canary
Canary User Conference
August 11 - 14 State College, Pennsylvania
canary

Connecting Everything

Overcoming the Challenges of Industrial Data Collection

John Weber

Connor Mason

Software toolbox™

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Software toolbox

OPC UA

CUSTOM PROTOCOLS

IT / OT / ET CONVERGENCE

OPC ROUTER

DIGITAL TRANSFORMATION

SPARKPLUG-B

MQTT

SAP

CONNECT EVERYTHING

DECISION SUPPORT SYSTEMS

OMNISERVER

UNS

INDUSTRIAL DATAOPS

OPC DATA LOGGER

CYBER SECURITY

ENTERPRISE CONNECTIVITY

PRODUCTIVITY TOOLS

INDUSTRY 4.0

EDGE TO CLOUD

DATA ANALYTICS

IOT & IIOT

DEVICE CONNECTIVITY

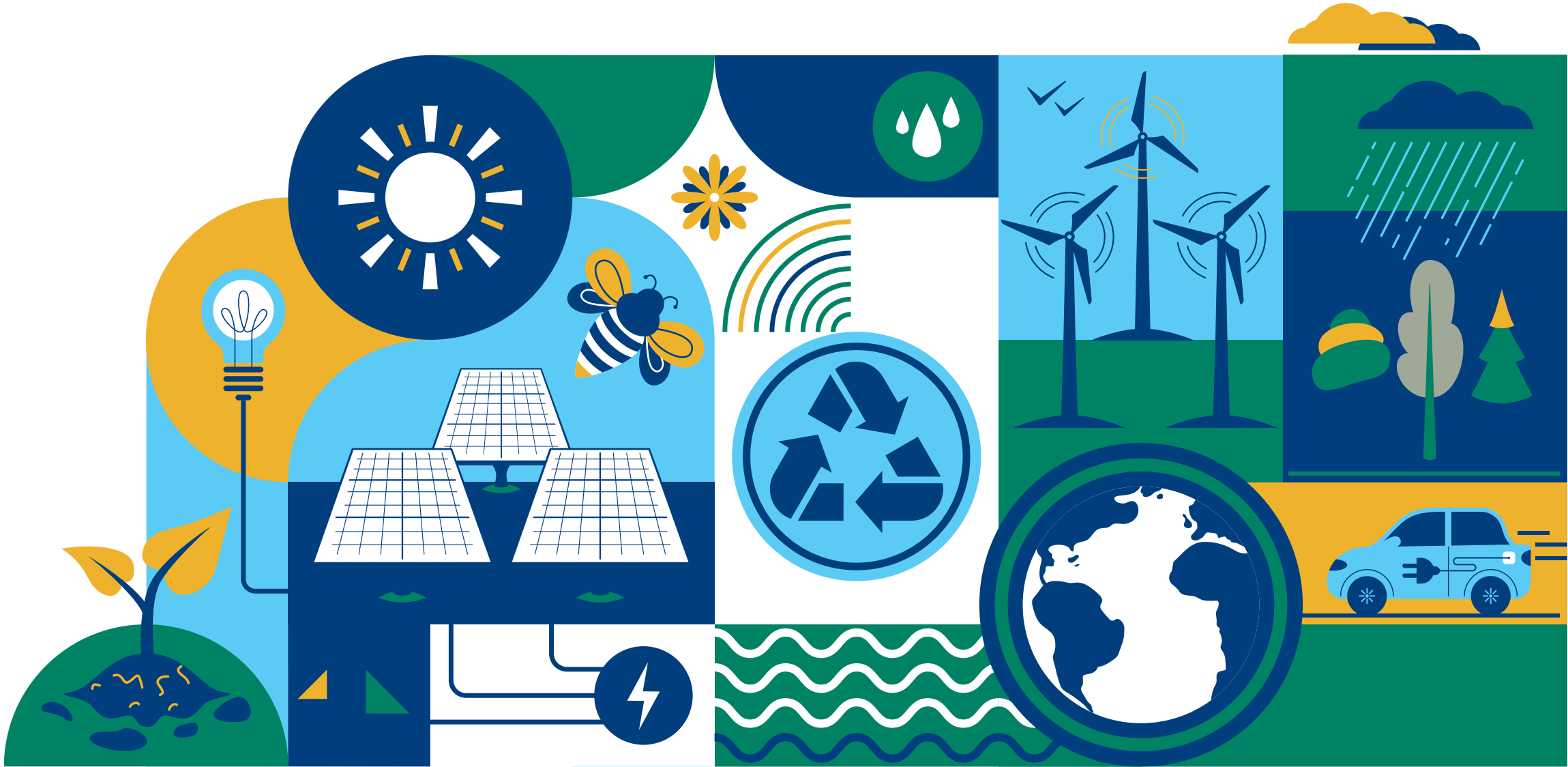
TUNNELING

DATAHUB

TOP SERVER

Software toolbox®

User Story Introduction



JW

Operation Overview

- Operating 10 energy generation sites based in the US
- Current development and construction under-going to double their footprint
- Blended technology stacks across sites due to Integrator choices, Site Acquisition, and Age
- Corporate level historically disconnected from certain areas of site operations

