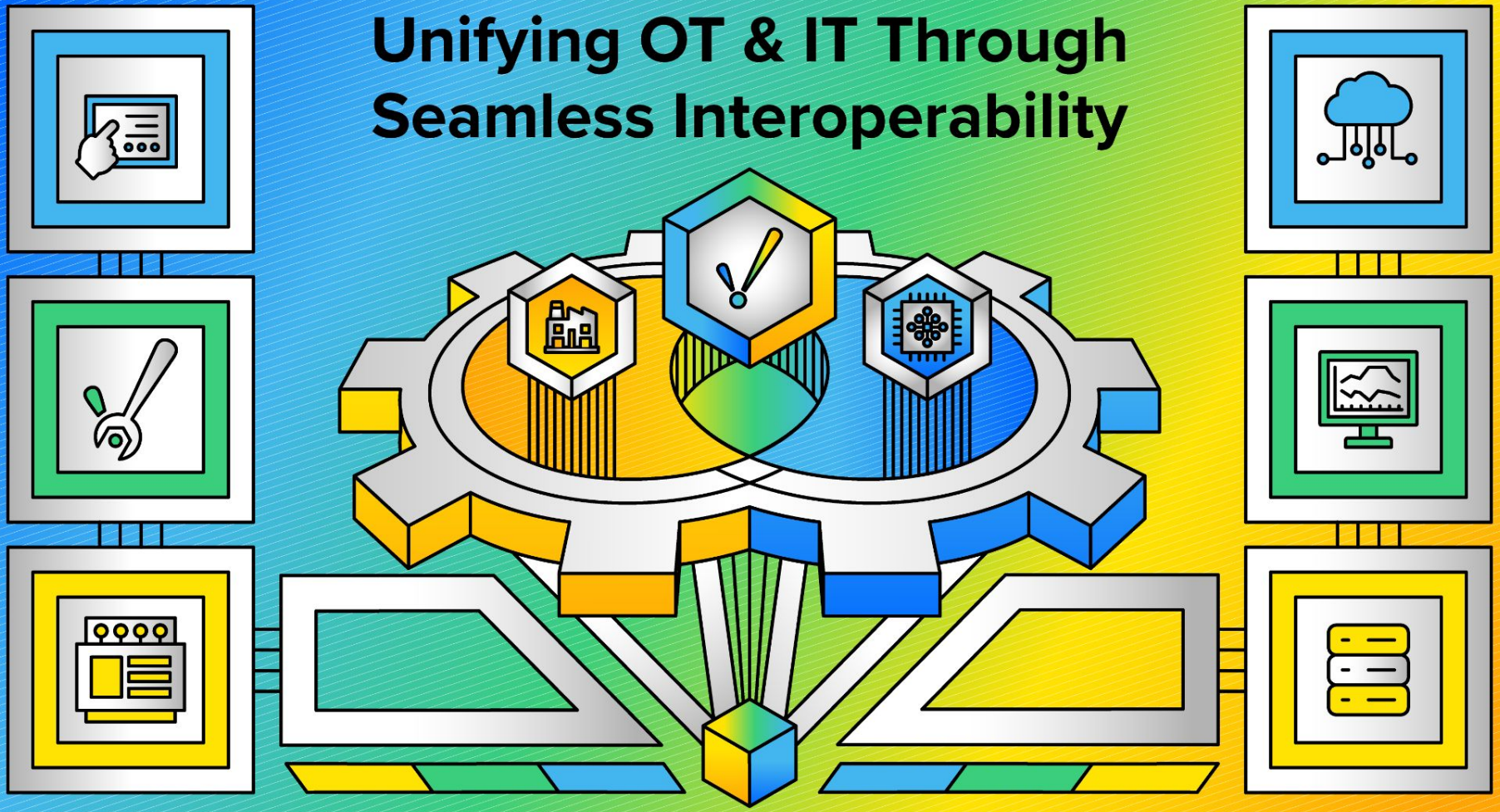
Unifying OT & IT Through Seamless Interoperability



