

IIntraOne

A Unified Platform of Software, Services & Technologies







- Shift to "platforms"
- Accelerated adoption of technology due to the lower cost of entry & ongoing labor challenges
- Less traditional automation, more flexible automation (Robotics)
- Address Interoperability Enable the deployment of disparate technologies
- Increase Network Visibility inventory, resources
- Digital Twins digital assets
- Al & Data Analytics
- Continued market consolidation

IntraOne Platform

plat-form | noun: a collection of information, products, and services that provides a foundation upon which an organization can grow and succeed



Our Platform Advantage

We are the one provider you can depend on by committing to the following:

- **Embracing** the current status of an organization's unique journey.
- Enabling a cohesive long-range strategy
- Streamlining engagements using in-house expertise
- Using data to support technology selections.
- Empowering organizations with actionable data.
- Leveraging R&D to identify best-of-breed technologies
- Maintaining a neutral position & focusing on the best solution
- Optimizing performance with leading-edge Full Stack Software Solutions to connect technologies and empower better outcomes.

IntraOne Application Stack

IntraOne

UNIFIED

FOUNDATION

· Web Based Singular UI

System Administration

Integrated API's

User Management - SSO

· Dashboards - BI



WCS Warehouse Control

- · Carton & Tote Routing · Integrated Web Base HMI Equipment Diagnostics
- · Sort Management
- · In-Motion Weighing Print & Apply
- PLC Communications

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WES Warehouse Execution

- · Process Balancing Resource Move Logic
- Order Sepertion
- · General Sort Management
- · Pick & Put Light Management
- · Labor Management · Good to Person
- Robotics • Slotting

WMS Warehouse Management

- · CORE FUNCTIONS: Recieving, Location Mgmt, Picking, Shipping . CARTONIZATION: carton ORDER MANAGEMENT: Allocation, Optimized Release, Wave Management
 - MOBILE: Android & IOS optimization & SLA control
 - · BI & Analytics
 - · Host system integration



TMS Transportation Shipping

- · Small Parcel & TLC
- · Rating & Rate Shopping
- · Future ship
- · In-transit time selection
- · Carrier compliant labeling
- International
- · Haz Mat
- · Integrated with cartonization



3RD PARTY Certified Extensible Apps

- NextView
- · StockIQ
- TeamCentral



IntraOne wcs

Warehouse Control System

- Designed to interact with and control automation equipment
- This includes
 - Conveyors
 - Sorters, etc.
- Can communicate with another system
 - WMS
 - ERP
- Very machine-centric
- Limited to hardware control but essential for a working MHE implementation

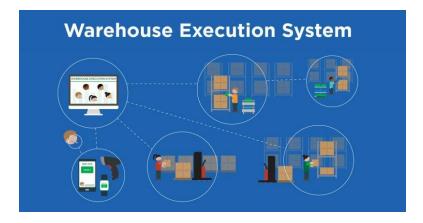




IntraOne WES

Warehouse Execution System

- Focused on orchestration and optimization
- Balance warehouse
 - From picking through shipping
- Communications between systems
 - Can be a bridge between systems
- Employs higher-level decision making
 - Loop sorters
 - Work distribution
- Put wall management
 - Include light control
- Packing management
- Robotic management





IntraOne wms

Warehouse Management System

- Sits in the center of a manufacturing and supply chain operation
- Manages raw materials, manufacturing, receiving, putaway, picking, etc.
- Order management
- Integration into ERPs
- Critical to ensuring the warehouse is operating as efficiently as possible





IntraOne TMS

Transportation Management System

Manges transportation systems for warehouses

- Includes trailer transportation
 - LTL (less than truckload)
 - FTL (full truckload)
- Parcel Carrier
 - UPS
 - FedEx
 - USPS
- Local carriers
 - Dayton Freight
- Rate shopping
- Trailer manifesting





IntraOne Software





FULL STACK

- WCS/WES/WMS/TMS
- Unified product
- Highly configurable
- Mitigates risk, complexity, and long-term cost of ownership.



ARCHITECTURE

- Modular architecture
- · Microservice model
- Scalable and adaptable



HYBRID

- Supports both Cloud and "Edge" deployment models
- Fast and scalable
- · Supports multi-site



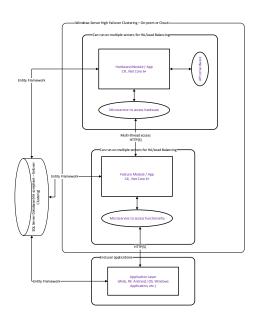
CONNECT

- Extensive integration API (including JSON)
- Connects endless technologies & systems together

