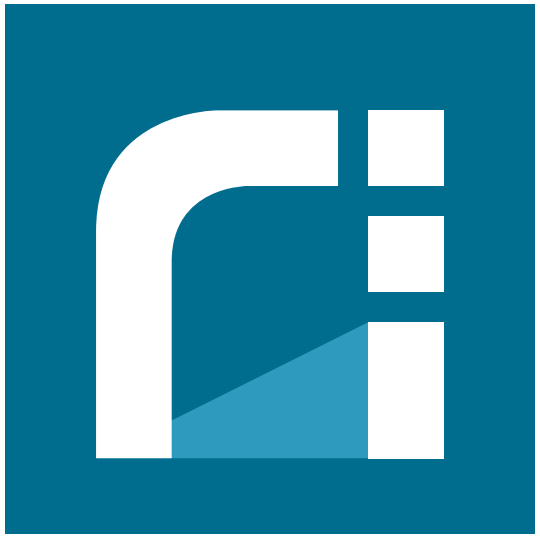
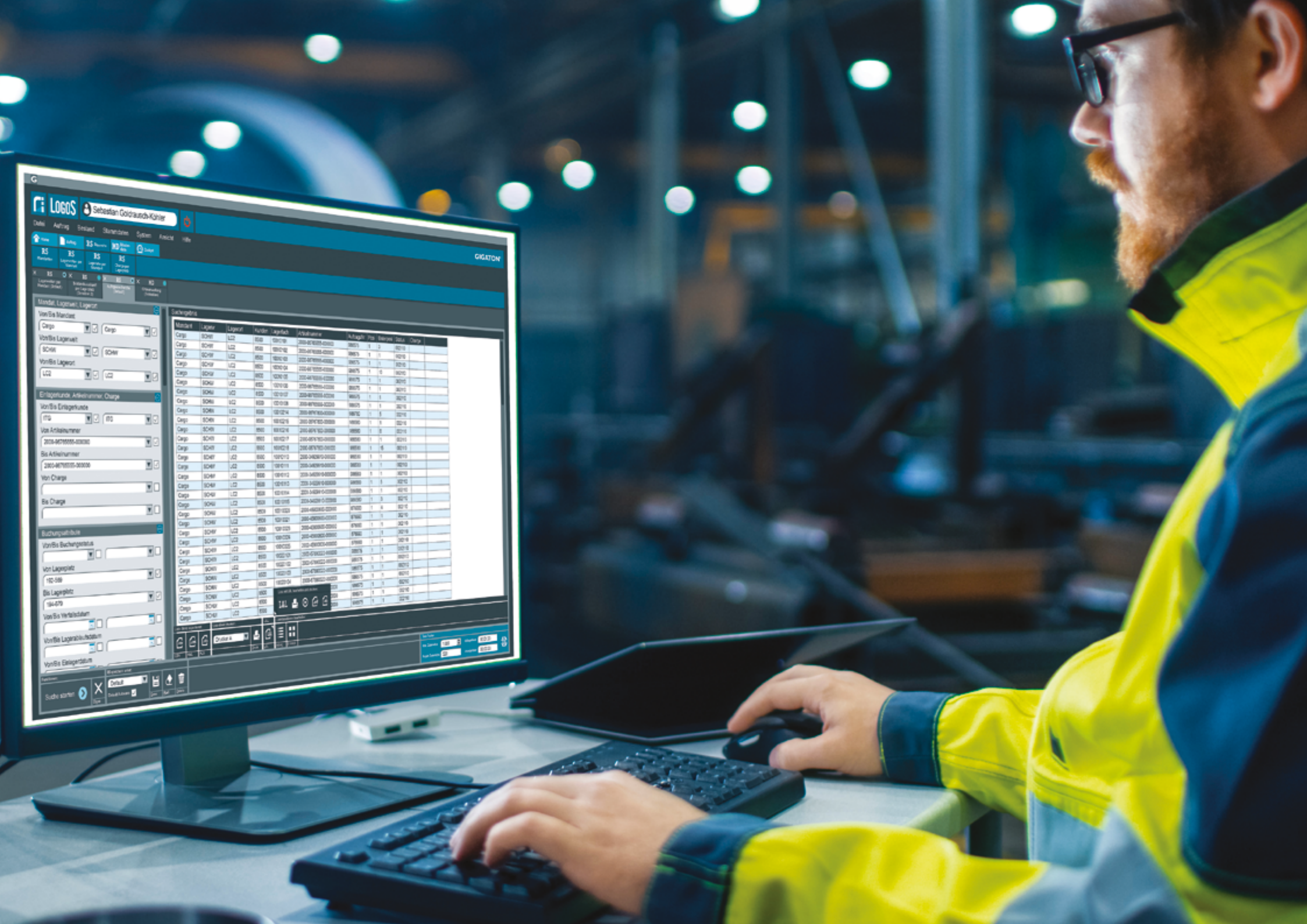


THEART

Short description LogoS® V3 / 2019

OF WMS


LOGOS
Sebastian Gebrauch-Kohler
GIGATON

LogoS enterprise®

LagerorganisationsSystem

LogoS is a cross-sectoral Warehouse Management System focused on the complex challenges of a service-oriented logistics service. It can be used in large, sometimes highly-automated, warehouse structures as well as in smaller to medium-sized, manually-operated installations. With **LogoS**, Gigaton has created a best practice and interactive solution, which controls and efficiently manages complex logistics chains.