Today's Presenters

Danny Haskell
President
NeoMatrix

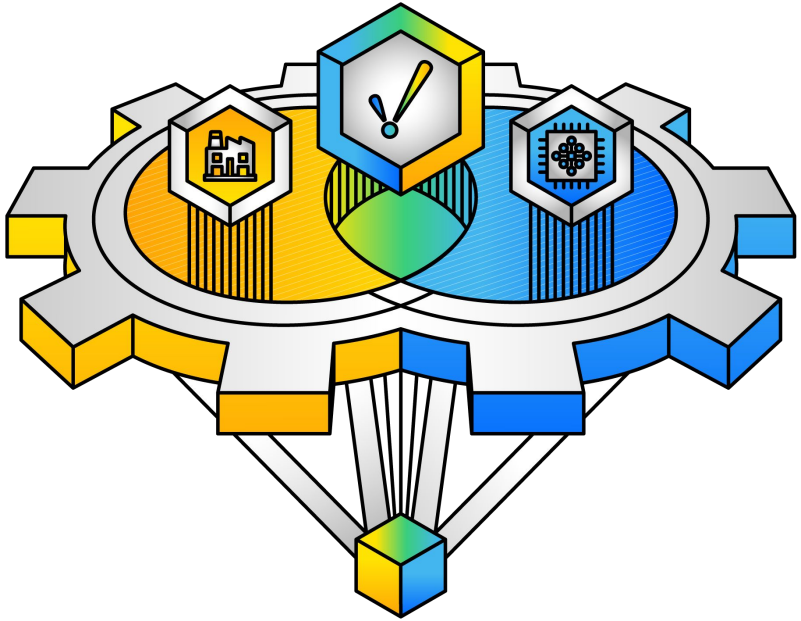
Jeremiah Arcaraz Mitchell
Software Project Manager
Barry-Wehmiller Design Group

Don Pearson
Chief Strategy Officer
Inductive Automation

Fred Zaboli
Operations Manager
Wunderlich-Malec Engineering

Agenda

- Bringing OT & IT Together
- Ignition Connects to any PLC
- Modules for OT/IT Integration
- Beverage Manufacturing Project by NeoMatrix
- Data Enablement Project by Wunderlich-Malec Engineering, Inc
- Barry-Wehmiller Design Group
- Q&A

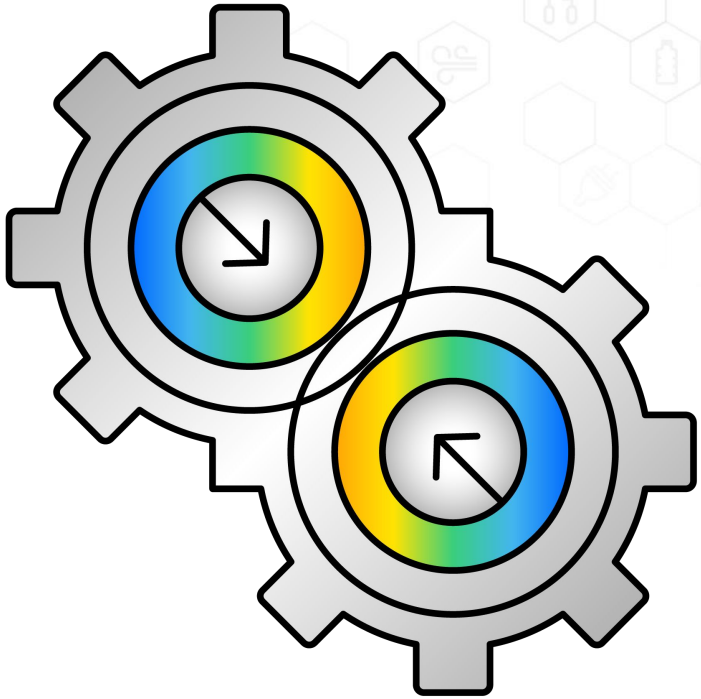


About Inductive Automation

- We make software for problem solvers
- In business for 21 years
- 61% of the Fortune 100 and 44% of the Fortune 500 use Ignition
- Highly diversified customer base across many industries
- Ignition installations in 100+ countries
- 4,000+ integrators worldwide
- Profitable and independent with no outside investors

Ignition Brings OT & IT Together

- Rooted in OT and accessible to IT
  - Enables IT to manage OT with IIoT
- Uses open standards that IT understands
  - OPC UA, MQTT, and SQL



Ignition Brings OT & IT Together

- Native SQL database connectivity
- MongoDB Module adds NoSQL database connectivity
- Unlimited connections and infinite scalability

OPC UA Module

- Based on modern IT protocols and Included with Ignition
- Outgoing connections to third-party OPC UA servers
- Connect to most PLCs
- Make your own driver with custom APIs to connect to any PLC

OPC UA Module

- High performance binary-TCP coding and transport
- RSA encryption
- Large tag counts
- Fast updates
- Easily connect to remote machines

SQL Bridge Module

- Bridge the gap between OPC data (OT) and SQL databases (IT)
- Swiss army knife for integrating PLCs and SQL databases
- Stop locking data in proprietary databases
- Flexible data modeling

SQL Bridge Module

- Log large amounts of data
- Virtually unlimited recipes
- Customize recipe batching systems
- Track changes historically
- Sequence processes

Introduction

Danny Haskell – President of NeoMatrix, Inc.

