



SIEMENS
Ingenuity for life

Siemens INTRALOG WMS

Next Generation WMS | Ready for xx

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www.siemens.com/industry-logistics

Agenda



Topic

- | | |
|---|---|
| 1 | Introduction |
| 2 | Functionalities Overview |
| 3 | System and Software Architecture Overview |
| 4 | Design Scope |
| 5 | Live Demo |
-

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1 Introduction

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5 Live Demo

Dedicated Portfolio for Specific Industry Focus



Turnkey solutions for greenfield and brownfield projects

Small Parts
Warehouses

Channel
Warehouses

Car Buffers

Pallet
Warehouses

Powertrain
Logistics

Tire
Logistics

IT by INTRALOG WMS

Automation by INTRALOG TIA



Automotive



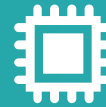
Tire



Battery



1st Tier



Electronics



Chemical



Pharma



Food&Bev.

Industry Logistics Business Locations



Germany

Headquarters

USA

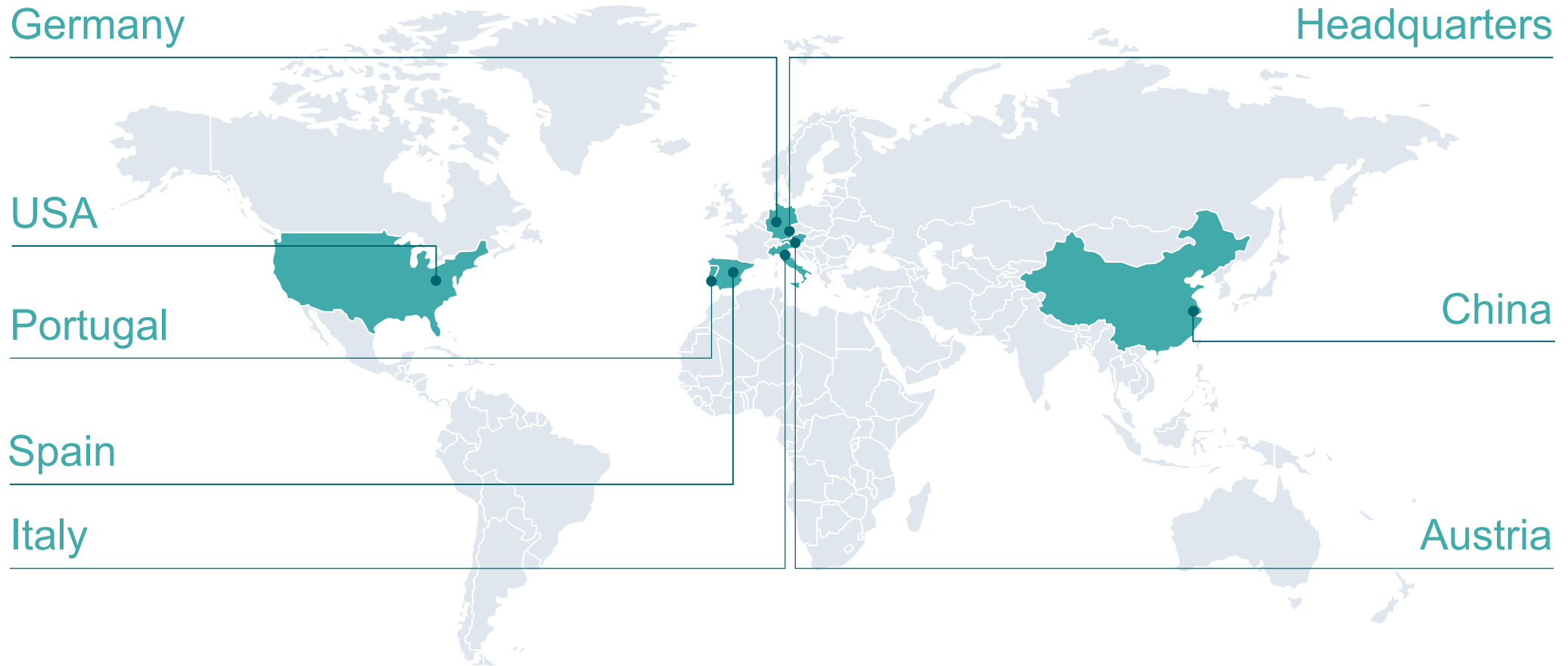
Portugal

Spain

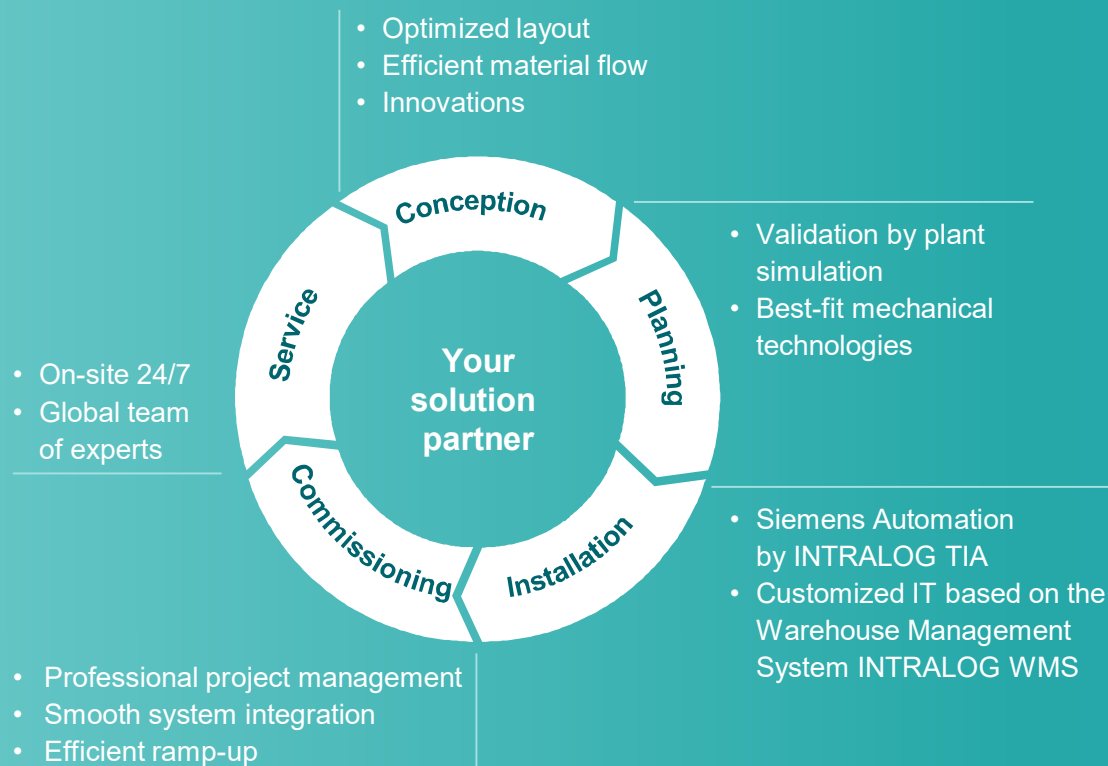
Italy

China

Austria



Industry Logistics Solutions from a Single Source from the Initial Concept to Smooth Operation



Competence from a single source

Global team with profound knowledge and experience and certified project managers



Technology leadership

Innovations that bring measurable advantages to our customers



Sustainable productivity

Automation and IT standards by INTRALOG TIA and INTRALOG WMS



Ensured availability

High-quality modular solutions throughout the entire production life cycle



Long-term investment security

Your trusted partner for reliable global support

IL Team Stands for High Performance WMS and Comprehensive Global IT Experience



>25 years of experience



~70 WMS engineers



All service models



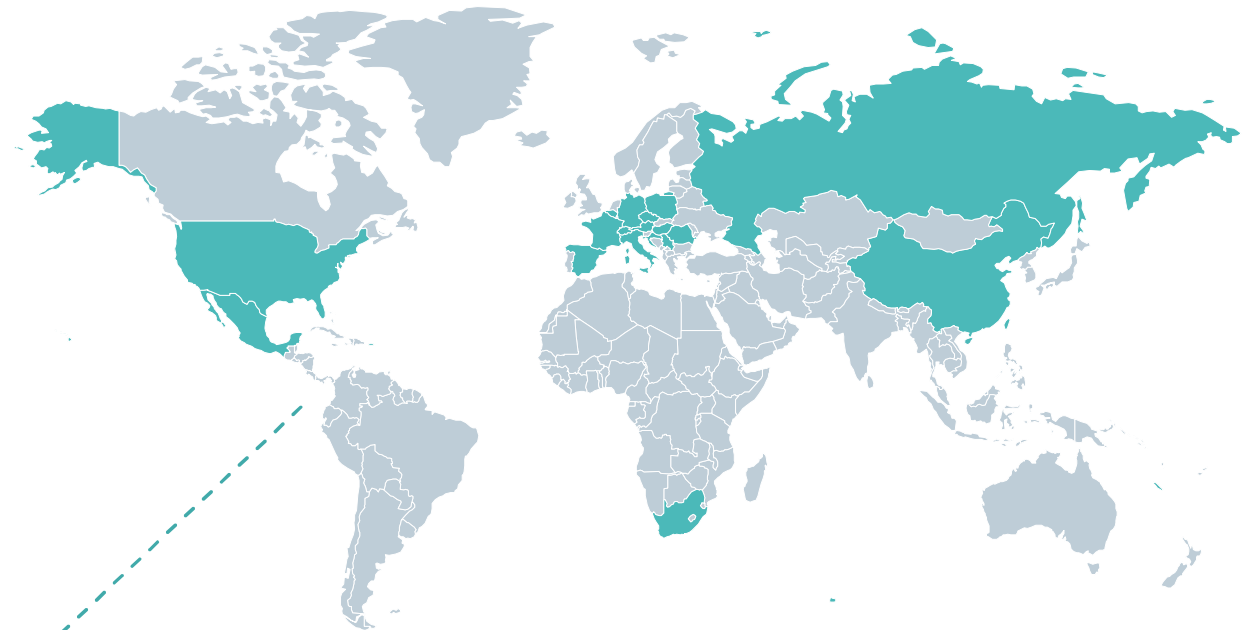
All warehouse and material handling functionalities



