

TraceLink University Foundation Sessions

Network, Platform, and Orchestration Fundamentals



Anti-Trust Guidelines

TraceLink University courses are public classes. As such, we ask our students not to engage in discussions regarding pricing, deal-making, selling, promoting or other activities which could be viewed as anti-competitive.

If anyone believes the discussions are approaching these boundaries, please say so and the discussion thread will be halted until TraceLink legal counsel is consulted before proceeding.

Morning Agenda: What to Expect

- Introduction to End-to-End Supply Chain Digitalisation and Orchestration
- Opus Platform Foundations
- TraceLink Network and Opus Integration Foundations
- Supply Chain Orchestration with MINT



Introduction to End-to-End Supply Chain Digitalisation and Orchestration

with Burke Ryder and Swanand Walimbe



Burke Ryder is a Principal Product Manager of Supply Network Products. Burke has 12 years of experience in product and solution development, with expertise in business process modeling and system design. He is responsible for driving the product design of TraceLink's supply network products, that enable the orchestration of end-to-end supply chain, product, and patient success.



Swanand Walimbe is a Senior Product Manager with extensive experience in the pharmaceutical supply chain and life sciences domain. He specializes in developing innovative, cloud-based solutions that improve operational efficiency, regulatory compliance, and product delivery. With a strong focus on product strategy and cross-functional collaboration, Swanand leads teams to optimize pharma operations and drive digital transformation, ultimately improving patient outcomes and advancing the life sciences industry.



Orchestration is the Means by Which We Achieve Integrated, Intelligent, End-to-End Supply Chain Management



Coordinate the supply chain to efficiently move product from manufacturers to consumers



Synchronize procurement, manufacturing, distribution, and logistics across suppliers, distributors, regulators, and healthcare providers



Optimize for cost-effective, and secure delivery of medications, enhancing visibility and responsiveness



Supply Chain Orchestration Helps Improve KPIs and Minimize Supply Chain Challenges

Business Goals

- ↓ Reduce Out of Stocks
- ↓ Reduce Inventory
- ✘ Eliminate Failure to Supply
- ↓ Reduce Operational Costs
- 🚀 Launch New Products
- 🌐 Enter New Markets
- 📈 Improve Service Levels
- 🏠 Build New Channels

Supply Chain Challenges

- 📊 Demand and Supply Forecast
- 🏠 Channel and Enterprise Inventory
- 📦 Customer and Supplier OTIF
- 📄 Order and Production Visibility
- 👤 Onboard Customers and Suppliers
- 🏃 Compliance & Regulatory Requirements
- 📅 Customer and Supplier Lead Times
- 👤 Marketplaces and Patient Delivery

Orchestration impacts multiple operational capabilities across multiple supply chain partners



▶ Key Performance Indicators



Order Lead Time



OTIF



Working Capital



Cycle Time



Supply Lead Time

▶ Planning



Channel Inventory



Demand Forecast



Production Forecast



Current Inventory



Supply Forecast

▶ Transaction Flow



Order-to-Cash



Transportation



Logistics



Production Tracking



Procure-to-Pay

▶ Inventory Flow



Channel



Transportation



3PL



Warehouse



CMO



Supplier

▶ End-to-End Supply Chain



Customers



Carriers



3PLs



Brand Owners



CMOs



Suppliers



N-Tier Suppliers

90%+ of the Supply Chain Data You Need Resides Outside of Your Enterprise

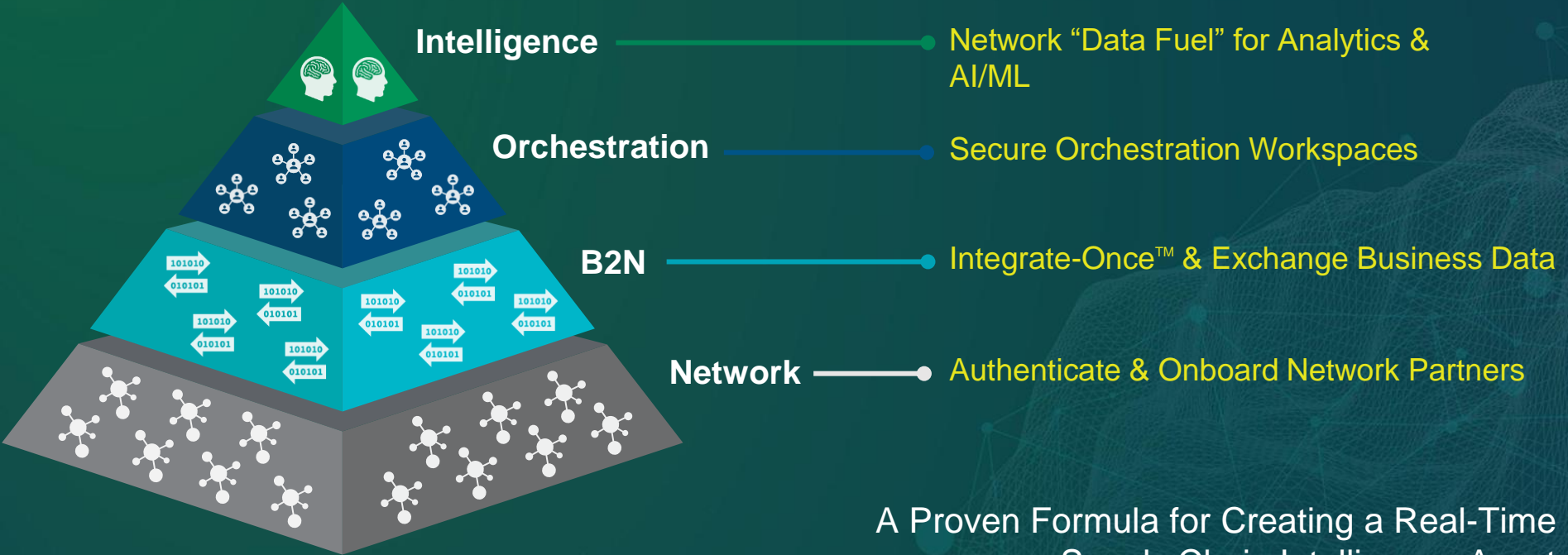


Supply chain orchestration requires clean, continuous, real-time data from all trading partners

Digitalisation Fuels Your Enterprise Systems with Real-Time, End-to End Supply Chain Information

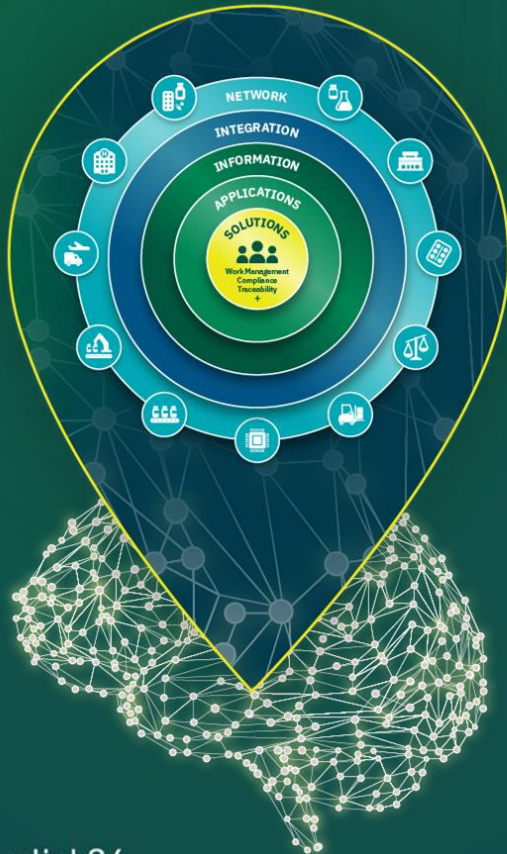


Real-time Supply Chain Intelligence Starts with Supply Chain Network Integration and Digitalisation



A Proven Formula for Creating a Real-Time Supply Chain Intelligence Asset

TraceLink's Opus Platform Enables Rapid Integration to Any System, Process, or Workflow – by Any Customer or Partner