The multifunctionality and high degree of configurability of LogoS provide almost unlimited options in mapping logistical processes. The optimum balance between a high degree of standardization and customized process adaptation is state of the art. The same is true for the modular structure, which adapts to customized requirements in customer-specific business processes and ideally aligns them to the standard processes.

LogoS seamlessly controls the entire material flow - from warehousing, order picking, commissioning and staging, to the handover to production or to the shipping department via interactive applications or documents.

The multi-modal approach, which Gigaton brought to life during **LogoS** development, opens the system to all warehouse technologies used in practice: Material Flow Control (MFC) systems, Pick-by-Scan, Pick-by-Voice, Pick-by-Light, Pick-by-Vision as well as RFID technology. Equipped with a modern, integrated software structure, it can be integrated into all existing systems and IT environments.

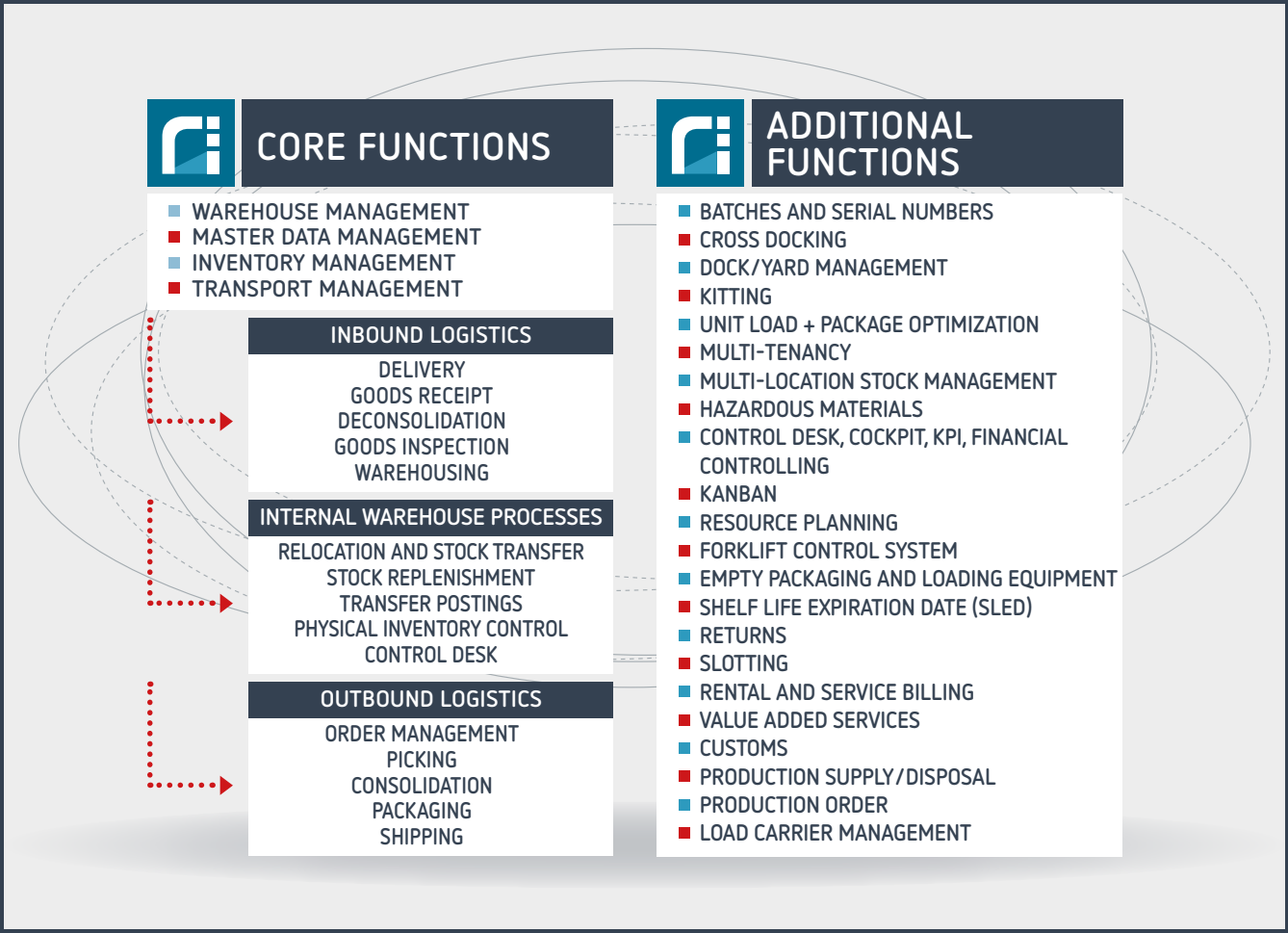
LogoS can be run either as a web application (Web client) or as a desktop application (Rich client). Specifically regarding the use of terminal devices in a browser-based environment, this ensures platform-wide usage on Windows, Android or IOS. In addition, **LogoS** is a great, flexible artist; it is highly flexible and adaptable when it comes to expanding technical infrastructures to customer's requirements.

PRODUCT DESIGN

LogoS is certified according to the VDI 3601 guideline issued by the Association of German Engineers (VDI) and the Fraunhofer Institute for Material Flow and Logistics (IMF). Designed as a modular system, all the necessary functional components can be optimally assembled for individual customer requirements.