Seamless integration in customer IT ecosystem



~300 installations¹ in 19 countries



¹ Greenfield and brownfield

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Topic

1 Introduction

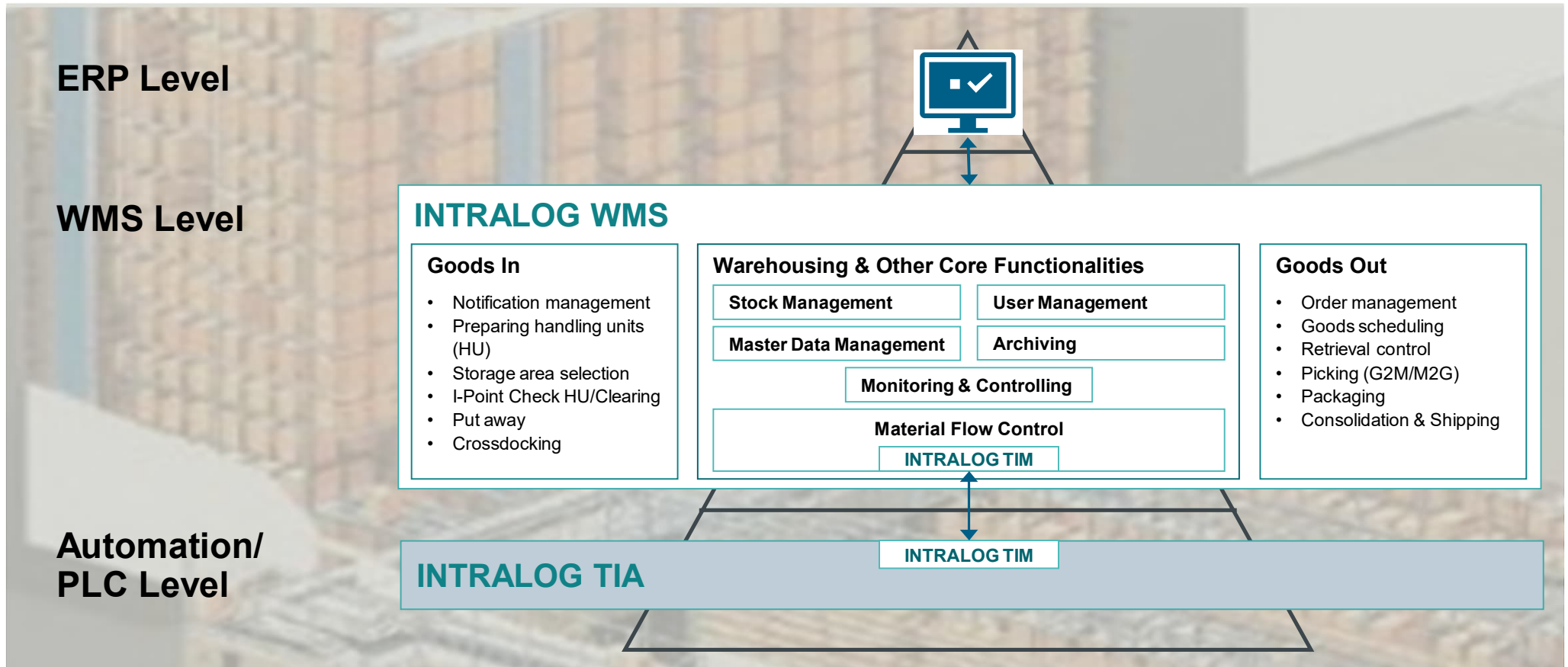
2 **Functionalities Overview**

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INTRALOG WMS with Wide Range of Logistics Functionalities for Covering Customer's Business Processes