Opus Capabilities

Customer Benefits

No-Code Solution Configuration

Custom solutions for your business processes that maintain interoperability

Low-Code Multienterprise Apps

digitalisation and integration of all manual processes with partners

Collective Intelligence Across the Network

Integrated, real-time visibility across the end-to-end supply and demand network

Integrate Once, Interoperate with Everyone™

10x faster and cheaper to create digital links with zero cost for maintenance

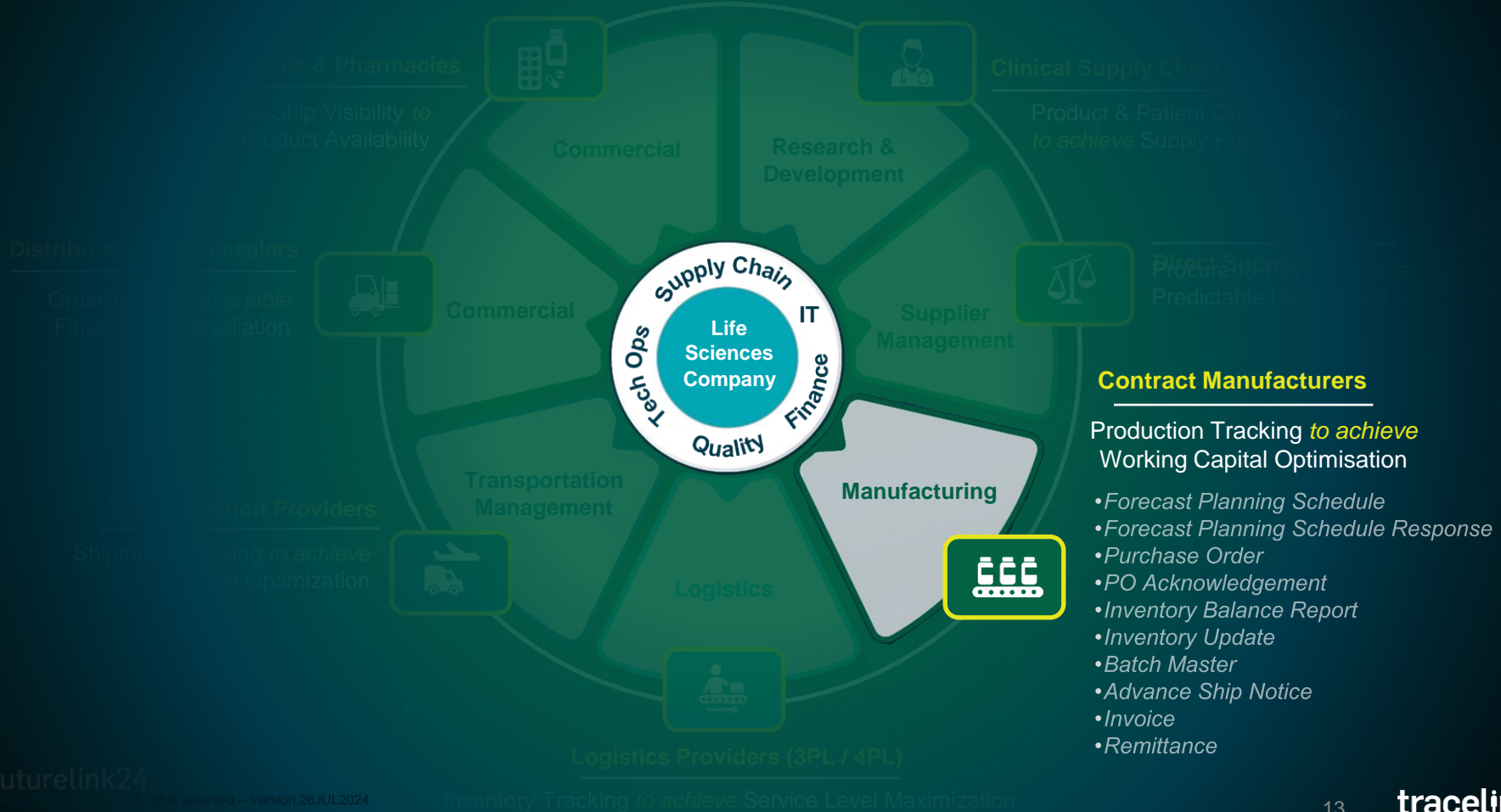
Network Creation & Management

Identify and onboard **all** supply chain partners, not just your top 1-5 partners



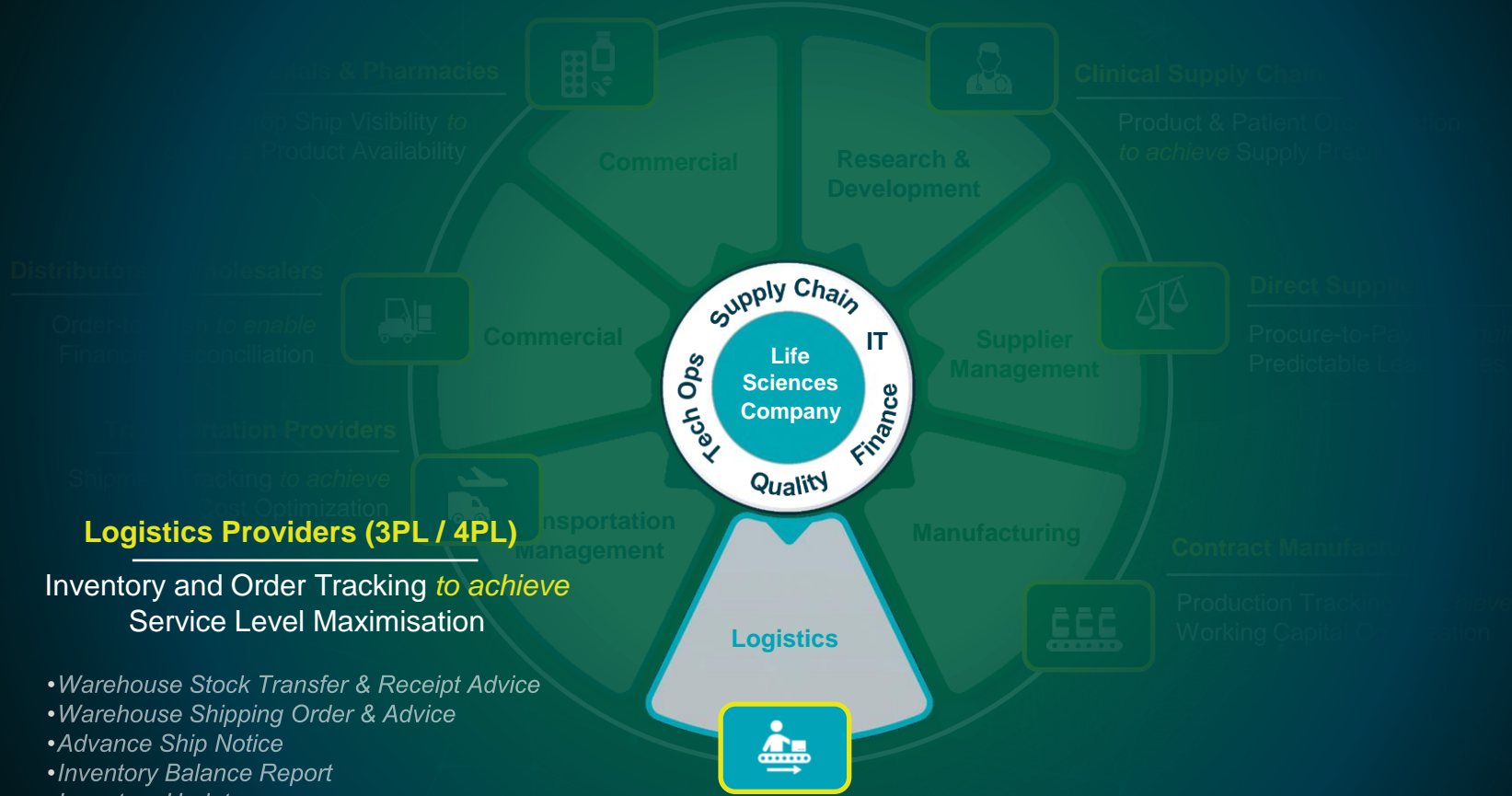
**Your End-to-End Orchestration Journey Can
Begin with Any Supply Chain Process**

Orchestrating Outcomes in External Manufacturing



- Contract Manufacturers**
- Forecast Planning Schedule
 - Forecast Planning Schedule Response
 - Purchase Order
 - PO Acknowledgement
 - Inventory Balance Report
 - Inventory Update
 - Batch Master
 - Advance Ship Notice
 - Invoice
 - Remittance

Orchestrating Outcomes in Logistics



Logistics Providers (3PL / 4PL)

Inventory and Order Tracking *to achieve* Service Level Maximisation

- Warehouse Stock Transfer & Receipt Advice
- Warehouse Shipping Order & Advice
- Advance Ship Notice
- Inventory Balance Report
- Inventory Update

Orchestrating Outcomes in Commerce

Hospitals & Pharmacies

Order-to-Cash *to enable*
Financial Reconciliation

- Price/Sales Catalog
- Purchase Order
- PO Acknowledgement
- Advance Ship Notice
- Invoice
- Remittance
- Return Authorization
- Credit/Debit