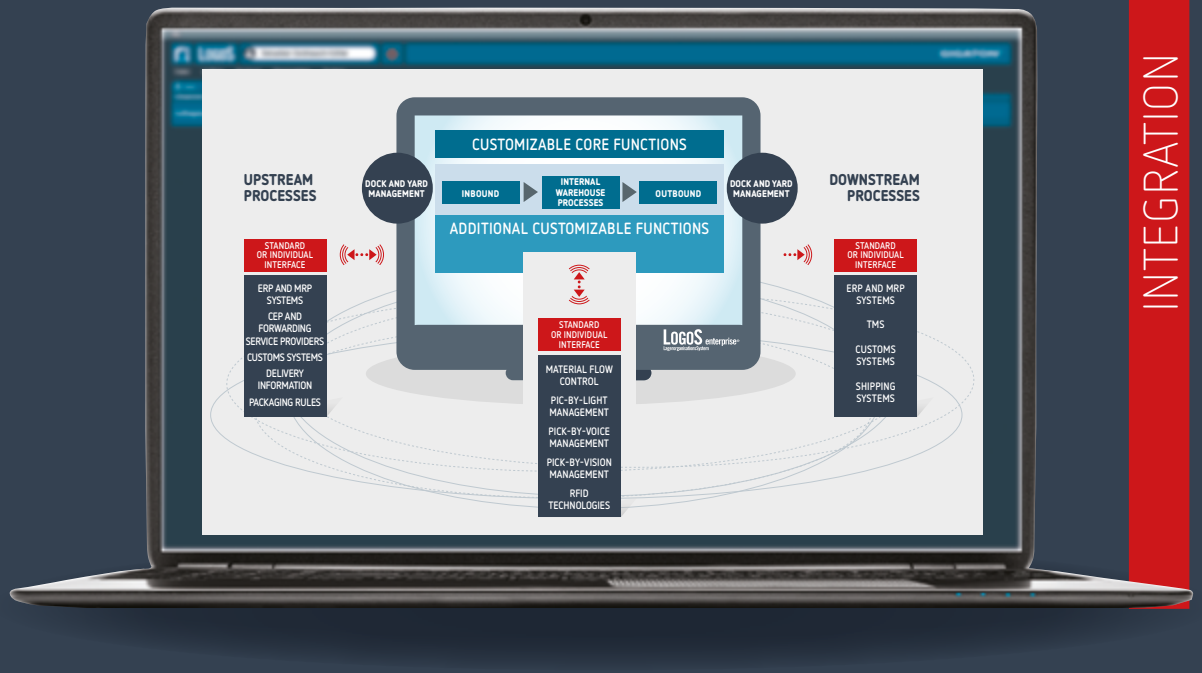
LogoS offers 2 product lines:
LogoS Enterprise and LogoS Compact.

LogoS Enterprise is a customizable and highly-configurable software package. Thanks to its modular structure, it can be tailored to customer-specific process requirements.
LogoS Compact variants are particularly suitable for small and medium-sized installations to digitally manage standardized core functions in a warehouse. Feature enhancements with add-ons from the enterprise solution are always an option.
Gigaton ensures a total releaseability of all updates, as new functions are fully integrated into existing modules. **LogoS** updates are applied according to the Gigaton Road Map and customer's requirements.



ON PREMISE **VS.** ON DEMAND

Gigaton offers different operating models for **LogoS**. In the On-Premise solution, the customer's technical infrastructure is used on-site and the **LogoS** application is hosted on their servers.
The alternative is an on-demand solution via the Gigaton Cloud, which runs through the in-house data center. The advantage of on-demand is that there are no investments for licenses and server systems; the billing of software usage and the entire hosting of the infrastructure is a monthly flat rate.
LogoS is seamlessly delivered over the Internet to the user's desktop. On this basis, **LogoS** can be used centrally as a SaaS or ASP solution in multi-company and multi-tenant systems, also in corporate structures. Only one software installation is needed to simultaneously handle many clients.