1) TIM = Transport Interface Management

Warehousing & Other Core Functionalities (1 of 2)



Stock Management	<ul style="list-style-type: none">• Goods specifications (article number, serial number, lot, expiry date, ABC classification, trading units, unit quantity, ...)• Handling units (pallets, totes, tires, any combinations like double pallet on system pallet, tire in tray, parcels in totes on pallet)• Warehouse types (automated for large or small HU, manual like block storage, shelf rack, ...)• Storage bin structures (bin depth 1-n, height/width/weight classes, variable structures like 3 small or 2 wide HU in compartment, ...)• Stock functionalities (stock alignment with ERP, inventory, replenishment, ABC analysis, ...)
Master Data Management	e.g. article master data, load equipment
User Management	with permission concept for users and user groups down to action level (view, insert, update, delete)
Archiving	configurable time intervals for saving to analyze historical data (e.g. notifications, outbound orders, interface messages)

Warehousing & Other Core Functionalities (2 of 2)

Material Flow Control

- Management of Transport devices, transport routes and transport orders
- Management of device states (e.g. automatic/manual mode, in/without fault) and device capacities (e.g. inbound conveyor of stacker crane)
- Routing and automated resolution of typical technical or operational issues to avoid material flow stoppings (e.g. bin full detection during rack storing, no read detection of a transport unit)
- Processing the connection with PLC level by Standard INTRALOG TIM Interface¹⁾
 - based on predefined messages, message structures and use cases for conveyors, stacker cranes, monorails
 - High performance for continuous material flow and optimized throughput
 - Seamless material flow continuation in case of interruption of the connection (no message loss)

Monitoring & Controlling

Display functionalities e.g.

- Material master data
- Storage locations
- Inbound goods notifications
- Transport units/orders
- Interface messages (ERP, PLC, ...)

Operational functionalities e.g.

- Block/unblock ASRS
- Block/unblock bin location
- Re-location of units within storage
- Manual retrieval of storage units
- Clearing bin locations

1) TIM = Transport Interface Management
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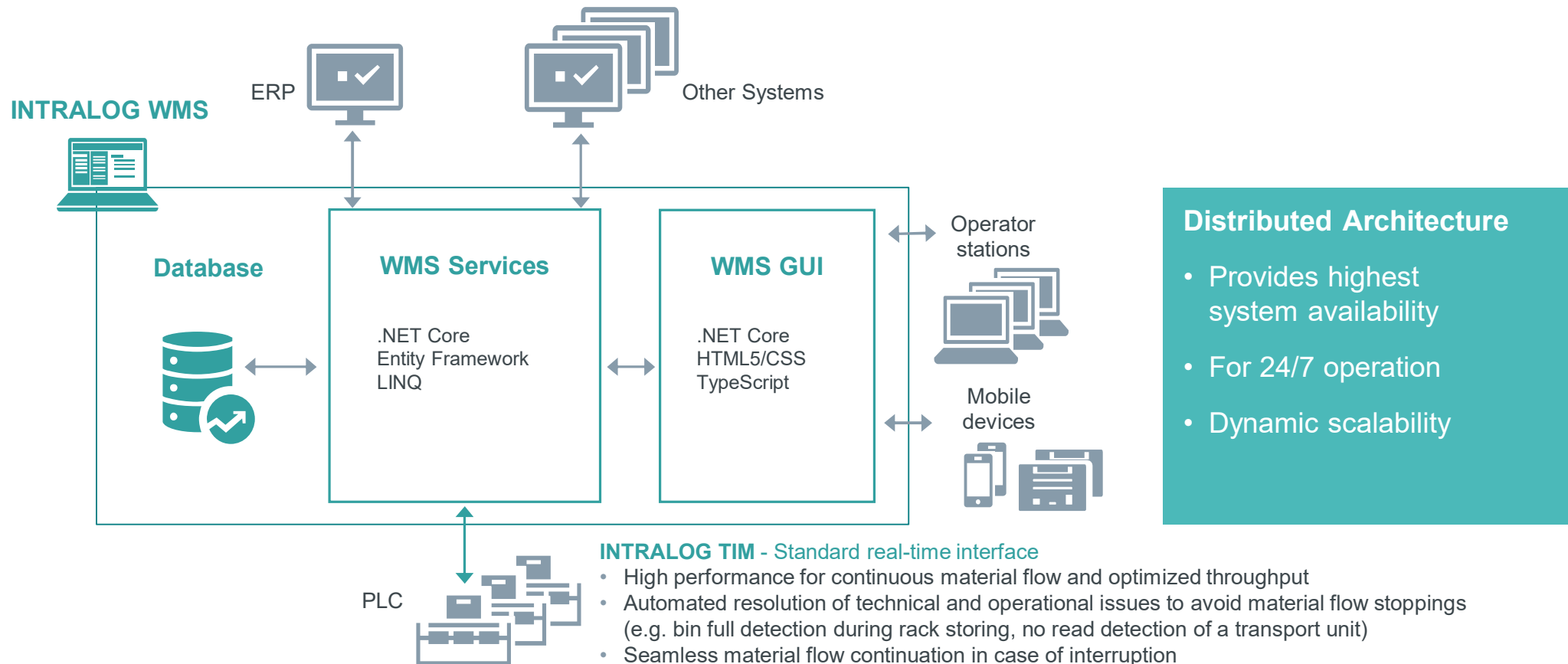
3 System and Software Architecture Overview