Distribution



Market Access



Clinical Supply Chain

Product & Patient Order Management
to achieve Supply Predictability



Commercial



Supplier Management

Direct Supply

Procure-to-Pay
Predictable Lead Times



Transportation Management



Manufacturing

Contract Manufacturing

Production Tracking
Working Capital Optimization

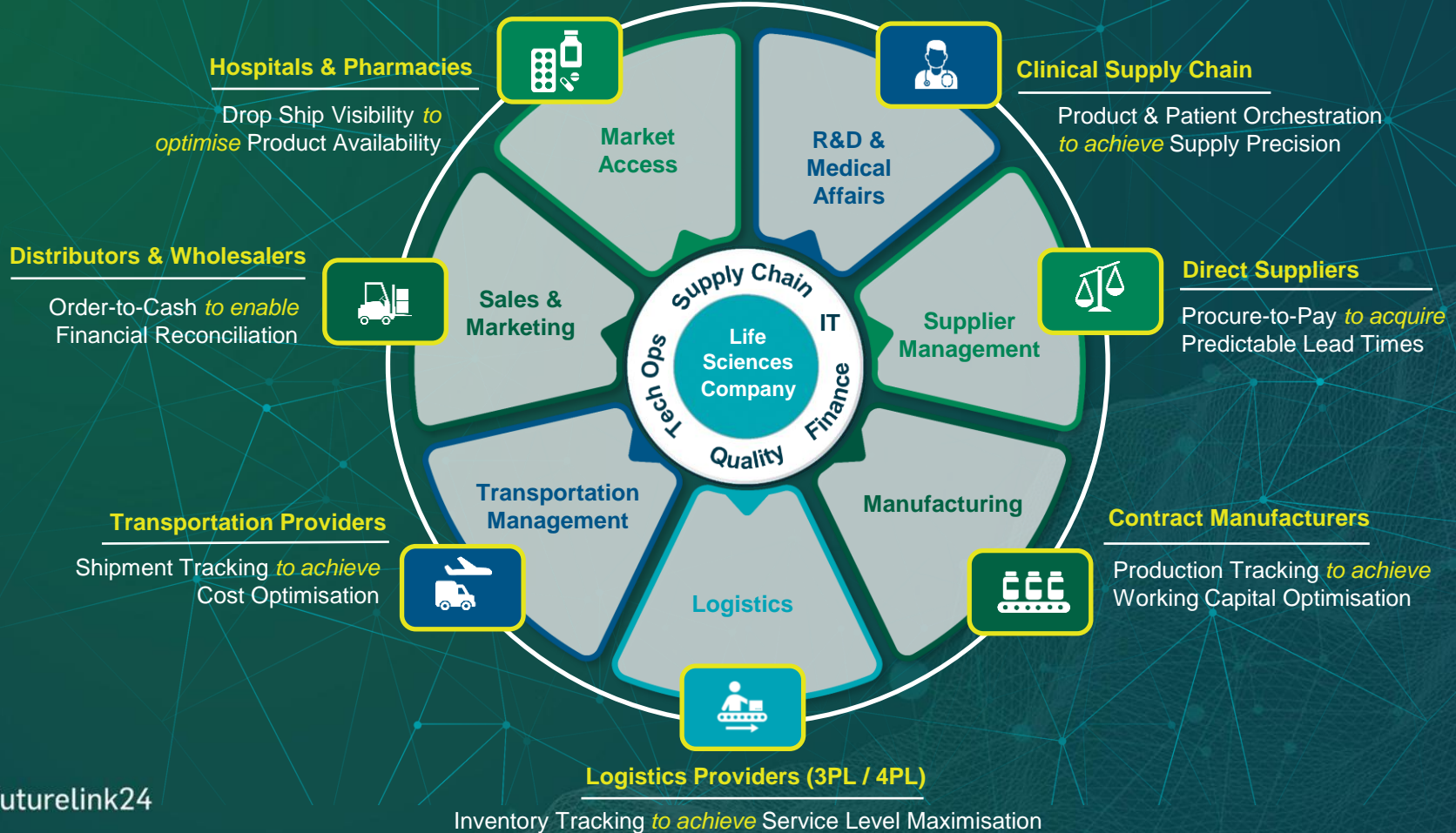


Logistics

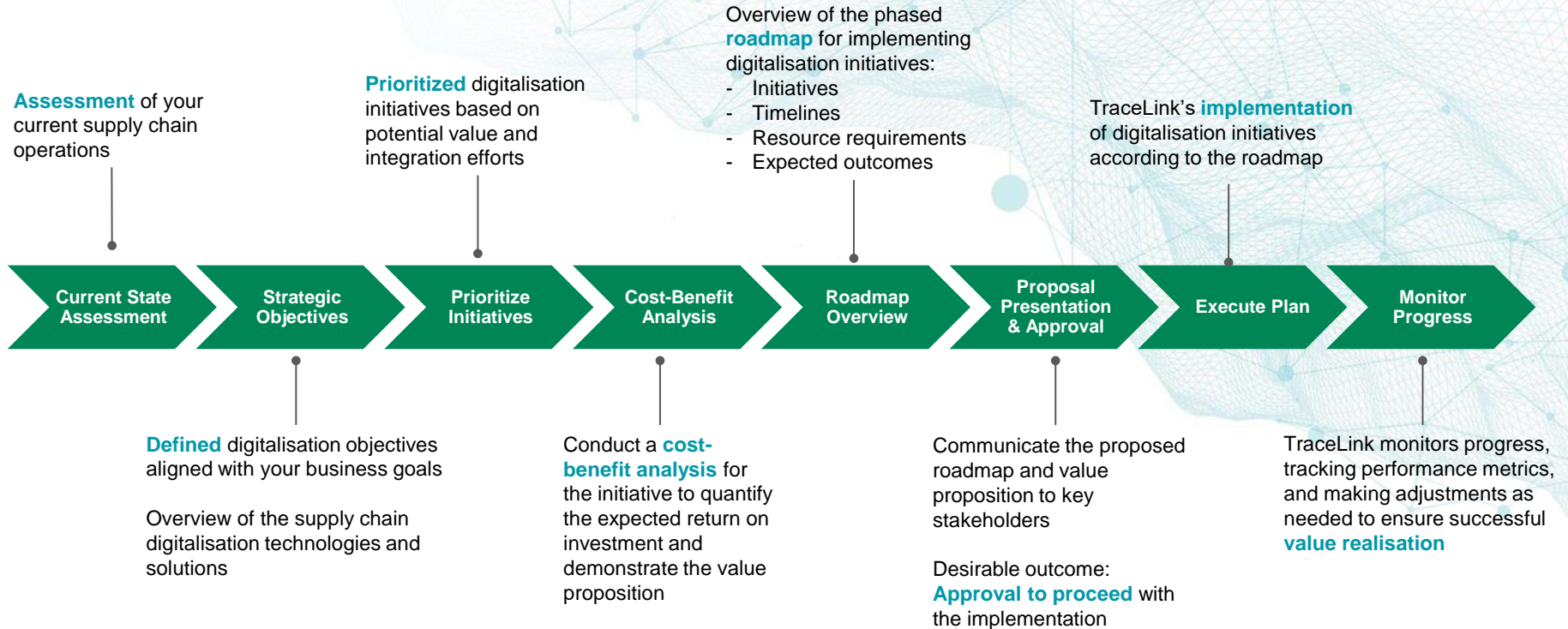
Logistics Providers (3PL / 4PL)

Inventory Tracking *to achieve* Service Level Maximization

Your End-to-End Orchestration Journey Can Begin with Any Supply Chain Process



How to Get Started: Supply Chain Orchestration Value Roadmap



Checkpoint and Key Takeaways

- ✓ Introduction to End-to-End Supply Chain Digitalisation and Orchestration
- Opus Platform Foundations
- TraceLink Network and Opus Integration Foundations
- Supply Chain Orchestration with MINT



Orchestration is the means by which we achieve integrated, intelligent, end-to-end supply chain management.



Digitalisation increases accuracy, efficiency, productivity, speed, and visibility.



To successfully orchestrate and digitalise your supply chain, you need a true network of verified partners.



TraceLink's Opus Platform, which sits atop TraceLink's proven Network provides rapid integration to any system, process, or workflow by any customer or partner.

**Questions
for Burke
and
Swanand?**



Opus Platform Foundations

with Bob Sturim

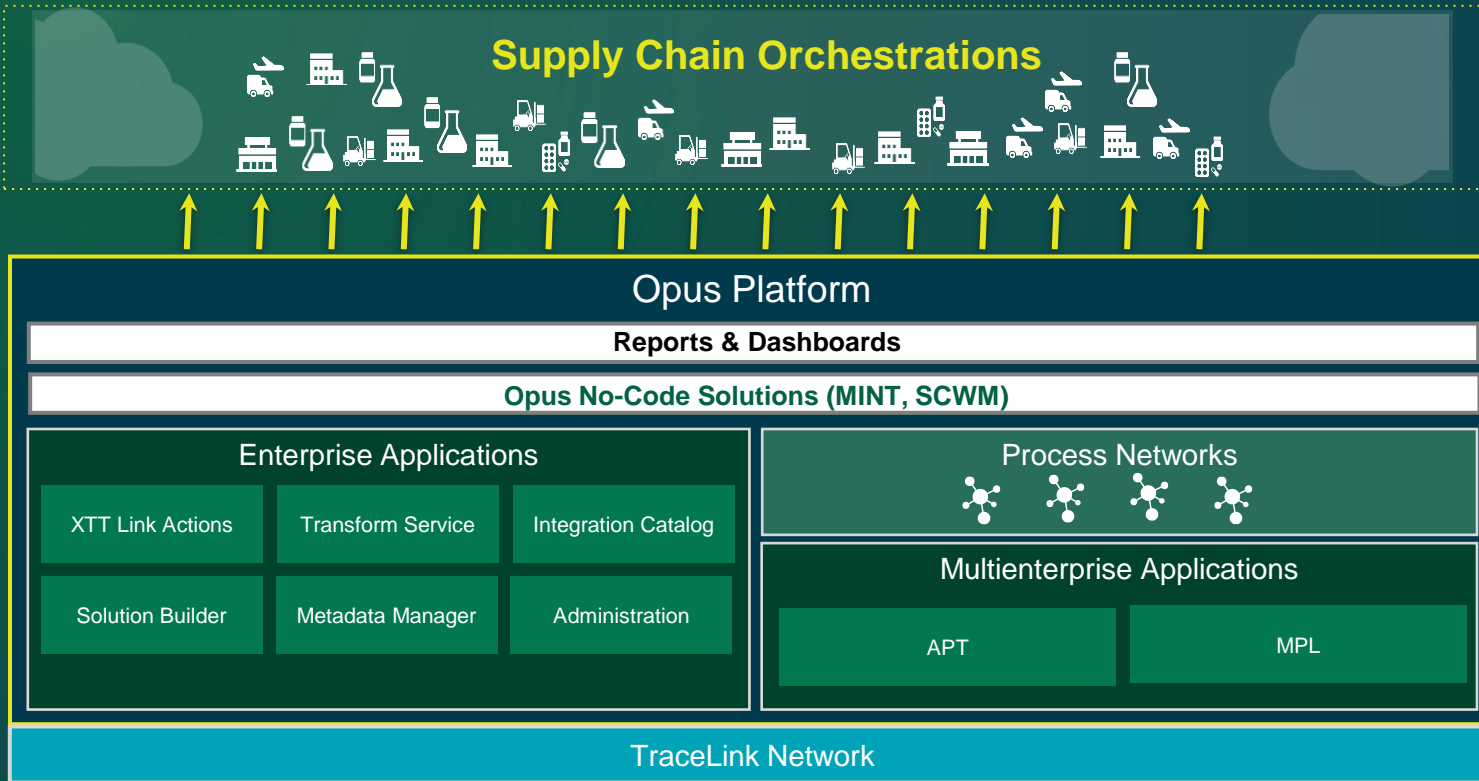


Bob Sturim is the Chief Technology officer and SVP of Platform. Bob has over 30 years of technology and engineering leadership in the supply chain sector, focusing on product architecture and agile development. Bob works to foster a culture of innovation, where collaboration and creativity drive the development of technology solutions that not only meet but exceed the rigorous demands of the healthcare industry.