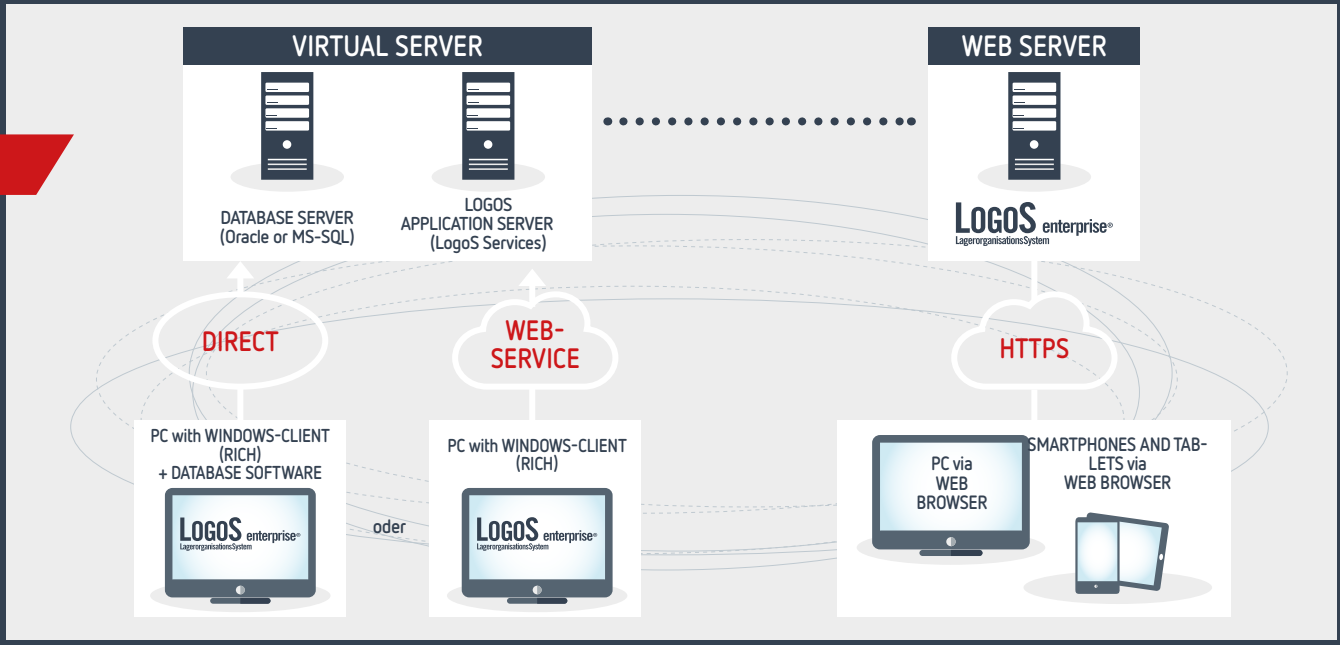


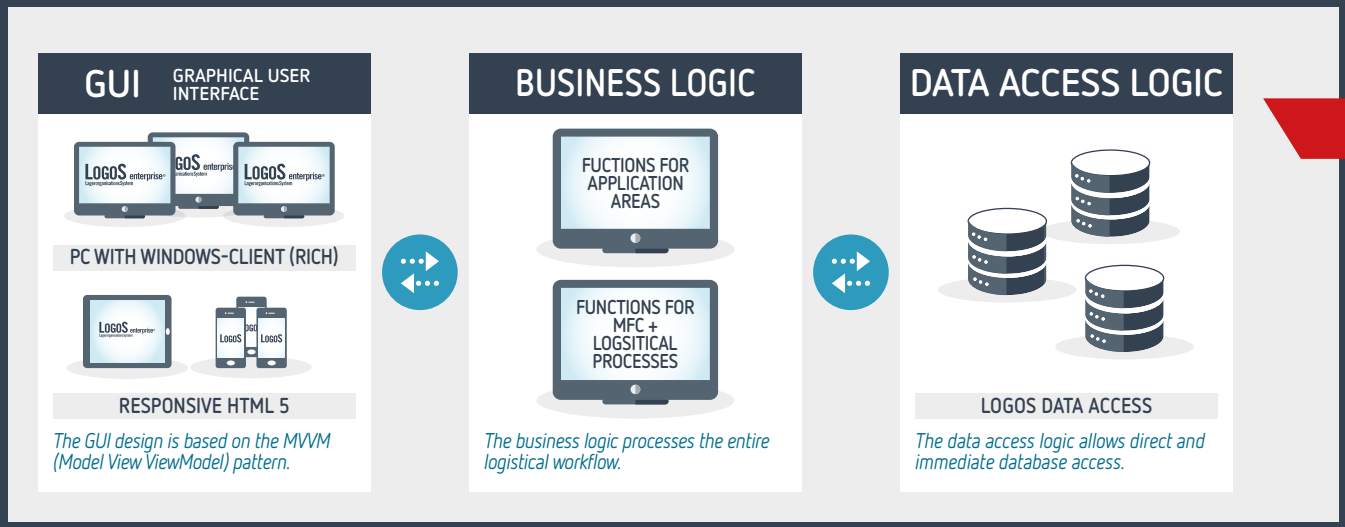
INTEGRATION

As a flexible Warehouse Management System, **LogoS** can be easily integrated into existing processes and IT environments. This allows it to connect to ERP, TMS, shipping and customs systems as well as MFC (Material Flow Control) systems and automated order picking systems. The fully-automated, real-time communication using various interface formats, such as XML, CSV or web service, guarantees a permanent data exchange.
Gigaton's own MFC system is an excellent alternative to integrate external MFC systems. It's a "one-stop-shop" solution that has the benefit of effortlessly controlling, monitoring and managing warehouse processes and material flow.

SYSTEM ARCHITECTURE

The structural components to create the object-oriented **LogoS** modules are **.NET platforms** for classic desktop applications and **Asp.Net MVC platforms** for modern responsive web applications. **C#** is the programming language.
LogoS supports **Oracle** and **MS-SQL database** systems running on a **Windows Server** platform.





SOFTWARE ARCHITECTURE

Software development is essentially based on a **3-tier architecture (MVC)**, consisting of a graphical user interface (GUI), interactive applications (BusinessLogic) and database access.
In addition, automated component testing permanently monitors developed apps for correct functionality.

QUALITY MANAGEMENT

Today, a certified quality assurance system is an essential feature for the successful implementation of integrated, software logistics projects. Transparent monitoring of all internal processes is best practice in Gigaton's daily life and a compelling standard for all LogoS applications.
Additionally, all applications offer a large variety of documentation and control features, from the control of material flows up to an early warning system that automatically responds to problems.

According to the DIN EN ISO 9001: 2015, Gigaton is certified in these areas:

- Software Development
- Support and Project Management
- Provision of Technical Services
- Operation of Data Centers

In addition, an external audit company regularly confirms **ITSM-compliance** with **ITIL V3**.

All relevant *material flow control processes* are subject to annual testing and certification by independent institutes under **GMP, HACCP** and **EU standard 178/2010.**

These include batch tracking, management of Shelf Life Expiration Date (SLED) and remaining shelf life, kitting, production of retail-ready POS displays and serial number management.
Special quality and validation variants for computerized systems, such as **GAMP 5**, can also be integrated.

Gigaton's project management was inspired by the PRINCE2 method, which includes guidelines for best practices, customer orientation and scalable project implementation.