- Company was founded 21 years ago.
- Software services company specializing in Automation & Software Integration for Manufacturing Companies.
- Two Offices – Portsmouth, NH & Andover, MA
- Our main geographic area is the Northeast.
- We do help our customers all over the country and the world.
- Premier Integrator since 2016 and we have been using Ignition since 2010.

Why OT/IT Integration?

Help our customers with their digital transformation journey.

- Connect and integrate people, assets, and business systems in real time.
- Better visibility of manufacturing operations at all levels of the company.
- Allows for real time correction of operations when it's needed not after.
- Centralize data in an IT managed server.
- Increases efficiency in the work flow between all manufacturing processes.

Receiving Raw Materials Project

Our Customer is a best-in-class, aseptic, beverage manufacturing company.

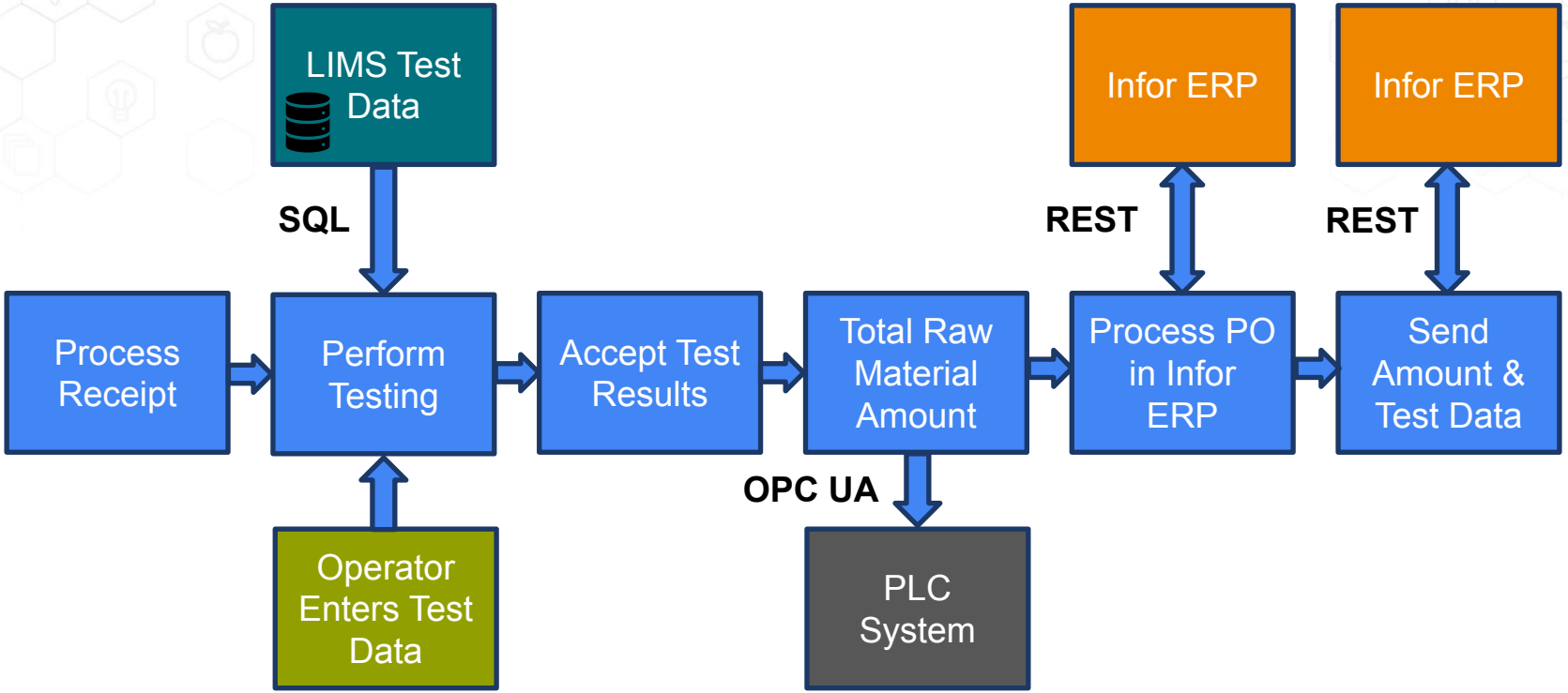
Business Need:

- Automate the receiving process for raw materials into the plant.
- Receiving process required the integration of PLC systems, LIMS, Infor ERP system, and Ignition.