The Opus Platform

The only PaaS that enables organizations to create and configure multienterprise solutions for orchestrating end-to-end supply chain processes.



Supports supply chain orchestrations by enabling the seamless coordination within business processes ecosystems.

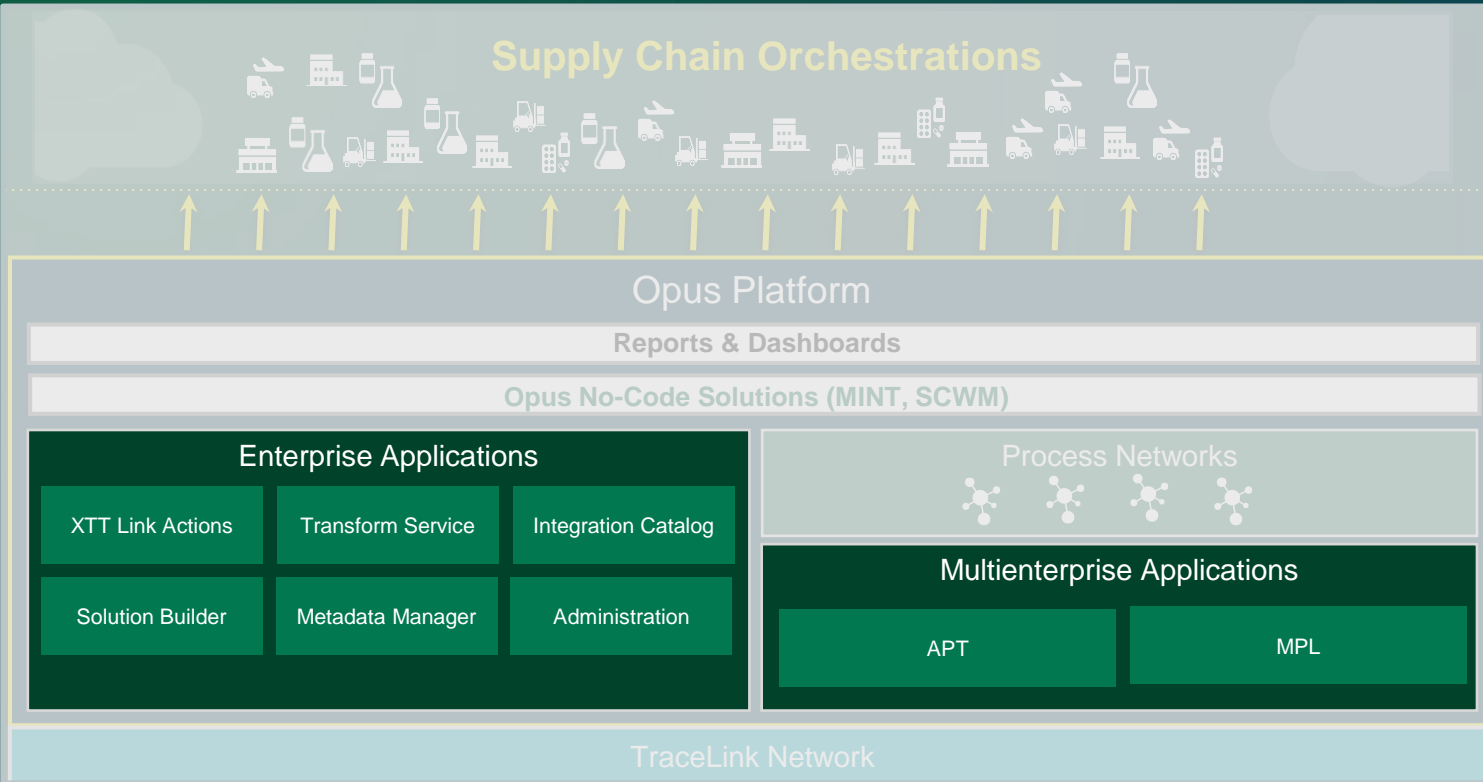
Allows organizations to link, facilitating real-time information exchange.

Key elements:

- **Applications**
- **Solutions**
- **Process Networks**
- **Integrations**

Opus Applications

Opus applications provide essential business functionality, enabling key capabilities like workflows, to meet customer and market needs.



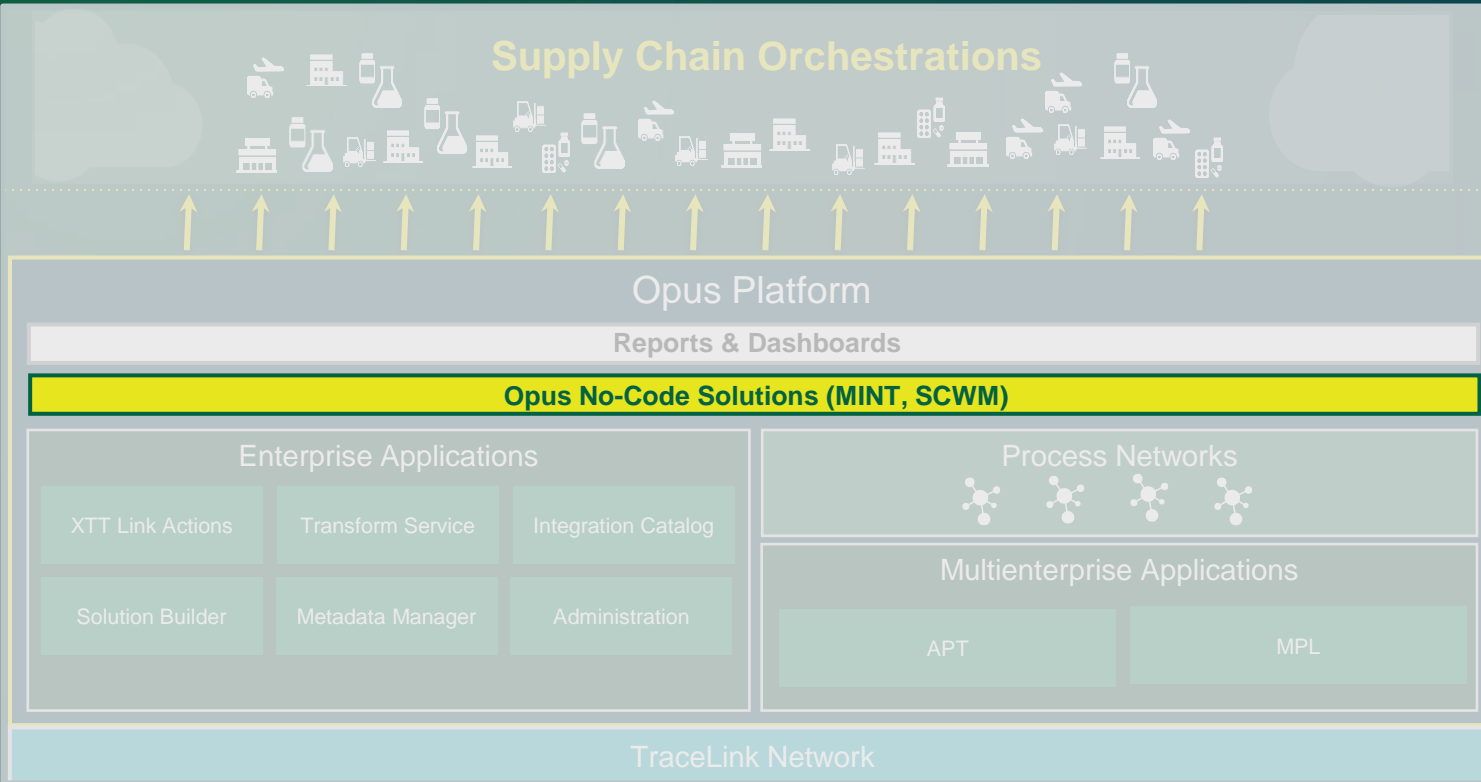
Opus includes both **enterprise** and **multienterprise** applications, providing shared instances for business process execution.

Opus apps are **"headless"** (e.g. no UI) and are built by Opus Developers.

A **multienterprise app** is a **shared instance** of an application where an owning company exchanges data with supply chain partners on the TraceLink Network.

Opus Solutions

Opus solutions configure and extend application behavior, allowing organizations to address their unique business requirements.