In *software development*, Gigaton relies on *variants of the V-model*, which defines strict development phases and ensures quality by phase validation.

The *inventory modules* are subject to regular audits by independent auditors. The audits are based on national tax regulations and quality assurance for EDI-based accounting systems.

APPLICATION OF THE MODULES

WAREHOUSE MANAGEMENT

BASIS
MOBILE CLIENT
INTERFACES
INVENTORY
LB&F
KPI
LOAD CARRIER MANAGEMENT
HAZARDOUS MATERIALS *(optional)*

GOODS RECEIPT

BASIS
MOBILE CLIENT
INTERFACES
SLS *(optional)*
MFS *(optional)*
HAZARDOUS MATERIALS *(optional)*

WAREHOUSING

REMOVAL / PICKING

BASIS
MOBILE CLIENT
INTERFACES
PRODUCTION
SLS *(optional)*
MFS *(optional)*

PRODUCTION + VAS

BASIS
MOBILE CLIENT
INTERFACES
SHIPPING SYSTEM
SLS *(optional)*
MFS *(optional)*
HAZARDOUS MATERIALS *(optional)*

TRANSSHIPMENT

INBOUND LOGISTICS

WAREHOUSING LOGISTICS

LOGOS enterprise®
LagerorganisationsSystem

BASIS
MOBILE CLIENT
INTERFACES
PICKING SYSTEMS
SHIPPING SYSTEM
SLS *(optional)*
MFS *(optional)*
HAZARDOUS MATERIALS *(optional)*

PICK-BY-SCAN
PICK-BY-VOICE
PICK-BY-LIGHT
PICK-BY-ROBOT
PICK-BY-VISION
PICK-BY-WATCH
AUTO STORE
RFID
etc.

PICKING

PACKAGING

CONSOLIDATION

BASIS
MOBILE CLIENT
INTERFACES
SHIPPING SYSTEM
HAZARDOUS MATERIALS
(optional)

SHIPPING

OUTBOUND LOGISTICS

DISTRIBUTION

LOGOS **BASIS**

The **LogoS Basis** manages all the functions of a document-driven warehouse for numerous clients, customers, storage locations and storage bins. All extensions and add-ons can be integrated.

Combining **LogoS Basis** with the **LogoS Mobile Client** allows for a completely paperless process.

Essentially, various modules are grouped together under he **LogoS Basis** module:

1. Master Data Management

From articles, partners, warehouse zones (storage locations, storage areas, aisles, racks, levels, bins) to order types (shipping, load units).

2. Inventory Management

Unit loads based management with a single ID-level (NVE/SSCC), stock status management (total stock, available, free, reserved and blocked stock), stock classification management (inventory, variance and fraction stocks), single parameter management (depending on add-on: batches, shelf life expiration sate (SLED), serial numbers, bonded and free inventory, country of origin).

3. Order Management

Warehousing - automatic storage bin allocation according to various putaway strategies:

- dynamic and chaotic strategies
- ABC methods
- storage zone and priorities management
- free capacities of storage zones management / cross-sectional analysis
- fixed bin location management and stock addition
- putaway strategies by storage type (bulk storage, rack storage, static rack storage, flow rack and drive in rack storage, silo, textile and hanging garment storage)

Removal and picking - manual release of picking and dispatching orders, configurable reservation strategies (FIFO, LIFO, etc.), relocation and stock transfer, stock entry and inventory adjustments, order and order lines adjustments, lock management, packaging material management.

In addition, **LogoS Basis** includes an integrated **document designer** for printing self-configurable documents (storage, picking and delivery notes) as well as labels (storage and shipping labels). All documents are designed to be customizable in content, layout and printing time.

LOGOS **MOBILE CLIENT**

LogoS Mobile Client controls all operational processes via a paperless, WLAN or UMTS-based picking system by operating MDE devices and forklift terminals. Depending on the add-on, the Mobile Client supports:

- configurable goods receipt
- configurable storage
- assembling of mixed pallets
- double act strategies for optimizing all storage processes
- order based picking
- multi-level picking
- storage zone based picking
- multi-order picking
- multi-worker picking
- sorting and distribution
- final control and consolidation functionalities
- output of shipping labels and delivery notes
- permanent online status and progress monitoring
- inventory count
- storage and booking information
- photo capture