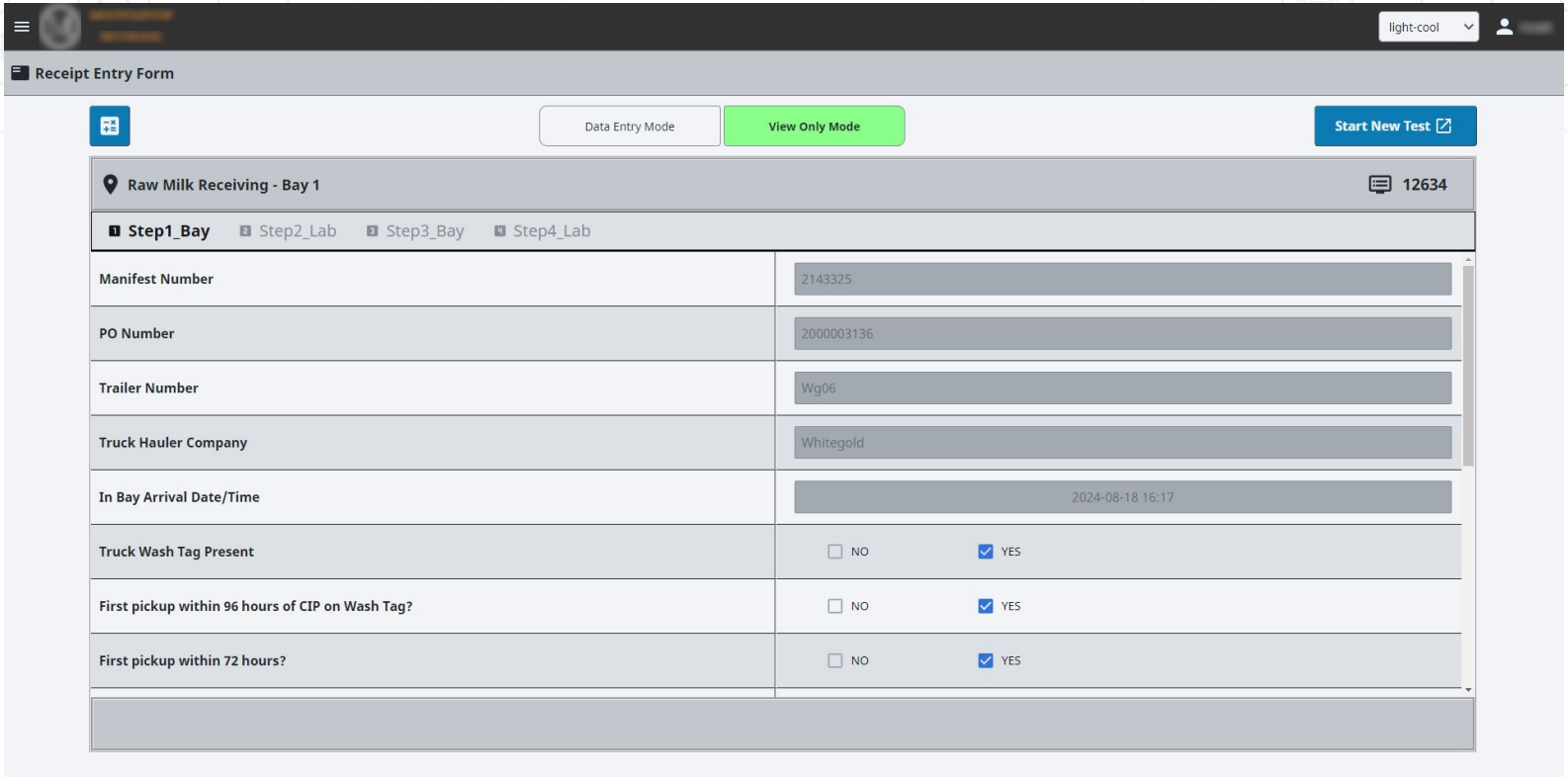
Solution:

- Use Ignition as the front end for the receiving process for raw materials.
- Use Ignition to integrate to the IT managed systems, LIMS and ERP system.
- Use Ignition to connect to the PLCs that controlled the transfer of raw materials into the plant.

Dairy Raw Material Process Flow



Ignition Interface



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Introduction

Fred Zaboli – Operations Manager
Wunderlich-Malec Engineering, Inc.