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System Architecture

A Modern Warehouse Management System



Distributed Architecture

- Provides highest system availability
- For 24/7 operation
- Dynamic scalability

Software Architecture – Customized solution based on a wide range of ready-to-use software modules



Architecture enforces quality, reliability, extensibility and maintainability

Software principles

- Loose Coupling
- Design by Contract
- Domain-Driven Design
- Clean Architecture Pattern
- Versioned updates

Lead to

- reusability
- adaptability
- configurability
- Well-tested software
- Proven operational quality



Project solution

- Re-use of existing modules where possible
- Customization where needed
- Lean delivery of just the modules you need

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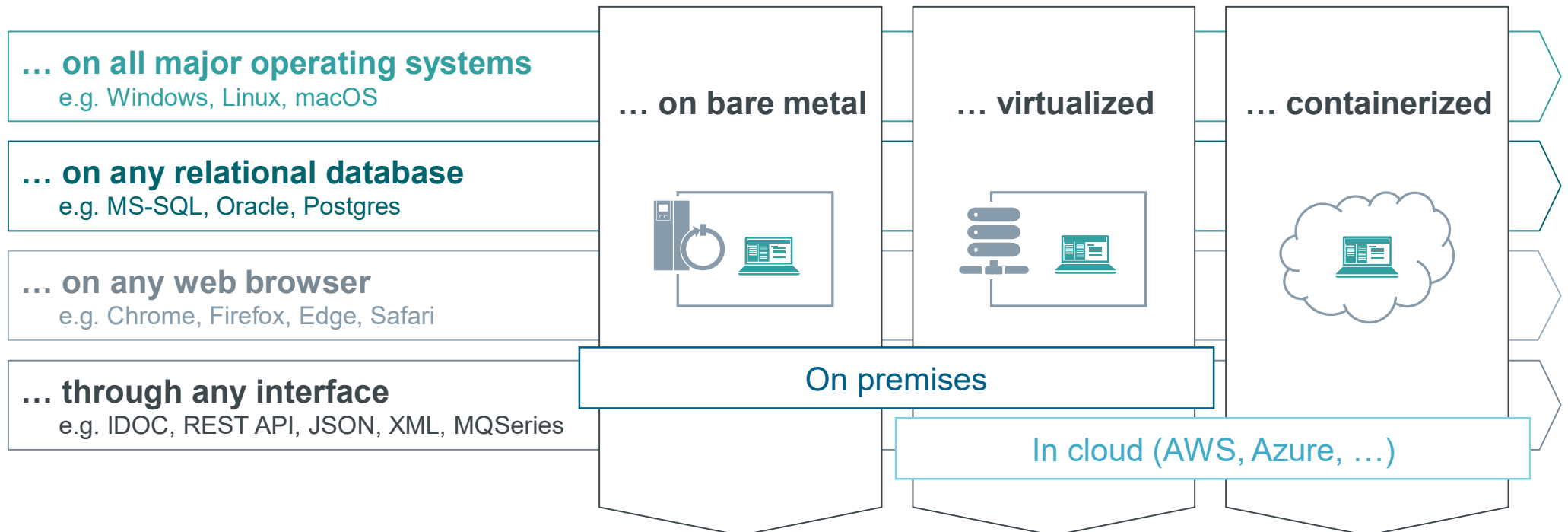
4 **Design Scope**

5 Live Demo

Seamless Integration in Your IT Ecosystem



INTRALOG WMS is designed to meet your individual requirements ...