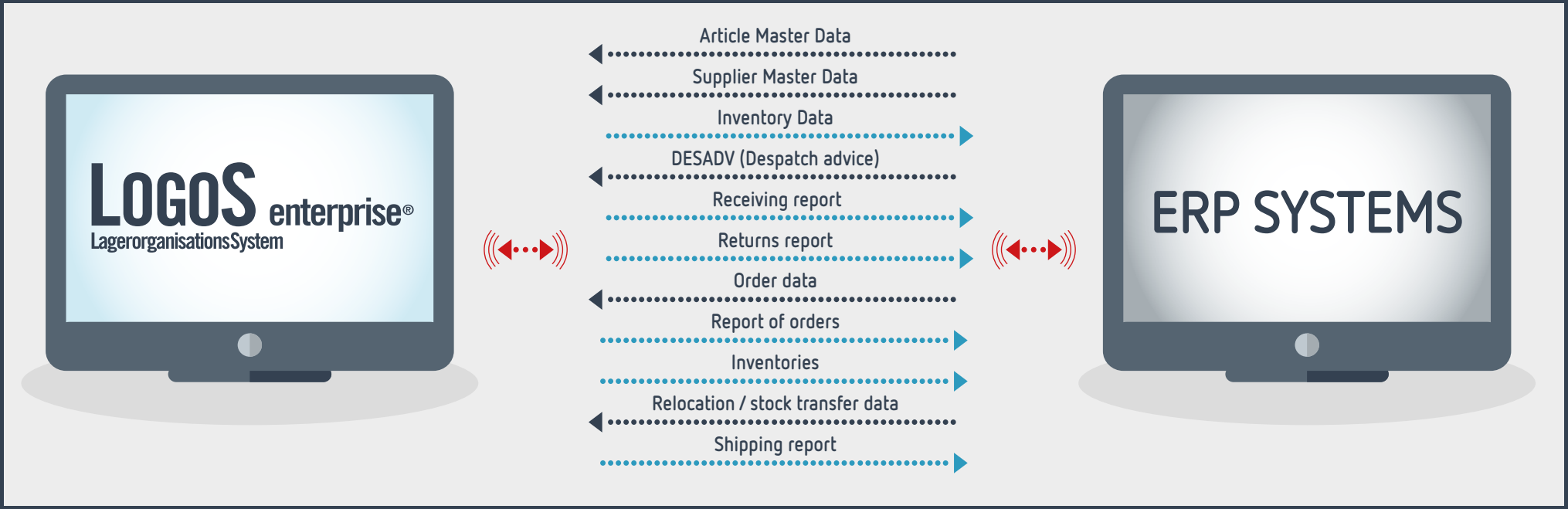
Thanks to responsive HTML5 standards, the GUI is optimized for all browser-supporting devices, such as MDE devices, smartphones and forklift terminals.

LOGOS INTERFACES

LogoS Interfaces offers an extensive fulfillment interface package in the formats XML, ASCII and CSV.
It contains standard interfaces for ERP and MRP systems to exchange the following data:

- Article master import
- Incoming orders, including system feedback
- Shipping orders, including system feedback
- Stock control import and export
- Inventory import and export

Transport service providers are connected via standard interfaces to TMS, common shipping systems operated by CEP and forwarding service providers, transit and customs systems, accounting systems and others.



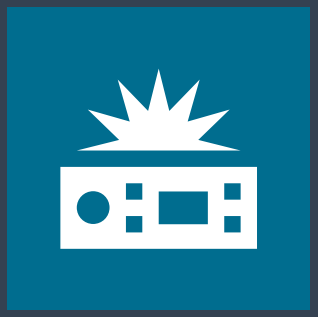
Data exchange possible via: XML - ONLINE - FLATFILES - KONVERTER

LOGOS **PICKING**

In addition to the classic paper-based picking and the picking via MDE devices (linked through the *LogoS Mobile Client*), the open structure of **LogoS Picking** allows it to connect almost all the major picking technologies.

PICK-BY-SCAN

PICK-BY-VOICE



PICK-BY-LIGHT

RFID MODULE

LogoS Pick-by-Voice is a voice-command-driven method which acts as an add-on to Wi-Fi-enabled mobile client processing. If needed, the system can run parallel with *LogoS Mobile Client* on a daily basis. A special configuration is not necessary, since all language dialogues are linked to the visual terminal dialogues.
With *Pick-by-Voice*, picking times can be significantly reduced, because employees do not need to handle or read printed lists or MDE devices. Instead, the entire picking process is controlled by using spoken commands which greatly accelerates the entire process.

LogoS Pick-by-Light is an add-on to manage storage-zone-specific picking, where the process is controlled through visual displays at the storage location. The system can be used simultaneously with all others, even for a single order.

The decisive advantage of a *Pick-by-Light*-controlled system is the efficient and accurate removal of items. Errors can almost be entirely eliminated. The location of a storage compartment is indicated by a light whilst the display shows the correct number of items to be picked.

LogoS RFID is a sender-transmitter system, which automatically identifies all RFID-tagged items in the entire warehouse. In addition, by using the integrated RFID-print module it is possible to label non-RFID-tagged items.

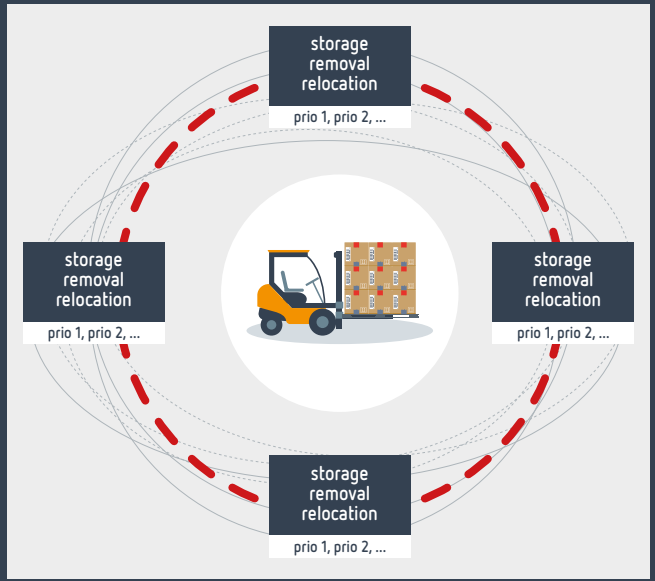
The operation of the *RFID add-on* is feasible in parallel and in addition to all other picking systems. It is based on the *GS1 guidelines* regarding the use of EPC/RFID for consumer products.

LogoS Picking integrates well, thanks to the *LogoS Mobile Client*, even the latest picking technologies in the daily workflow, such as Pick-by-Vision, Pick-by-Robot or Pick-by-Watch.