Ignition Premier Integrator

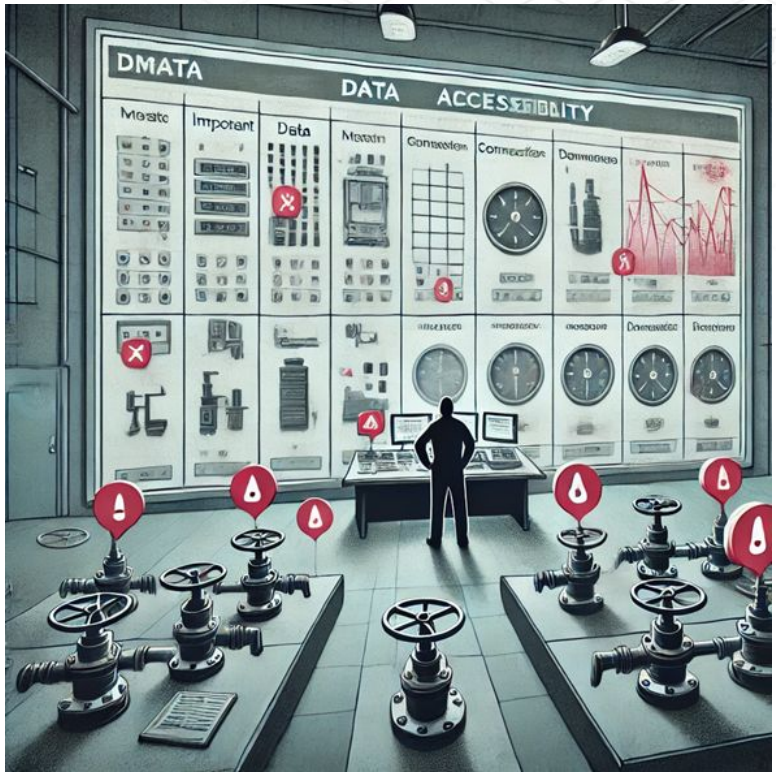
- Established 1981
- Core Identity = Systems Integration
- 100% Employee Owned (ESOP)
- $225 MM Annual Revenue
- 612 Employees
- 37 Local Offices
- 15 Gold, 37 Core, 93 Credential Ignition certified
- Using Ignition on multiple industries
- Automation & Control Systems
- IT/OT Convergence, Cloud Applications, and Cybersecurity

Data Enablement Project

Data enablement project makes data accessible, understandable, and usable, empowering organizations to drive better decision-making and achieve superior business outcomes.

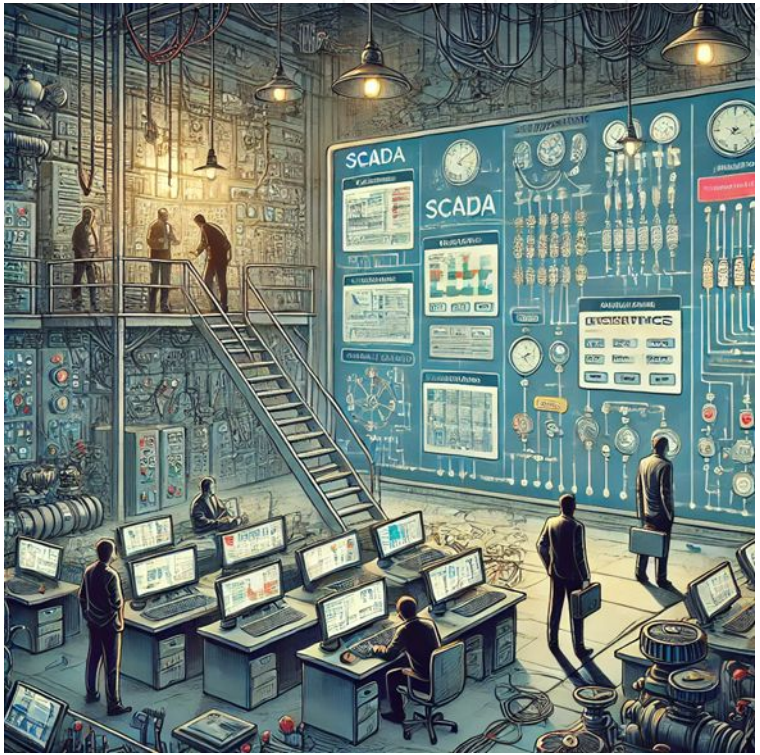
Problems to solve:

- Data access and not having a way to narrow down the issues.
- Having a variety of platforms and not having a single source of truth.
- Lack of standard tools and methods to present, contextualize, and evaluate data.