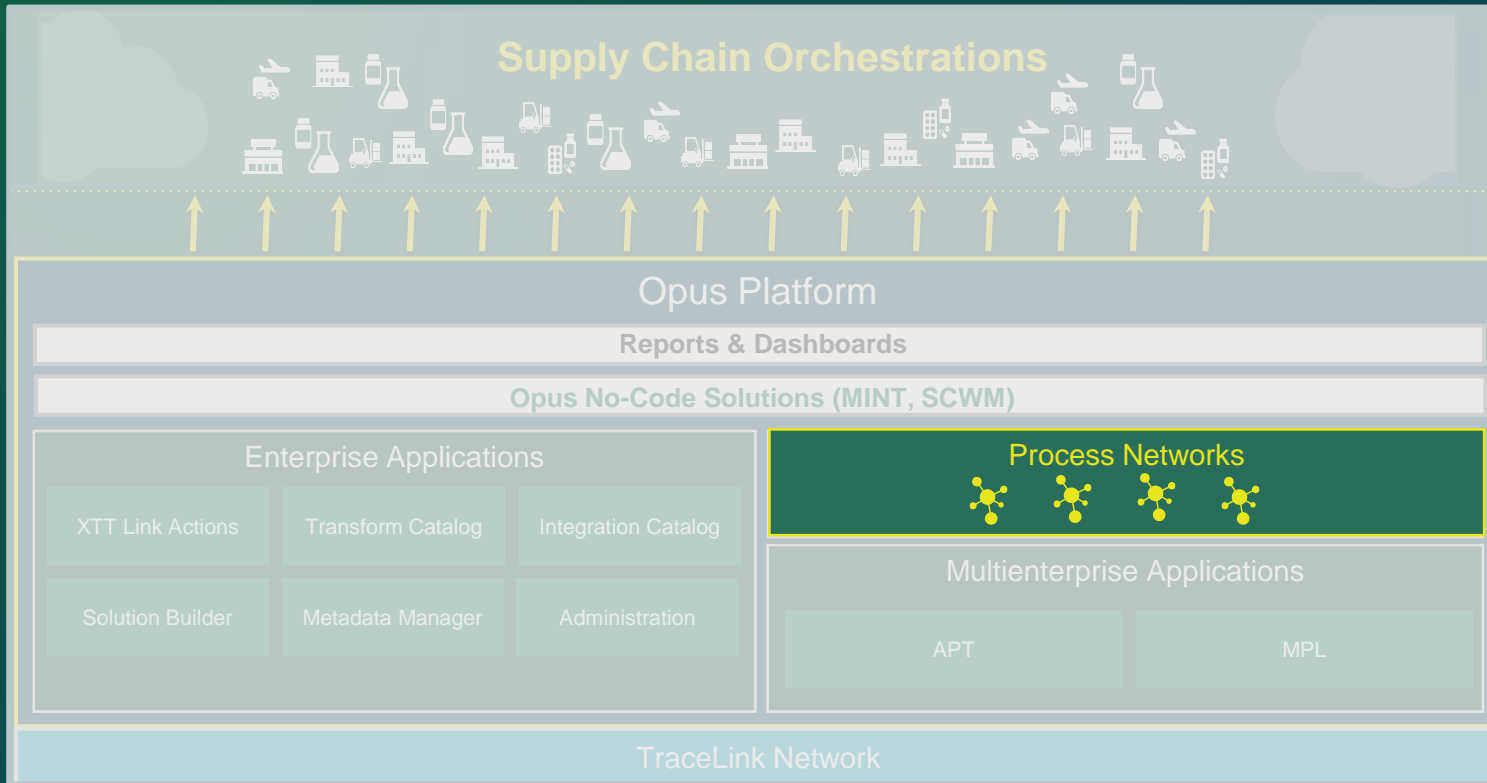
As apps are headless, Solutions provide UX and configurations that **extend application behavior**.

Solutions harness TraceLink's comprehensive data model to create rich, **interoperable**, multienterprise solutions.

Solutions encompass many robust components that allow for an **accelerated delivery** of a tailored user experience.

Process Networks

Process Networks enable efficient multienterprise coordination and data exchange, supporting orchestrations and end-to-end supply chain processes



A **Process Network** is a business ecosystem within a multienterprise app all working toward a shared business goal.

Each network is **configurable**, enabling secure data sharing and orchestration of business processes based on roles and links.

Using a **solution on multiple Process Networks** enables customers to tailor their different orchestrations to satisfy the unique needs of each network.

Opus Ensemble: The First Next Generation Solution

Opus ensemble powers browser-like navigation across multienterprise and enterprise solutions.

Explore the Opus UX through these key areas:

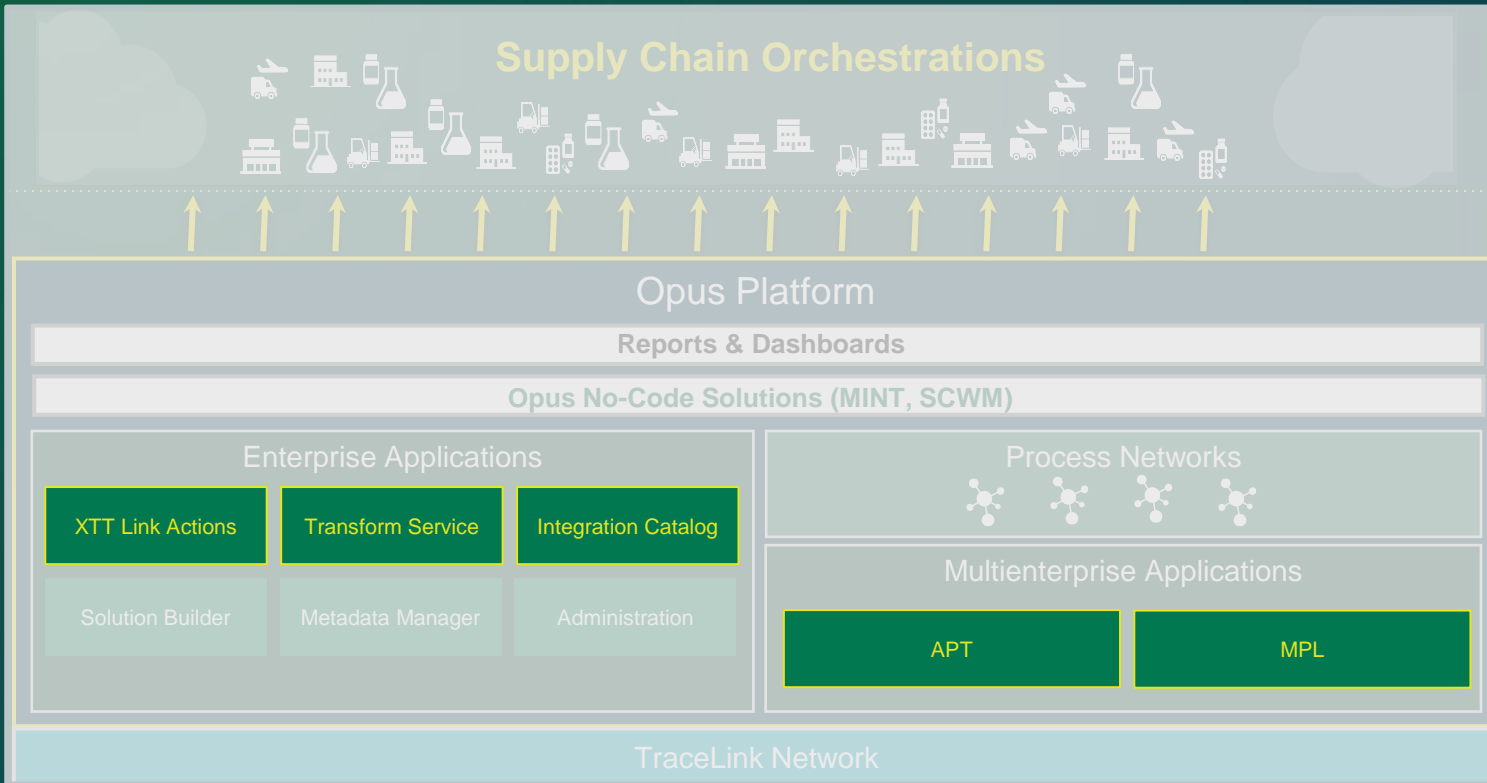
- A. **User Context:** Fixed at the top for reliable and familiar interaction. Instant access to your accounts, notifications, help, support, and essential context such as company name/logo and environment.
- B. **Navigation:** Guides you to solutions, networks, and processes, featuring browser-like tabs and TraceLink's unique network navigation, to ensure streamlined and efficient user journey.
- C. **Main Content Area:** A rich, interactive space for effortless engagement and task execution.
- D. **Toolbar and Push Panel:** Quick access to key operations and information without impeding key information and actions in the main content area.

The screenshot displays the Opus Ensemble web application interface for Kendall Pharmaceuticals. The browser title is "Kendall Pharmaceuticals". The page shows a navigation bar with tabs for "MINT - Global Supplier Net...", "SCWM - Global Animal Hea...", and "Settings". Below the navigation bar, there is a search bar for "Global Supplier Network" and a dropdown menu for "Murro Supplies". The main content area is titled "Search Purchase Orders" and displays a table of purchase orders. The table has columns for PO Number, Transaction Status, Last Modified, Supplier, Order Date, and Delivery Date. The table contains 8 rows of data. To the right of the table is a "Filters" panel with options for Keyword, Status, Buyer, and Last Modified. At the bottom of the table, there is a "Rows per page" dropdown set to 100 and a "Showing 1-100 items" indicator.