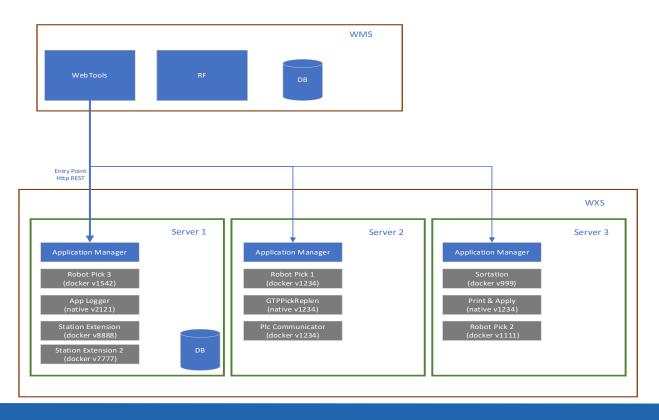


Started with our legacy WMS product

- Extending / building on the 40+ years of development work
- A more modular approach to the architecture
- Wanted to allow for true separation of concerns or layers
 - Screens focus on user interaction and experience
 - Backend components have business logic
 - Machine-level integration separated from business logic
- Use C# and React as primary development languages
 - C# with Core 6 / .Net 4.8
 - React for UI development
 - Convert C++ applications to C#
 - .Net Maui for RF applications (future)
- Entity Framework
 - Event-driven database development (Table Dependency)
- MQTT (discussed more later) for PLC communications



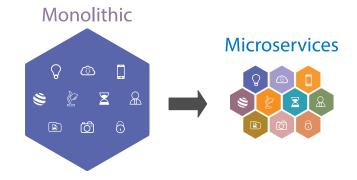






Backend

- Using Microservices to provide functionality
 - Each microservice is dedicated to a specific process
 - Microservices will communicate with each other via HTTP/HTTPS RESTful interfaces
 - · Docker is used to install and handle versioning
 - · Can be installed natively as well
- Example
 - Exotec integration
 - Low-level API is contained in a microservice
 - It has no business-level logic only how to communicate with Exotec
 - Picking microservice has the business logic and, if configured to use GTP (Goods to Person), will determine through configuration which system to use and communicate to the microservice





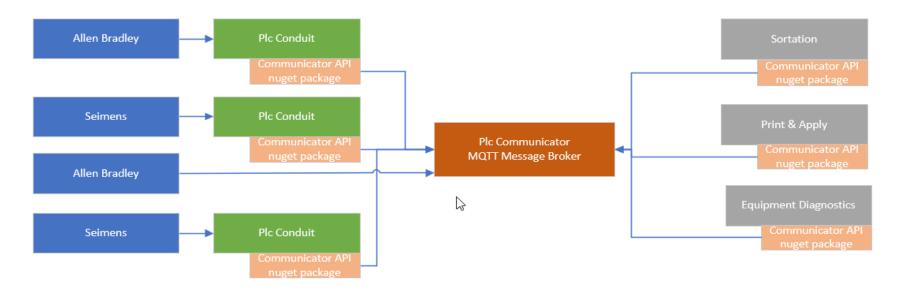
PLC Communications

- Like the rest of the system, the PLC communications are abstracted from the business logic
- Uses MQTT (Message Queuing Telemetry Transport) to communicate between II and PLCs
 - Adherence to IoT (Internet of Things) standard communications
 - Accommodates resource and network constraints
 - Ensures no messages are missed, even when the server is offline
 - Specifically designed for small, real-time updates between systems





PLC Communications





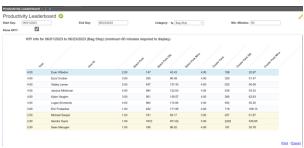
IntraOne UI (User Interface)

- Leveraging WebTools for the presentation layer
 - Builds upon the existing infrastructure
 - Extends what we use currently to React
- React
 - JavaScript solution for user interfaces and experience
 - Widely adopted JavaScript framework for front-end development
 - Highly secure and very flexible
 - Uses IntraOne UI Backend to access data
 - Does not have direct access to the database
 - All new screens are being written in this language/environment

Reporting

- Will continue to use current reporting features
 - We are working to add the report creation features to React



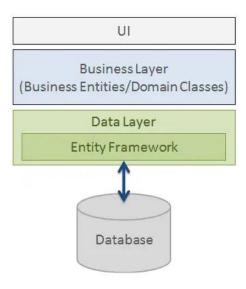




IntraOne Database

IntraOne Database

- Built upon the legacy database
- · Extending it where needed
- Replacing fixed sizes with more flexible options
- Accessing DB with Entity Framework
 - Allows for the database to become objects inside of the program
- Access to the database is limited to the containers (for applications)
 - Allows containers to manage its' own data
 - If anything is changed, the container is aware of the change and can modify behavior
- Some data is stored locally in memory within the containers
 - Data will be persisted as needed through periodic updates
- KPI tables
 - Key Performance Indicators
 - Faster / easier access





IntraOne Documentation

Documentation and help files

- New approach to documentation
 - Multiple ways to provide
 - Using new tools
- This includes knowledge base articles being updated
- New screenshots
- Better release notes
- Context-sensitive help (coming)







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