IT/OT Challenges during design

- Providing standard data model for each piece of equipment.
- Aggregating data from multiple sites' edge gateways with different protocols.
- Providing readily available access to data with no compromise on security.
- Hosting a centralized SCADA system in a location that could support reliable connections for all remote sites.
- Having a local backup system in case of service interruption from the site to the central SCADA system.
- To provide a cohesive configuration tool for all servers and gateways.

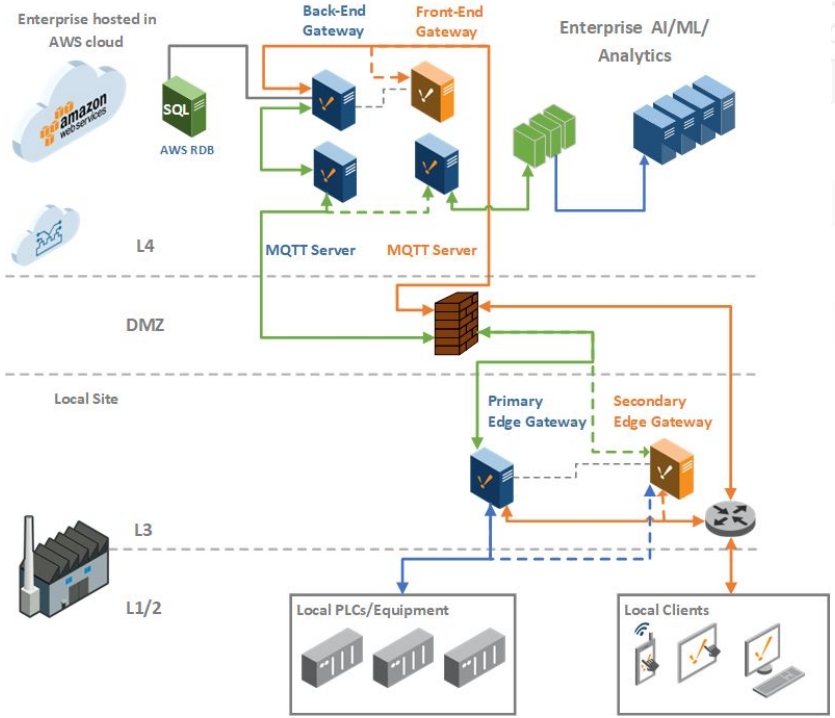


Solution using Ignition platform

- Employ asset-based design principles by using Ignition UDTs, and Templates.
- Using Ignition Edge and Ignition Cloud Edition.
- Deploy Edge gateway into VMs, Ignition is fully compatible with Virtualization
- Taking advantage of technologies in Ignition Platform:
  - MQTT communication
  - Enterprise Administration (EAM)
  - Scale-out architecture
- Implement Unified Named Space with Ignition MQTT Distribution Module.
- Following the Security Hardening Guide provided by Inductive Automation.

Result

- Standard naming conventions.
- Data access from anywhere in the world within the customer domain.
- Defined path and standards for future expansion.
- A central hub to publish production data securely and pass it to all existing and future ERP, MES, and Analytical tools.



Closing summary

- Closing the gap between IT and OT.
- Common language from production all the way to enterprise and management.
- Opens up many future opportunities.

Introduction

Jeremiah Arcaraz Mitchell, PE – Software Project Manager
Barry-Wehmiller Design Group, Inc

- 45+ offices in the US and India
- 1,600 technical and engineering experts
- Ignition certifications across 25 offices

Enterprise Integrator

Ignition Premier Integrator

sepasoft PREMIER

OEE DOWNTIME GOLD

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Design Group

OT vs IT

Operational Technology (OT)

- Local Hosting
- Virtual Machines
- OPCUA and Modbus protocols
- Local Historians, Data Analysis, etc.

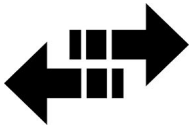
Information Technology (IT)

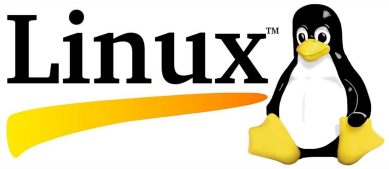
- Cloud Infrastructure
- Containerized Applications
- SQL queries and Rest APIs
- ERP, SAP, Data Lakes, etc.