LOGOS **SLS**

LogoS SLS – Forklift Guidance System – manages and monitors forklift traffic across all storage processes and in all zones. Forklifts are controlled via MDE devices or forklift terminals connected through the *LogoS Mobile Client*. Traffic is easily tracked in real-time and optimized using key data, such as storage, relocation and removal orders.

In this context, distance and cost-related transport orders can be effectively designed. Transport routes and execution times are optimized, deadheads can be avoided, forklift utilization is increased and the analysis of double act strategies can be integrated.



LOGOS **LTM**

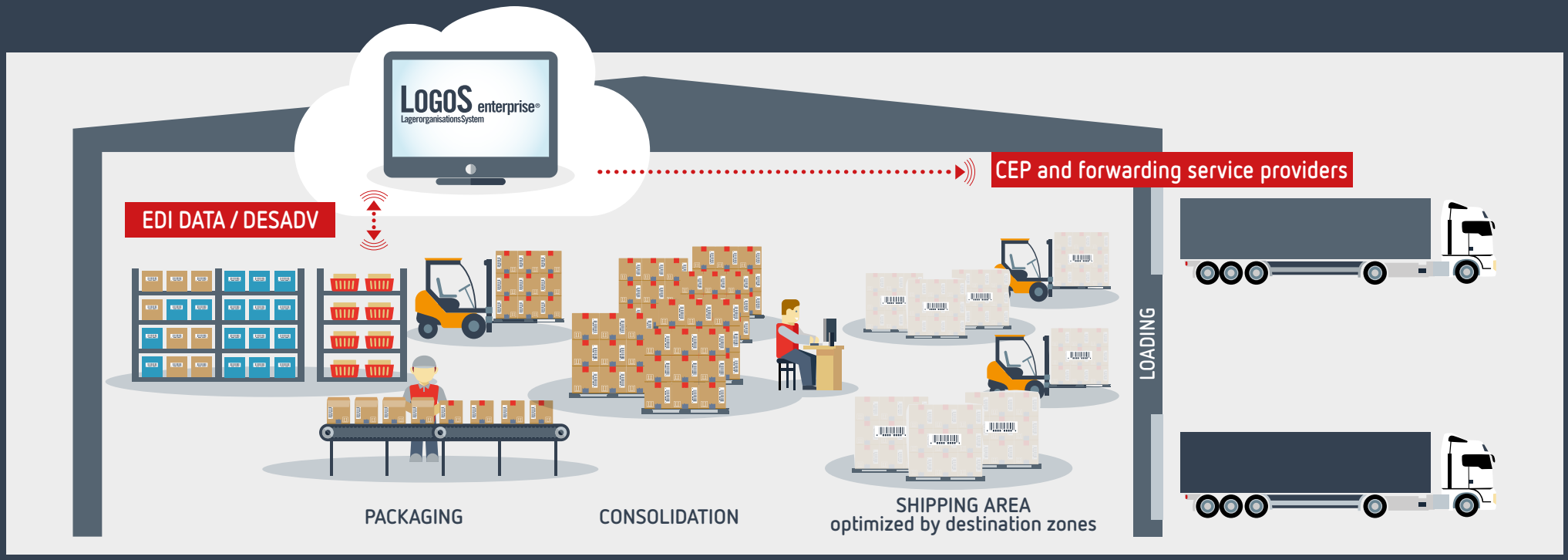
LogoS LTM – Load Carrier Management – manages load carriers in the warehouse as well as in exchange with external partners. The status quo of the load carriers, including tracing movements and stocks of individual load carriers, is monitored.
Transparency and an efficient workflow are guaranteed by combining load carriers with stocked goods – for example via packaging specifications – and by tracing them at the individual ID-level. Defining key parameters for monitoring load carrier usage allows them to be collected for specific purposes, such as maintenance, and easily removed from the work cycle.

LOGOS **SHIPPING SYSTEM**

The **LogoS Shipping System** converts commissioned *articles into shipping units, orders into consignments* and *consignments into optimized routes*. In this way the logistics process in a warehouse is aligned with the requirements of downstream transports.

The handling of packing station processes and transportation planning, including transport route optimization and BOL management, is part of the **LogoS Shipping System**. *Dock & Yard Management* manages gates, loading and staging areas as well as entrances and exits.

A fully integrated connection to the CEP and forwarding service provider's networks is state of the art and, via EDI interfaces, directly processes the appropriate document number ranges. As a result, the related shipping labels and documents are generated automatically.



LOGOS **LB&F**

LogoS LB&F – Performance Evaluation & Billing – checks, evaluates and calculates the cost of logistic services. **LogoS** basically differentiates between 3 service types:

- Handling services
- Rental services
- Special services

The audit process for all services uses predefined, scalable parameters and automatically creates a valuation. Special, not predefined, services can be recorded manually or via time measurement on a MDE device.
After the automated audit process, **LogoS LB&F** automatically generates the invoice data and outputs the appropriate documents.

The invoice data can be also transferred to the financial accounting system via a standard interface.