System Security



Security ranks first

Software facilitates industry standard best practices, technologies and algorithms¹

- Up-to-date libraries and frameworks are used exclusively
- Ongoing vulnerability monitoring

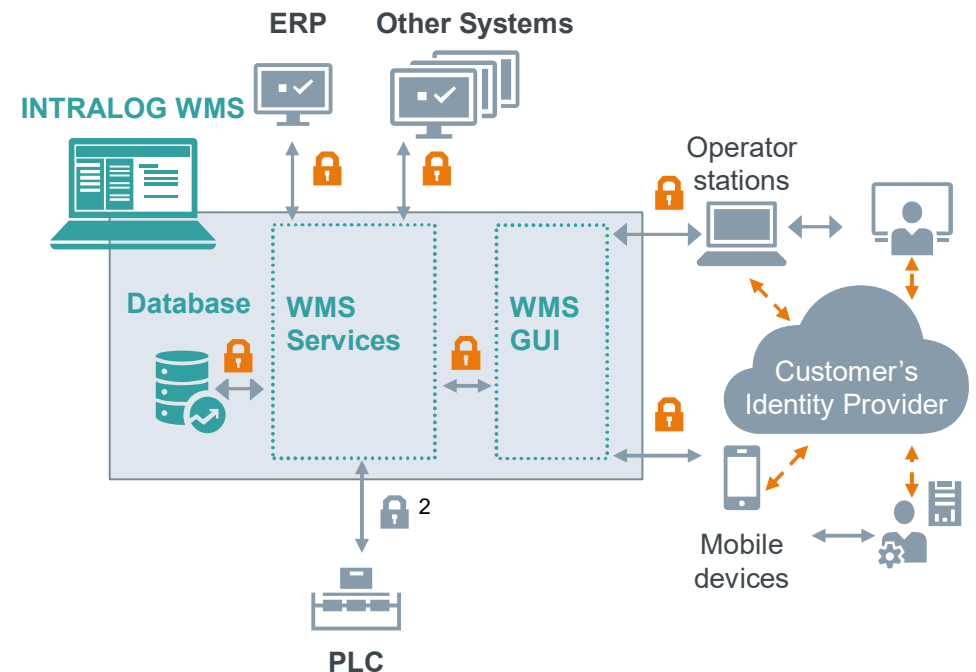
Approved by official Siemens security experts

- Threat and risk analysis conducted
- Fulfils e.g. “Siemens Cybersecurity Policy Framework”

Connectivity to customer’s Identity Provider for Authentication

- Support for OAuth, OIDC, LDAP, Active Directory, SAML
- No sensitive credential information handled nor stored by the system

¹ e.g. encryption for client and host communication; ² Depending on customer’s measures e.g. VPN



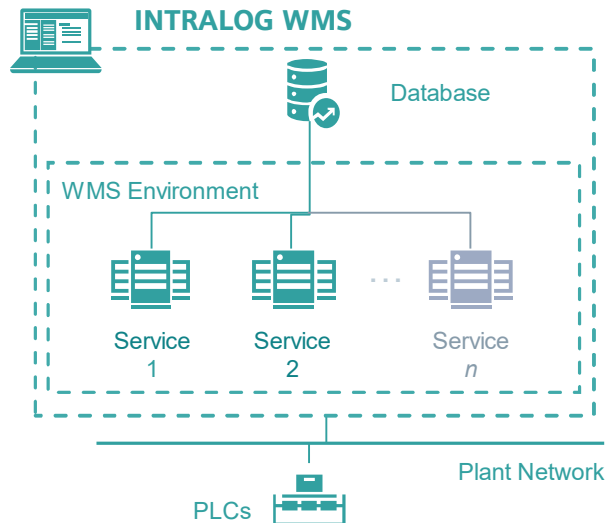
System Scalability



INTRALOG WMS is your companion as demands grow throughout the plant life cycle

System

Extend by additional service instances for scale-out, scale-up ...



Plant

For example, extend by additional high bay warehouse aisles



Functionality

Extend by additional logistic functionalities

Goods-In

Notification Mgmt.	Preparing Handling Units	I-Point Check	Cross-docking	...
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Warehousing

Master Data Mgmt.	Stock Mgmt.	Monitoring Controlling	Inventory	...
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Goods-Out

Order Mgmt.	Picking	Packaging	Shipping	...
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Material Flow