Agenda

- Explore the Obstacles and Existing Environment
- Overview of Implemented Solution Components
- Solution Architecture Review and Discussion
- Findings and Future Plans

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Why it Matters?

*"This project has **enabled** us to collect **data** that previously was **unreachable** for **17 years**"*

Siloed Data

- Various integrations of Databases, Web Services, OPC Servers across sites
- Legacy systems with insecure connectivity
- Real-time applications and Historians operating without a common data source

JW

Problem Statement

Asset **acquisition** and **deployments** resulted in systems

→ with **varying levels** of **connectivity**,

→ making it difficult to create a **unified, reliable, supportable, and cost-effective** data infrastructure

Fragmentation severely **limited** the ability to **collect** and **centralize operational data**.

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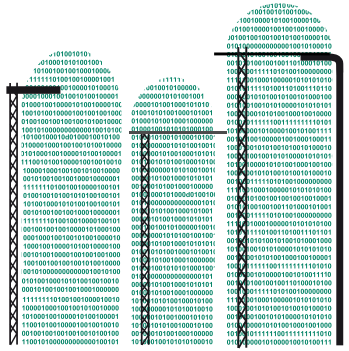
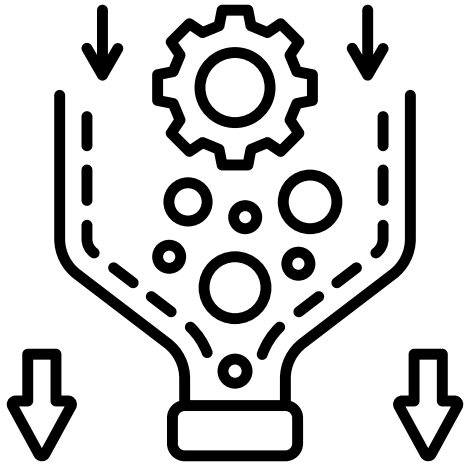
Key Challenges