PO Number	Transaction Status	Last Modified	Supplier	Order Date	Delivery Date
260320210011	Delivered	08 Oct 2023, 12:34 PM	Alpenstock	16 May 2023	24 May 2024
260320210012	Inbound	08 Oct 2023, 12:34 PM	Globex Corporation	16 May 2023	24 May 2024
260320210017	Delivered	08 Oct 2023, 12:34 PM	Alpenstock	16 May 2023	24 May 2024
260320210024	Inbound	08 Oct 2023, 12:34 PM	Alpenstock	16 May 2023	24 May 2024
260320210057	Delivered	08 Oct 2023, 12:34 PM	Globex Corporation	16 May 2023	24 May 2024
260320210089	Delivered	08 Oct 2023, 12:34 PM	Alpenstock	16 May 2023	24 May 2024
260320210014	Delivered	08 Oct 2023, 12:34 PM	Globex Corporation	16 May 2023	24 May 2024
260320210090	Delivered	08 Oct 2023, 12:34 PM	Globex Corporation	16 May 2023	24 May 2024

Integrations

Integrations drive seamless data flow and coordination across business process ecosystems



Integrations **simplify** the **exchange** of complex transactional data across companies

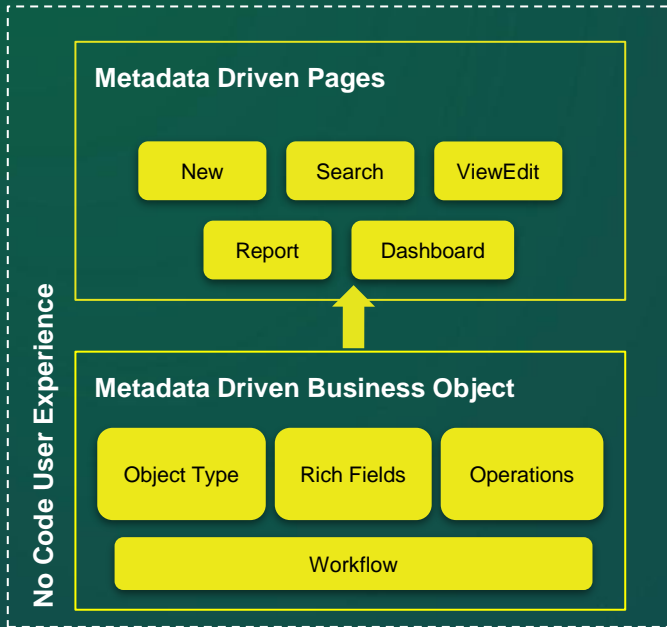
These integrations involve the **transfer of key business objects**, such as purchase orders and invoices that traverse through specific workflows to support orchestrations (e.g. Commerce).

Integration options include the **UI, B2B Messages, and Link Actions.**

Metadata Makes it Happen!

Rich Metadata in Opus unlocks the ability to create multienterprise no-code solutions, enabling the ability to get supply chain solutions to-market, faster than before.

Everything starts with TraceLink's Data Model



Metadata provides **information** about **Business Objects**.



It is the **foundation** of our **object-centric** design.



Metadata makes **no-code** **Solution Environment** possible.

Opus Solution Environment (OSE)

The Opus Solution Environment (OSE) allows customers to design or configure solutions without coding, delivering unparalleled ability to facilitate unique multienterprise business processes

Effortlessly configure...

Business Objects



Workflows



Menus



Pages



Roles



Policies



...with intuitive drag and drop interface.



The screenshot displays the 'Opus Solution Designer' interface for 'Kendall Pharmaceuticals'. The main window shows 'MINT Menu Details' configuration. A table lists submenus and menu items:

Submenu Name	Display Name
all_Transactions	All Transactions
manufacturer_Customer	Manufacturer - Customer

Menu Item Name	Display Name
purchase_Orders	Purchase Orders
purchase_Order_Acknowledgments	Purchase Order Acknowledgments
shipment_Notification	Shipment Notification
invoices	Invoices
production_Plan	Production Plan
inventory_Balance	Inventory Balance
inventory_Adjustment	Inventory Adjustment
material_Issued	Material Issued

On the right, the 'New Menu Item' configuration panel is visible, showing fields for 'Menu Item Name' (material_Consumed), 'Menu Item Display Name' (Material Consumed), 'Target Page Type' (Search Page), and 'Page Name' (Option).

Opus Catalogs

Opus catalogs offer a searchable repository of various solution offerings, empowering discovery and reuse by customers and partners.

Standard Catalog – pre-installed, out-of-the-box

Marketplace Catalog – globally shared catalog

Company Catalog – configured by your company

** Solutions, Link Actions, and Transforms are accessible via the Marketplace Catalog through Opus's Platform Capabilities*

The screenshot shows the Tracelink interface for managing solutions. The left sidebar contains a navigation menu with the following items:

- Catalog
 - Standard Solutions
 - Marketplace Solutions
 - Company Solutions
- Available
 - Business Object Types
- Solutions
 - Solution
- Workflow
- New Pages
- Search Pages
- View Edit Pages
- Menus
- Roles
- Policies

The main content area is titled "Solutions" and includes the instruction: "View the solutions your company can use to create new...". Below this is a table with the following data:

Applied	Application Name
✓	Agile Process Team
	Agile Process Team
	Agile Process Team
	Master Data Sharing
	Product Track - US
✓	Product Verification
	Russia Compliance
✓	Supply Chain Work Management
✓	Serialized Operations Manager
✓	US DSCSA Compliance

Checkpoint and Key Takeaways

- ✓ Introduction to End-to-End Supply Chain Digitalisation and Orchestration
- ✓ Opus Platform Foundations
 - TraceLink Network and Opus Integration Foundations
 - Supply Chain Orchestration with MINT



The **only** multienterprise platform!



Flexible applications, solutions, and integrations.



No-code design environment.



Faster time to market.



Searchable repositories.

**Questions
for Bob?**



Tracelink Network and Opus Integration Foundation

with Caitlin Czulada



Caitlin Czulada is the Vice President of the Solution Center of Excellence at TraceLink, where she leverages over 11 years of experience to drive customer success, optimize product usage, and deliver comprehensive training solutions. In her current role, Caitlin leads the Center of Excellence, ensuring that customers not only adopt but thrive using TraceLink's solutions.



The Network



TraceLink creates a **single** digital twin of every company in the supply chain.



TraceLink uniquely **identifies** and **authenticates** the Network entities.



Ensures **trust** when connecting and exchanging data with entities on the TraceLink Network.



TraceLink's Network is Supported by Network Success Management



Global dedicated Network Success Management team.



NSM team **onboards** and **maintains**
Network entities.



Reducing onboarding, maintenance and overall support
efforts and **cost**.



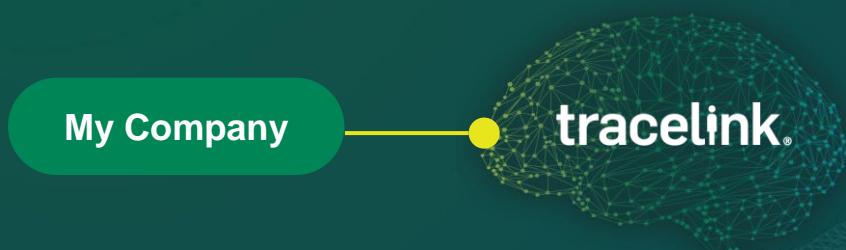
TraceLink's Network Enables B2N Integrate Once



Integrate once enables every company on the Network to integrate **one time** for each transaction, regardless of the number of partners.



With TraceLink, there is **no need** to create and **maintain costly** unique point-to-point integrations for each partner.



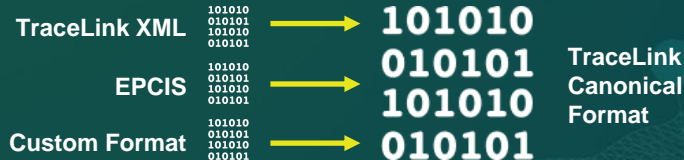
TraceLink's B2N Integrate Once Permits Interoperate with Everyone



Interoperate with Everyone uses a **canonical model** to allow every company on the Network to integrate to TraceLink using their **own format and integration method**.



Since each partner uses their own format, each company only needs to **maintain their own integration** and is **isolated from changes** their partners make.



TraceLink's Interoperate with Everyone Facilitates Linking



A link is a connection between **two** entities on the Network.



Through the **simple configuration** step of linking, companies can start exchanging data with any entity on the TraceLink Network.



TraceLink's Linking Configuration Empowers Multienterprise Applications



Multienterprise applications, like MINT, allow customers and trade partners to have a **shared truth** of their business processes.



Solves the security concerns of giving access to internal system.



One link and **one view** of the data enables better orchestration.



Excel
(only your workspace)

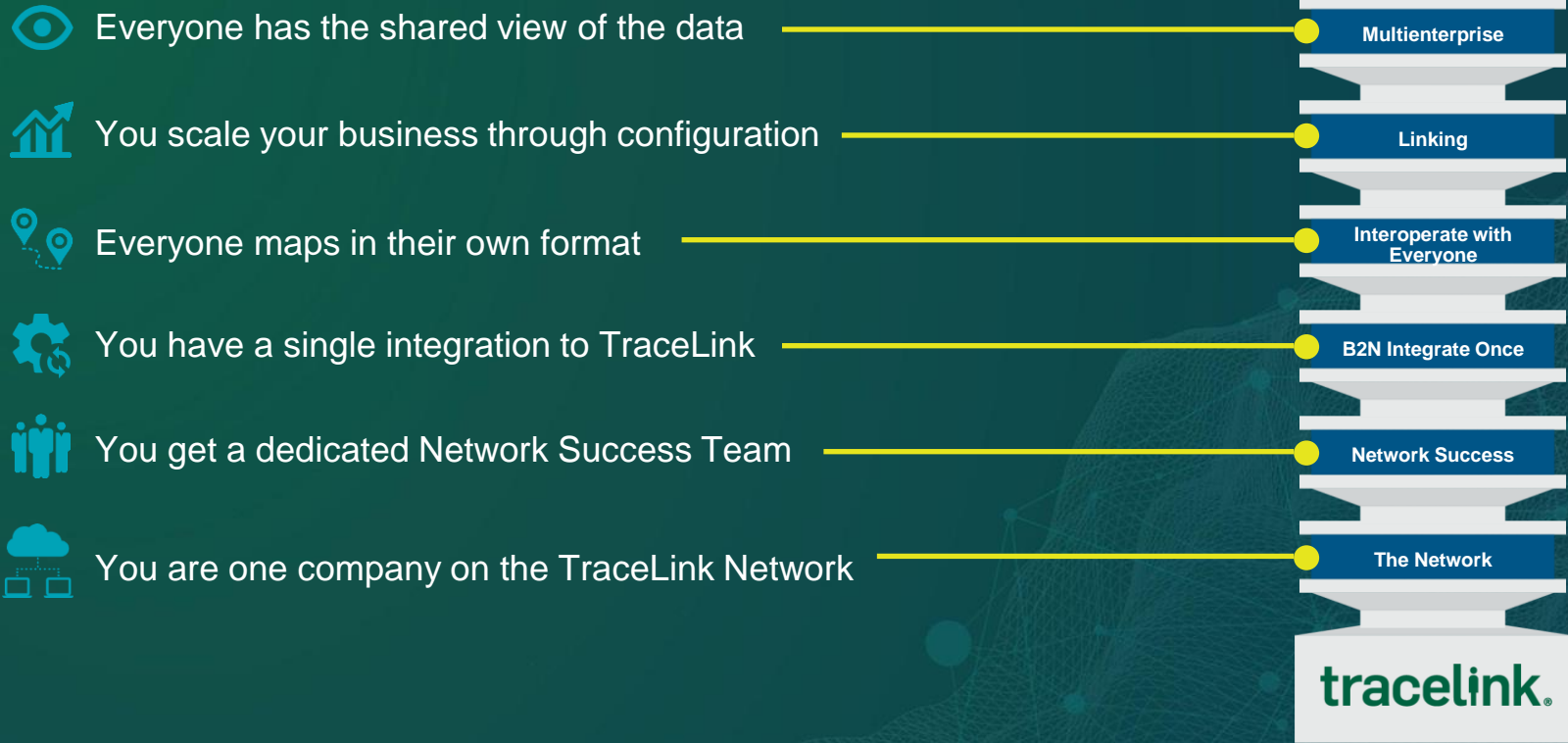
VS.