Transport Order Mgmt.	Device Mgmt.	Routing	Issue Mgmt.	...
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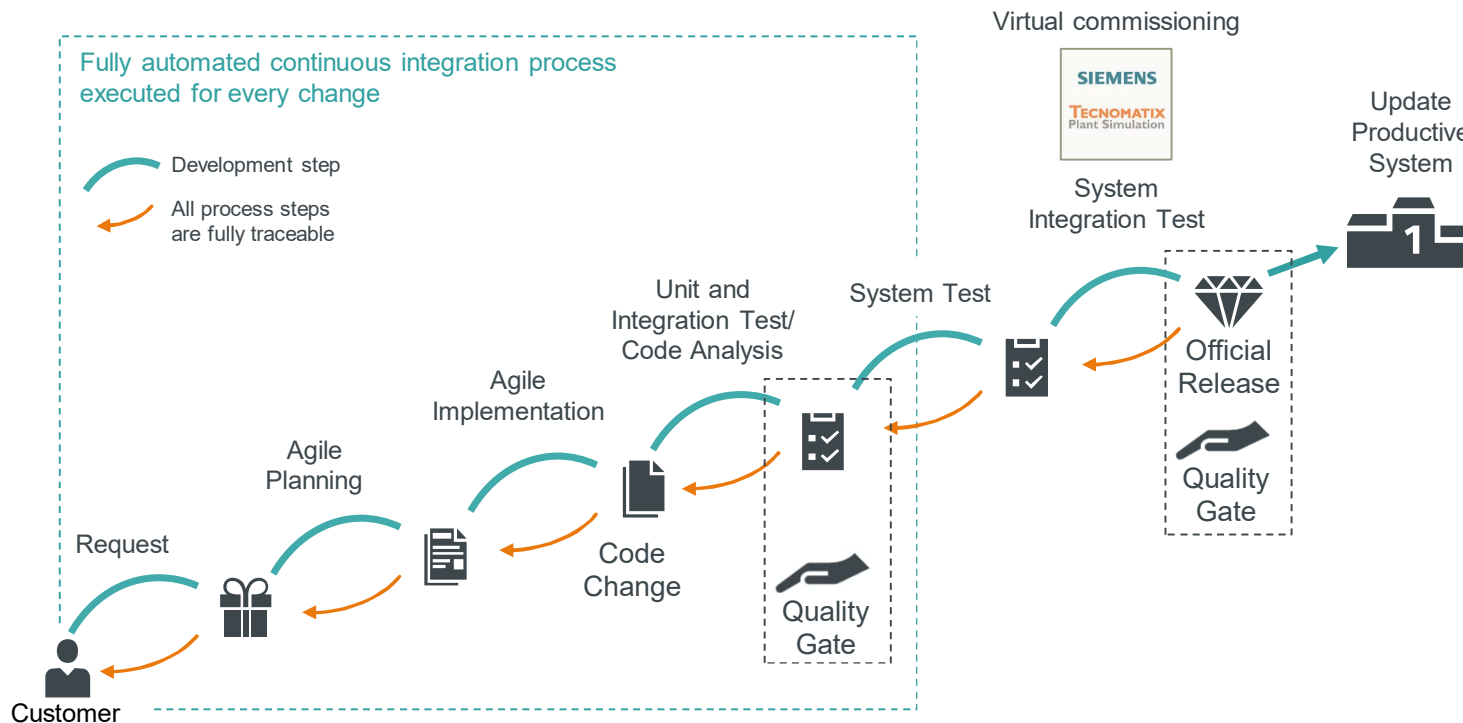
Interfaces

ERP	PLC	...
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High System Quality Ensured by Systematic Software Development Process



Only thoroughly quality-checked software code is deployed



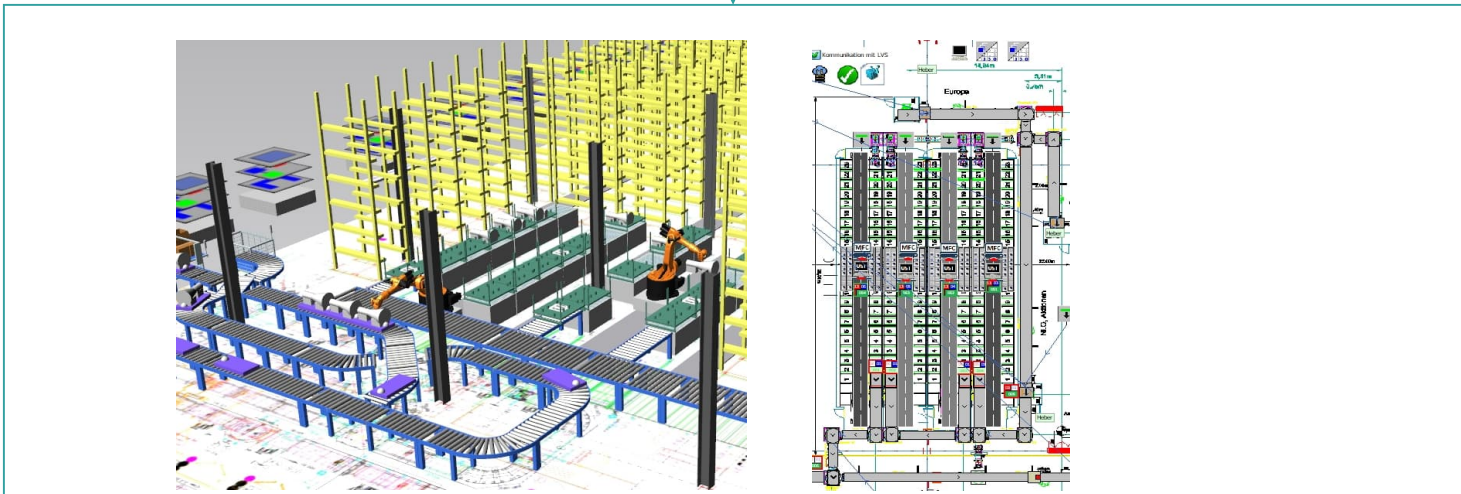
Development process

- Continuous integration process ensures always fully tested software
- Four different test stages with different scopes ensure highest test coverage
- Automated code analysis to spot potential issues as early as possible