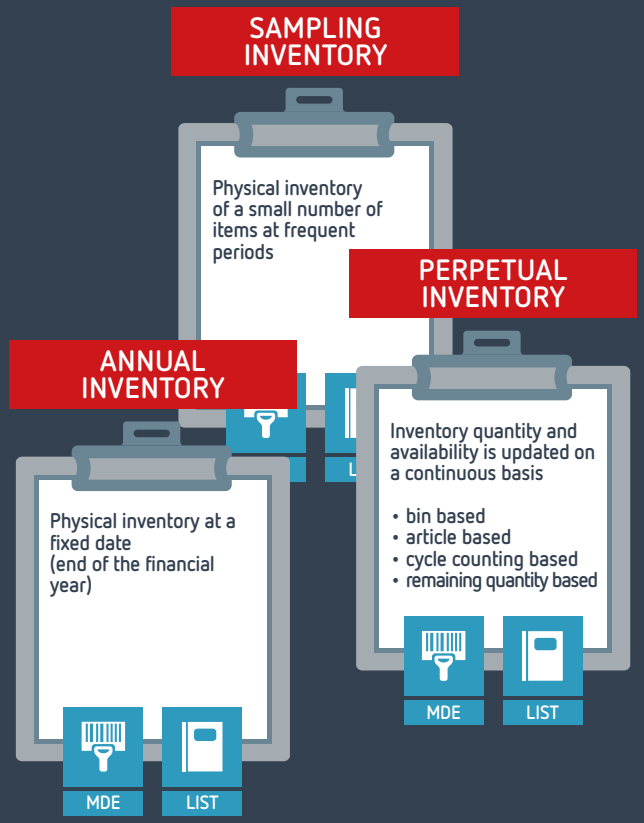
LOGOS **INVENTORY**

LogoS Inventur allows a physical inventory to be carried out on of the warehouse stock. The master data includes, by default, various inventory processes which can be operated traditionally via lists or electronically via *LogoS Mobile Client*.
The physical inventory processes are

- annual inventory
- perpetual inventory (based on article or bin)
- sampling inventory and cycle counting inventory

LogoS Inventory controls and manages all inventory processes and thier process statuses in real-time.

All inventory procedures are audited by a independent auditing company.



LOGOS **KPI**

LogoS KPI – Key Performance Indicators – monitors and controls the key aspects of a warehouse and evaluates statistics and reports in real-time.
Comprehensive dashboard functionalities provide daily business monitoring and a detailed overview of key aspects, processing statuses and warehouse space utilization.

The **LogoS KPI control desk** offers a large overview of all storage and removal orders and their processing statuses as well as key data for lean analysis.
Instead, the **LogoS Cockpit** displays the KPIs in compelling visual graphs and diagrams. This is a powerful, user-friendly way to monitor the degree of utilization of warehouse space, the statuses of order processing and the actual staffing situation in real-time.

LogoS KPI statistics offers both, standardized and configurable settings for performing customized analysis.

LogoS Cockpit

LOGOS **HAZARDOUS MATERIALS**

Storing hazardous materials in multifunctional warehouse facilities is a complex challenge and requires the highest safety standards. It's a balancing act between efficient logistical processing and optimal capacity utilization, while adhering to all safety and environmental requirements.

The **LogoS Hazardous Materials** tool is designed to store dangerous goods, which are restricted by numerous laws and regulations. Predefined putaway strategies determine the placement of dangerous goods in separated warehouse locations and zones in compliance with laws / prohibitions on mixed storage.

Complete documentation and inventory of all stored dangerous goods are guaranteed. Data can be edited by using different parameters, such as storage class, storage type, ADR number, UN number, bin code, etc. The **LogoS Hazardous Materials** add-on is based on the technical rules for hazardous substances TRGS 510.

LOGOS **PRODUCTION**

Today, logistics service providers offer a large range of fulfillment services and value-added services by taking over production tasks for the OEMs where a high level of vertical integration is required.
With the tools of **LogoS Production** it is possible to manage efficiently both, production planning and supply chain optimization from the procurement to the actual manufacturing operations.
Typical fulfillment scenarios are:

- Bill of Materials (BOM) management and component inventory management
- sequencing & sub-assembly services
- pre-assembly and product finishing services
- just-in-time SKD, MKD, CKD handling
- production of retail-ready POS displays
- kitting / bundling / labeling

To make the production even more lean **LogoS Production** includes the configuration of in-house transportation systems such as tugger train solutions.

LogoS Production - tank filling

LOGOS **MFS**

Building on and complementing the WMS, Gigaton offers its own Material Flow Control (MFC) system for connecting automated logistic environments.
LogoS MFS – Material Flow Control (MFC) system – maps data and information flows of automatic systems and high-bay warehouses.
All major automatic storage, transport and picking systems can be controlled, such as conveying systems, pallet live storage systems, sorters, autostore systems, shuttle systems and dynamic storage-retrieval machines. A sophisticated display visually monitors all current material flows and provides fault diagnosis and troubleshooting.

By launching **LogoS MFS**, Gigaton also established a strategic partnership with *Swiss Soloc Automation GmbH (www.soloc.com)*; a proven expert in conveying systems and customized machines.

GIGATON®

Sience 1996, **GIGATON** has been following the passion to make complex logistics processes monitorable and controllable. A passion, which turned into the art of deploying organizational systems in day-to-day operations in an integrative, cross-sectoral and extremely efficient manner. This art has been cultivated during 20 years of practice, resulting in an expertise thanks to which the Heddesheim-based company has become one of the leading providers in the WMS sector.

Today, logistics providers, industry, wholesale, mail order and retail trade throughout Germany, Austria and Switzerland put their trust in ***"The Art of WMS made by GIGATON"***.

The pioneer product, **LogoS**, presents an interactive solution which is exclusively in the hands of its developers in terms of further development and distribution. The same applies to project planning and implementation in challenging logistics environments since consulting and project management have been declared top-priority matters at GIGATON.

Because: each WMS is a one-shot solution. Configurability, flexibility and process transparency make the real, profitable difference.

GIGATON®

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