Design Group

Deployment Flexibility

- Industrial packages historically constrained by Microsoft products
- Open-source database connectivity options
- Unlimited licensing model incentivizes add-on work
- Enables lower cost, quick ROI projects
- Allows for cost reduction options in several areas





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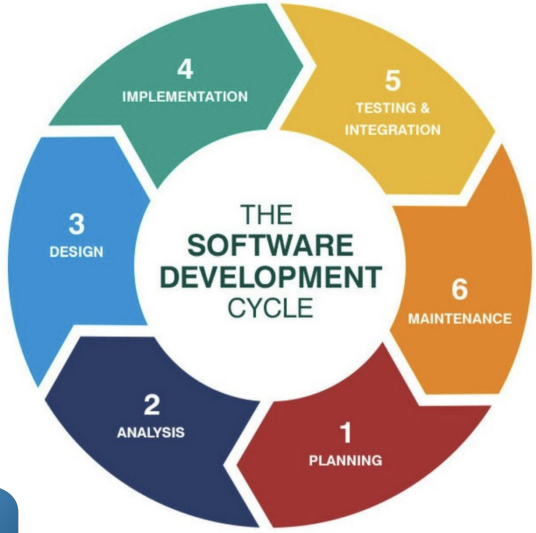
Ignition as a Platform for Custom Solutions

- Possible to develop software apps faster than leveraging native languages directly.
- Enables a quicker development lifecycle due to streamlined implementation times.
- Enhanced compatibility with industry-specific protocols and tooling.
- Easier integration with existing systems through legacy and modern business connector modules.



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Ignition and Version Control

- Collaboration on projects is made easier through branched development
- Efficient and robust change tracking
- Simplified rollback in case of issues
- Streamlined automated deployment processes
- Able to leverage modern tools like GitHub, Gitlab, and Azure Devops.

GitHub

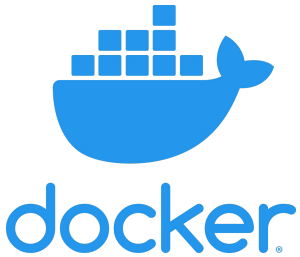
Azure DevOps

GitLab

Design Group

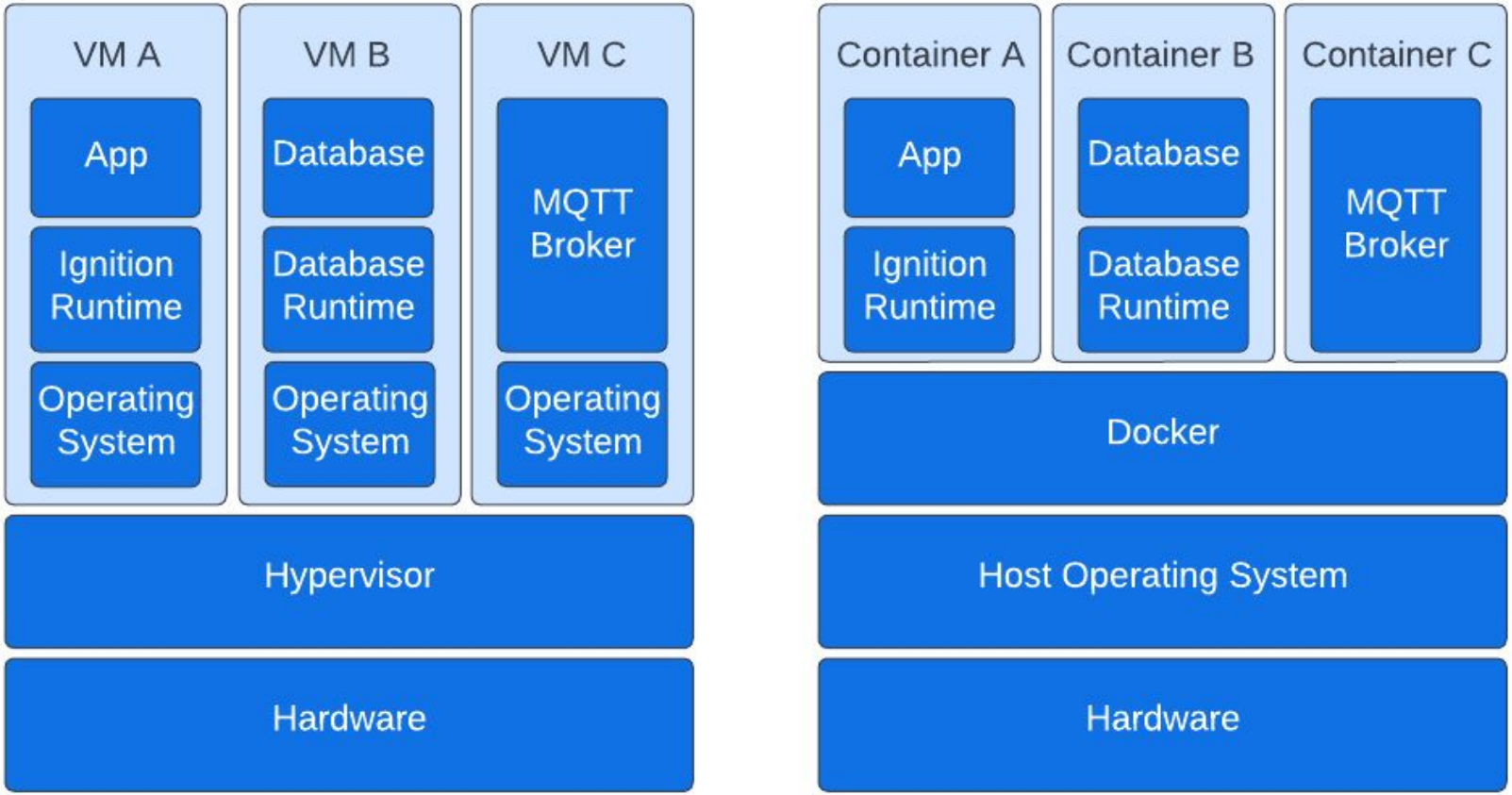
What do Containers bring to the table?