Enhanced Quality by Virtual Commissioning



Test with Emulation Twin before “physical” plant commissioning



Emulation

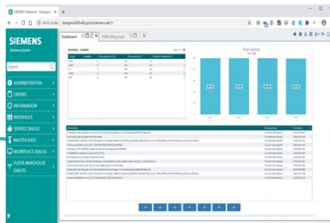
- Represents an exact image of the real plant (e.g. dimensions, speed, acceleration)
- Enables test of entire material flow and business processes
- Is connected to the WMS by our standard interface INTRALOG TIM
- Visualizes the plant as a 2D or 3D representation

User-friendly Interface for Easy Operation



Main GUI components allow optimal system monitoring and controlling

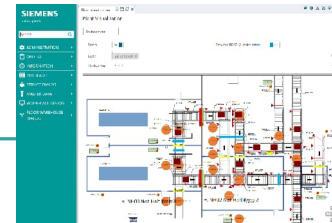
Dashboard



Overview of the system status at a glance

- Configured out of a set of standardized and customized widgets (e.g. aisle filling degrees, shipping orders overview, status of interfaces, availability of aisles)
- Personalized dashboards according to the operators' functions and needs

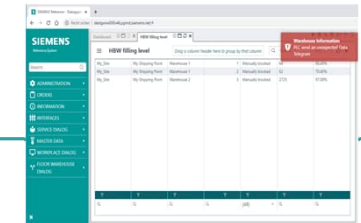
Visualization



Overview of the conveyor system and warehouse

- Identifications and locations of transport/storage units
- Status of the units (e.g. empty, loaded), by different symbols and colors
- Detailed information of the units by "mouse over"
- Further functionalities by "right mouse click"

Notifications



Ad-hoc information about important events

- Pop-up at once
- Are classified in accordance to their meaning (critical, warning, information and success)
- Can be parametrized as to be acknowledged or not
- Can also be displayed in an dialog

Intuitive GUI for Easy Operation

 GUI can be learned easily as design and user experience follow well-known web-applications



Views & navigation

- Site map menu
- Hamburger menu
- Multi-dialog view
- Browser full screen mode
- Favorites
- Collapsible main menu
- Tabs
- Brightness changer
- Font size zoom



Search, find & show data

- Multi-value filtering
- Drag & drop
- Sorting/ascending/descending
- On-the-fly data loading (blur effect)
- Multi-dimensional grouping
- Refresh
- Reordering columns
- Hide columns
- Full text search
- Print preview



- Information can be found quickly and easily
- View settings can be saved per user (personalization)
- Screen can be adjusted to the workplace environment
- Data export to numerous file formats like pdf, xlsx, csv, ...
- Language can be switched on-the-fly (multilingual)

Our INTRALOG WMS – Designed for Your Success



✓✓ Functionality

- Covers the logistics business processes from Goods In to Goods Out
- Links ERP and PLC level efficiently
- Optimal system monitoring & controlling

Usability

- Web-based design and user-guidance follow industry standards
- Supports all stationary and mobile devices
- Easy to learn

Software Quality

- Modern, efficient, agile software development process
- Comprehensive tests incl. virtual commissioning
- Re-use of well-tested, proven code



Seamless IT Integration

- Bare metal/virtual machine/container
- On premises/cloud-native/hybrid
- Any major OS (Windows, Linux, ...)
- Any database and any web browser
- Any interface technology

Information Security

- Industry standard technologies and algorithms (e.g. encryption)
- Identity federation with customer's provider
- Software assessed and approved by official Siemens security experts

Scalability

- System scale-up and scale-out
- Plant extension
- Added functionality

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Summary

INTRALOG WMS from the Intralogistics Experts

SIEMENS
Ingenuity for life

Focus ...



Global Installations



Industry-focused



Greenfield and Brownfield

... Offer ...



State-of-the-Art in Technology and Usability



Seamless Ecosystem Integration



Future-Proof due to Life-Cycle Management

... Siemens-like



Premium Quality



Reliable Information Security



Customized Service