Google Sheets
(shared workspace)



The Tower of Success



Checkpoint and Key Takeaways

- ✓ Introduction to End-to-End Supply Chain Digitalisation and Orchestration
- ✓ Opus Platform Foundations
- ✓ TraceLink Network and Opus Integration Foundations
- Supply Chain Orchestration with MINT

- 🔑 TraceLink creates a single digital twin for each company on the Network.
- 🔑 Each company only needs to integrate once in their own format.
- 🔑 Multienterprise apps allow a shared view into the orchestration.

**Questions
for Caitlin?**



Supply Chain Orchestration with MINT

with Tereance Puryear

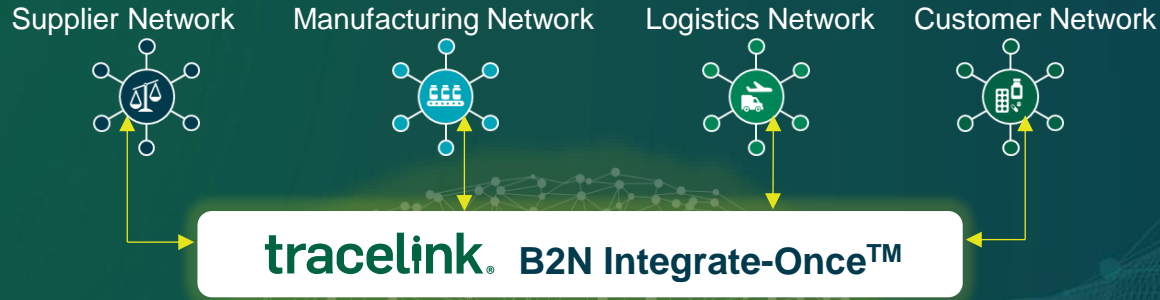


Tereance Puryear is a Senior Solutions Consultant with TraceLink where he engages customers to extract and understand needs, create compelling use cases, and communicate value through TraceLink's digital network. With years of experience in logistics and supply chain, Tereance uses his expertise to assist customers and partners achieve real-time supply chain intelligence through cost-effective B2B network integration across the entire pharmaceutical supply chain.



MINT is the Digitalisation Solution that Integrates Supply Chain Networks to Optimize Service, Cost and Cash Across End-to-End Supply Chain Orchestrations

Multienterprise Information Network Tower



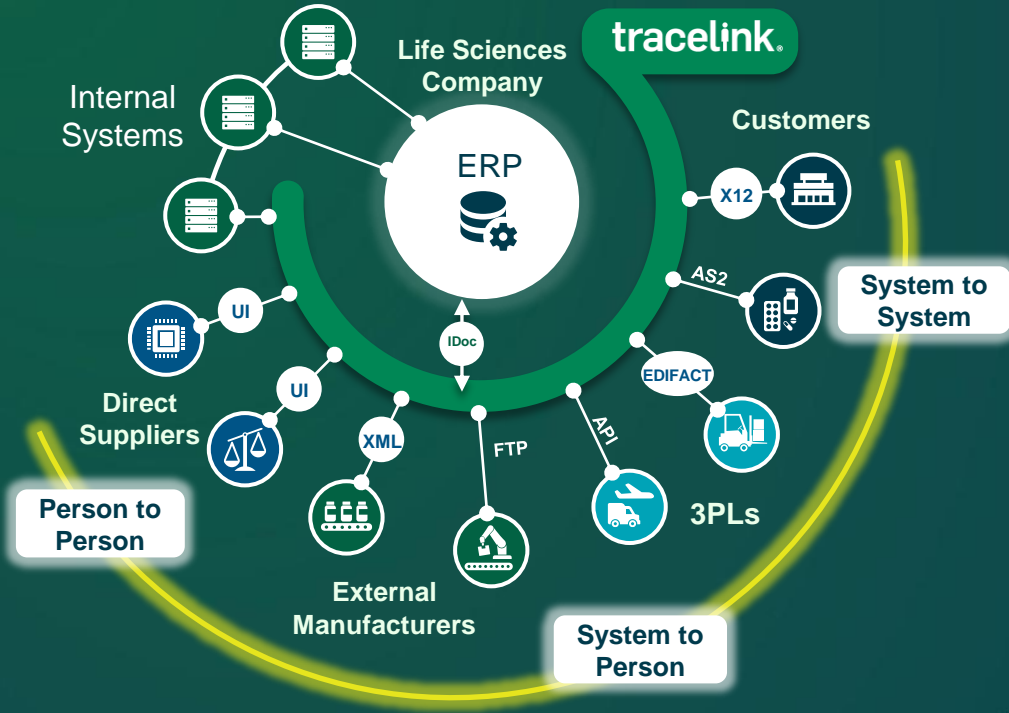
Multienterprise Orchestration Use Cases

- PO & Shipment Confirmation
- Forecast Collaboration
- Production Tracking
- 4PL Order-to-Cash
- Invoice Tracking
- Financial Reconciliation
- Clinical Supply Distribution
- 3PL Warehouse Management
- Inventory Visibility
- Price Catalogue Updates
- Procure-to-Pay
- Returns Processing

Cross-Functional Orchestration Team



MINT Enables Data Exchange with All Supply Chain Partners Through Flexible Modes of Integration with the Integrate-Once™ Model

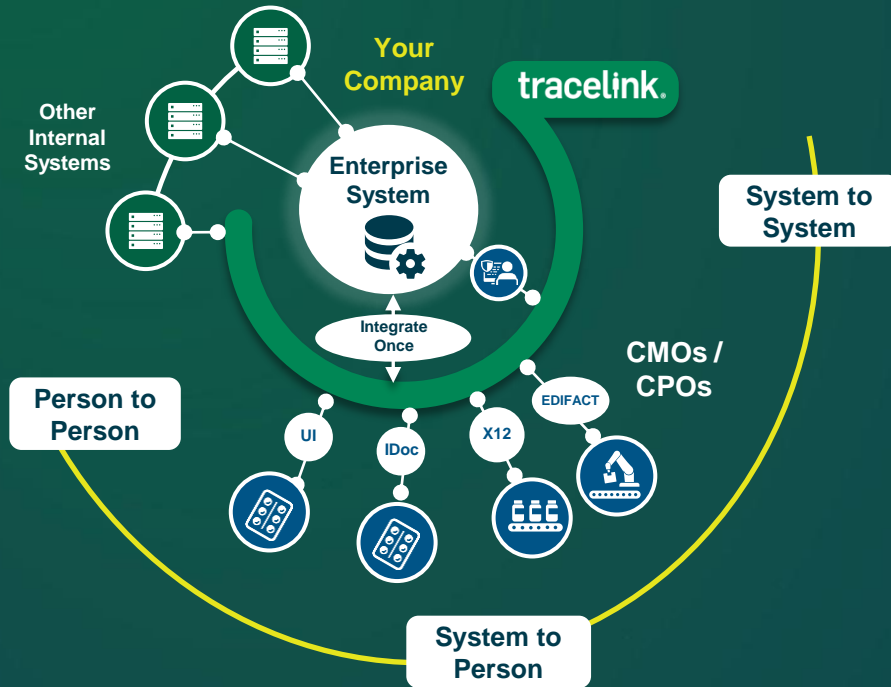


- Bridges the gaps across capability levels and needs of supply chain partners
- Delivers real-time data even if supply chain partners are not capable of B2B integration
- Supports business process and relationships that require high-touch interaction and collaboration, as well as those that are transactional

MINT Powers Your End-to-End Orchestration Journey Across All Supply Chain Processes



MINT for External Manufacturing Orchestrates Outcomes to Ensure Supply Plans are More Accurate, and Products Predictably Ship On-Time and In-Full