- Independent packaging of dependencies
- Isolated execution of your applications
- Minimal execution footprint
- Better density running Containers vs. VMs



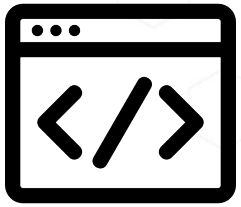
Design Group

Virtualization vs Containerization



Challenges to Adopting Containerization

- OT resources are not familiar with a lot of IT tools (and vice versa!)
- Difficult to containerize applications that require a user interface to install.
- Infrastructure support and technical resource constraints.
- Integration with legacy virtualization systems
- Difficult to leverage Windows based containers, and most industrial clients are not fully adoptive of Unix platforms yet.

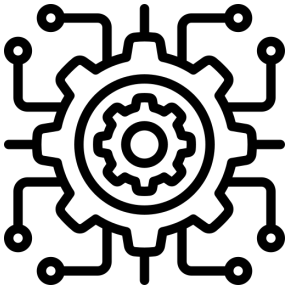


UNIX

Design Group

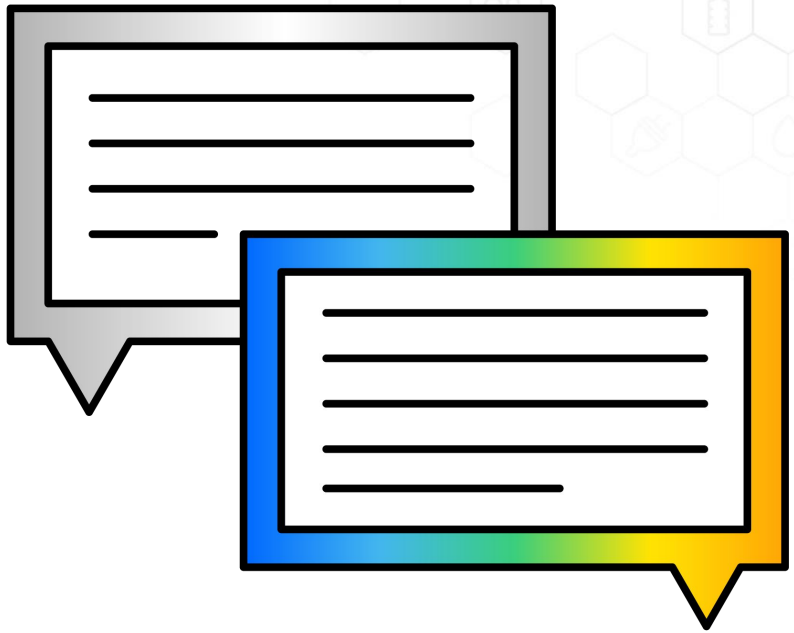
Closing Thoughts

- Highly versatile industrial platform
- Cost effective to deploy
- Often leads to significant add-on engagements
- Actively developed and strong technical direction
- The platform has and will continue to drive growth as a part of digitization of the shop floor and other Industry 4.0 initiatives.



Discussion

- What have been the biggest benefits to connecting OT and IT in your projects?



Ready to Try Ignition for Yourself?

Download the full version for free at:
inductiveautomation.com

inductiveuniversity.com

Ignition User Manual also available at:
docs.inductiveautomation.com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Call us at: **800-266-7798**

Vannessa Garcia
x231

Lester Ares
x214

Ramin Rofagha
x251

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