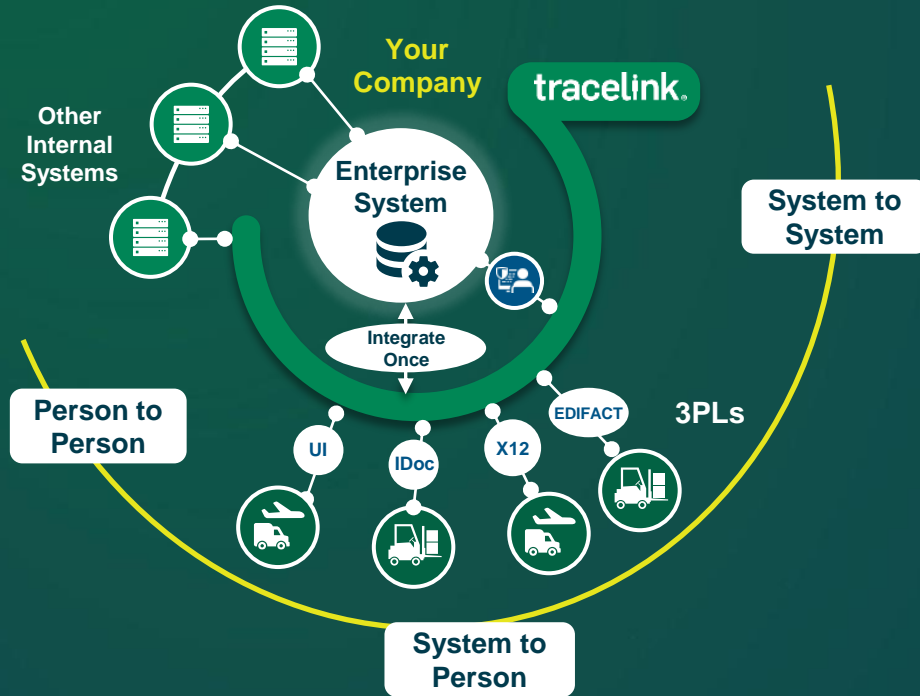
Integrate-Once™ for:

- Forecast Planning Schedule & Planning Response
- Purchase Order & PO Acknowledgement
- Materials Issued, Consumed & Produced
- Batch Creation
- Advance Ship Notice
- Invoice & Remittance
- Inventory Update
- Inventory Balance Report

Real-time business transaction exchange to:

- Improve collaboration on forecast plans to increase predictability and reliability
- Maintain visibility to inventory levels to ensure production is not disrupted
- Quickly and efficiently confirm POs and delivery schedules to enable accurate supply planning
- Maintain visibility into production completion and delivery dates to ensure supply meets demand
- Streamline invoice and payment process for contract services to enable smooth flow of operations funding

MINT for Logistics Orchestrates Outcomes to Achieve the Highest Order Fulfillment Performance



Integrate-Once™ for:

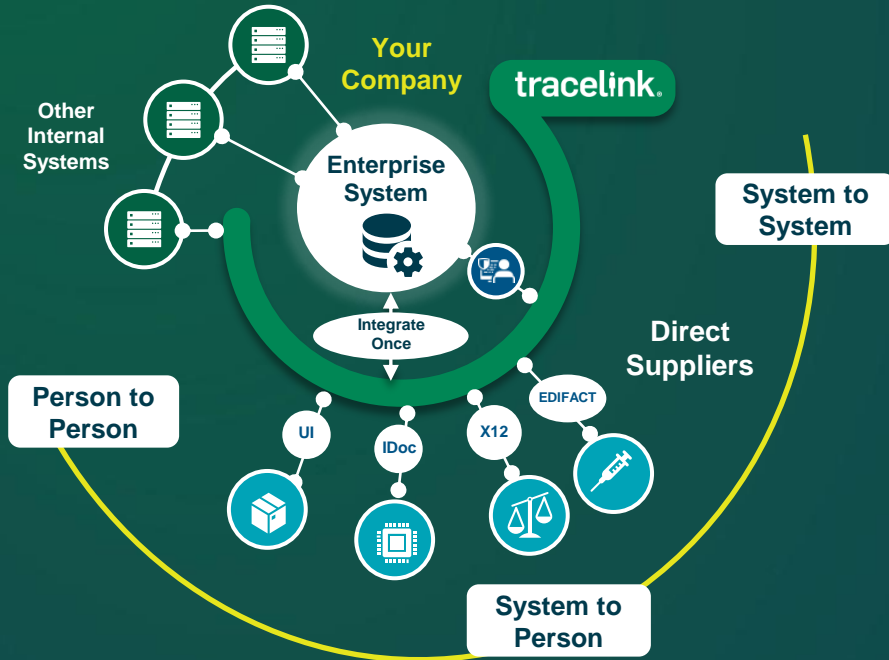
- Inventory Balance Report
- Inventory Update
- Warehouse Stock Transfer Shipp & Receipt Advice
- Warehouse Ship Order & Shipping Advice
- Advance Ship Notice

- Forecast Planning Schedule & Plan Response
- Price/Sales Catalog
- Customer Purchase/Sales Order (info)
- Customer Invoice (info)
- Customer Return Authorization (info)
- Customer Credit/Debit Adjustment (info)

Real-time business transaction exchange to:

- Align on inventory balances at 3PL warehouses
- Orchestrate stock transfers from CMOs to 3PLs
- Provide accurate customer order data to 3PLs
- Track when customer orders fulfilled by 3PLs
- Improve invoicing and cash collection

MINT for Commerce Orchestrates Outcomes to Improve Product Availability and Customer Service Levels



• Integrate-Once™ for:

- Forecast Planning Schedule & Planning Response
- Price/Sales Catalog
- Purchase Order & PO Acknowledgement
- Advance Ship Notice
- Invoice & Remittance
- Return Authorization
- Credit/Debit Adjustment

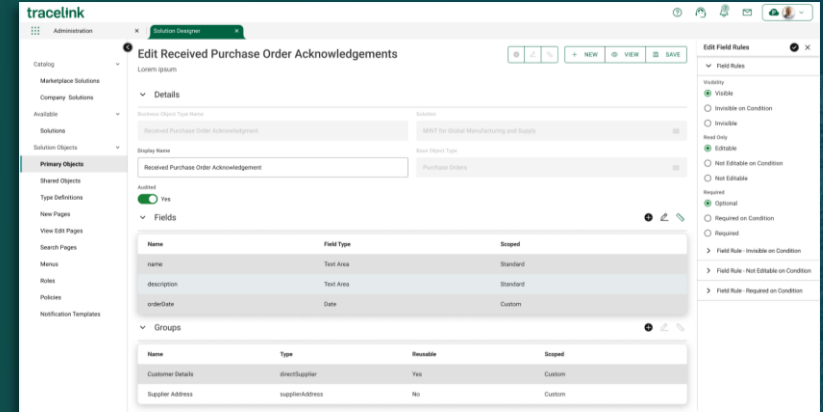
• Real-time business transaction exchange to:

- Improve collaboration on forecast plans to increase predictability and reliability
- Align annual purchase volumes with supplier capabilities
- Quickly and efficiently confirm POs and delivery schedules to enable accurate supply planning
- Coordinate material deliveries with Logistics partners and CMOs and ensure complete visibility
- Streamline the invoice and payment process

MINT Orchestrations and Workflows can be Configured and Tailored to Meet Your Specific Business and Supply Chain Needs

Opus Solution Environment (OSE) enables you to:

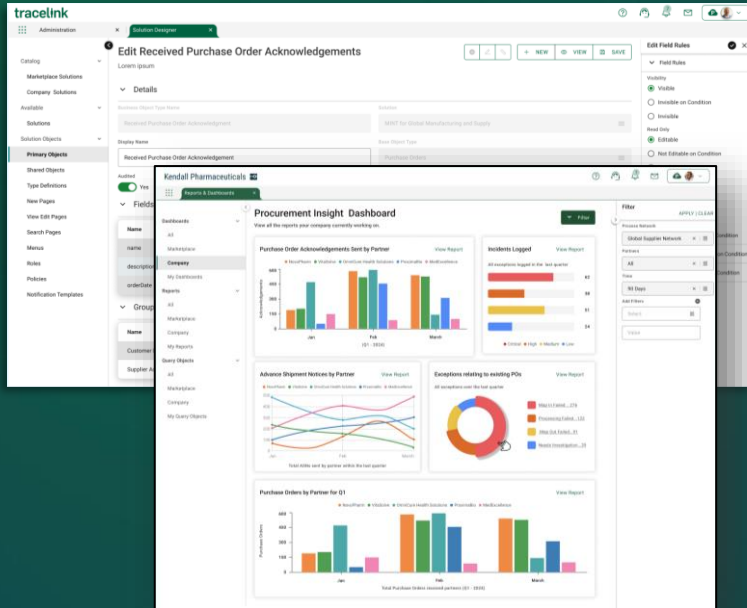
- Make MINT solutions specific to your supply chain needs
- Specify which transactions you need
- Rearrange or rename the screens and data fields
- Add field logic to meet your requirements
- Modify workflows to include additional steps
- Create new user roles to ensure permissions and security over who can see and do what



All in a no-code UI

Reports and Dashboards Provide Visibility into Your Supply Chain Performance to Improve KPIs and Identify Supply Chain Challenges

MINT Orchestrations provide out-of-the-box reports and dashboards, powered by Opus Reports & Dashboards



Opus Reports & Dashboards enables you to:

- Modify the provided MINT reports and dashboards to suit your needs
- Define your own reports using no-code queries and report definitions
- Define your own dashboards using no-code charting tools that operate on the report data
- Arrange reports and dashboards on pages to tell your orchestration stories
- Share reports and dashboards, with data protected by user permissions and roles

Checkpoint and Key Takeaways

- ✓ Introduction to End-to-End Supply Chain Digitalisation and Orchestration
- ✓ Opus Platform Foundations
- ✓ TraceLink Network and Opus Integration Foundations
- ✓ Supply Chain Orchestration with MINT



MINT is the digitalization solution that integrates your supply chain networks to optimize service, cost and cash across your end-to-end supply chain orchestrations.



By supporting a wide range of transactions and data formats, MINT powers diverse supply chain orchestrations.



Reports and Dashboards for MINT provide actionable visibility into your supply chain orchestrations.