Data Silos



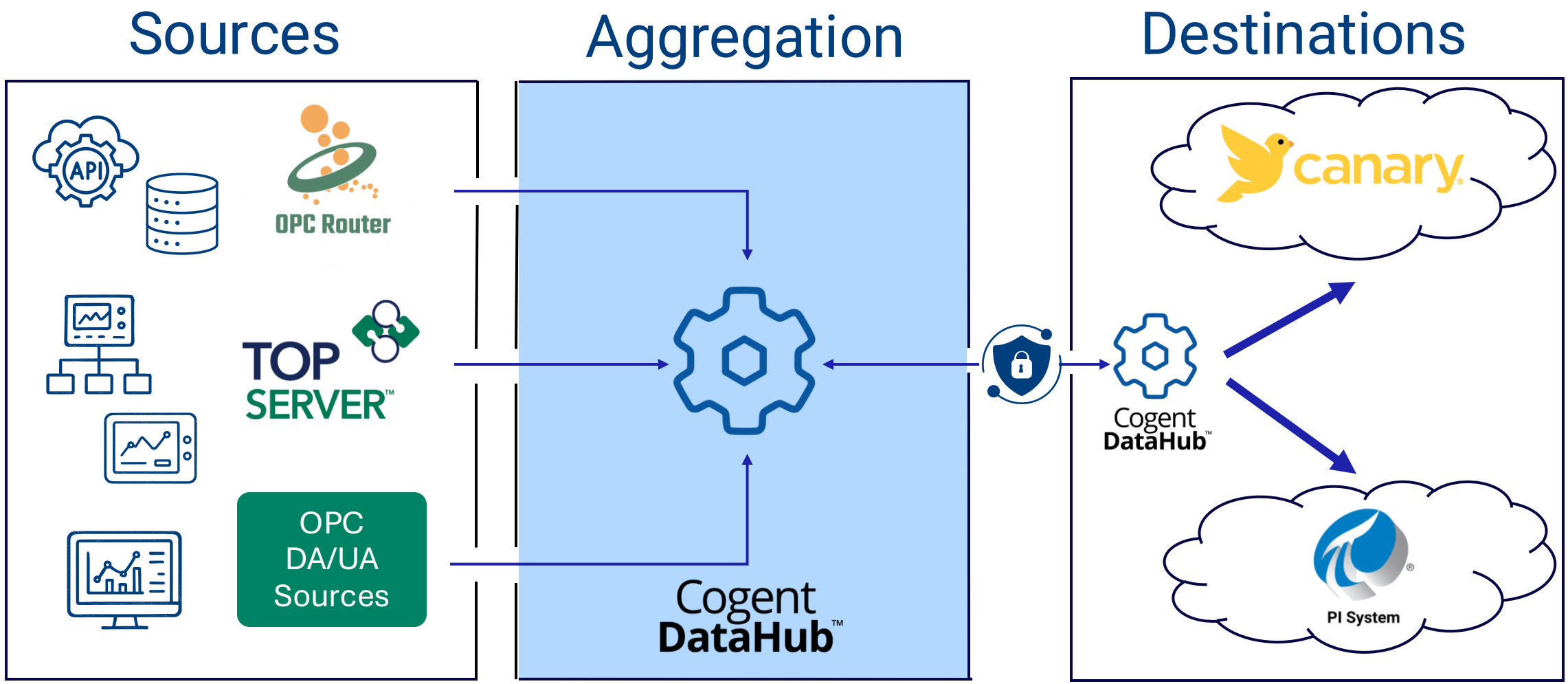
Data Visibility

Operational Bottlenecks



Scalability

Solution Architecture Overview



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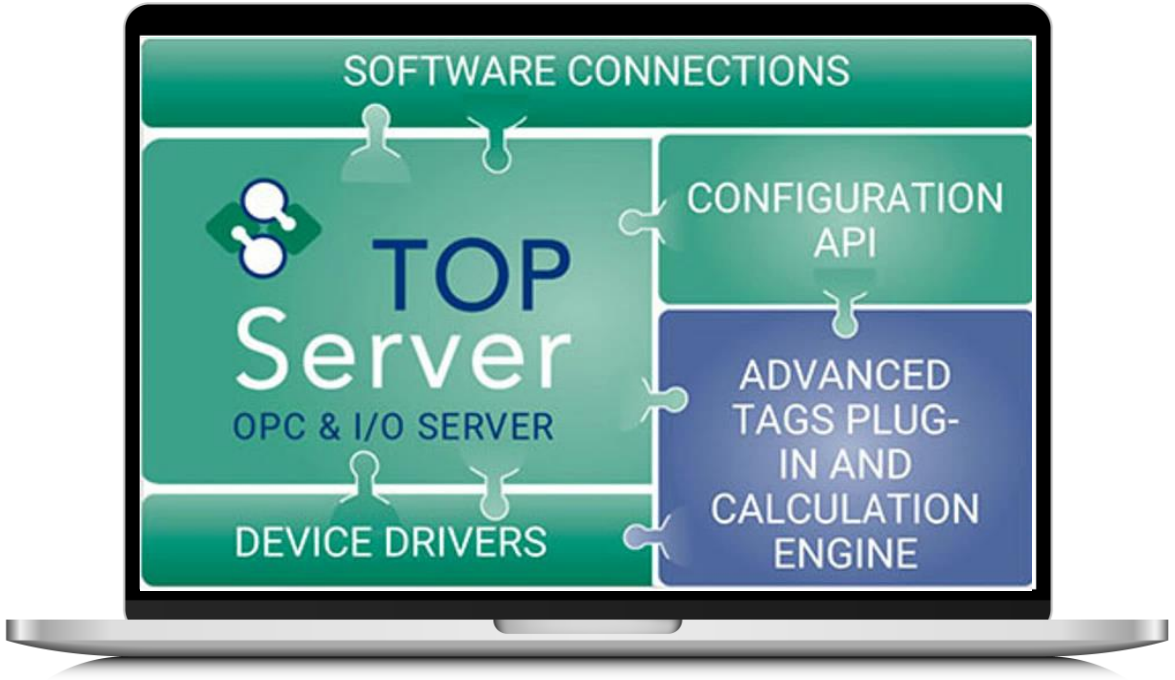
TOP Server Solution Contribution



- Basis of Field communication to connect various devices
- Supports common open standards including DNP3, IEC 60870-5, IEC 61850, Modbus, and more
- Standardized support for industry protocols to connect HMI, SCADA, MES and ERP systems

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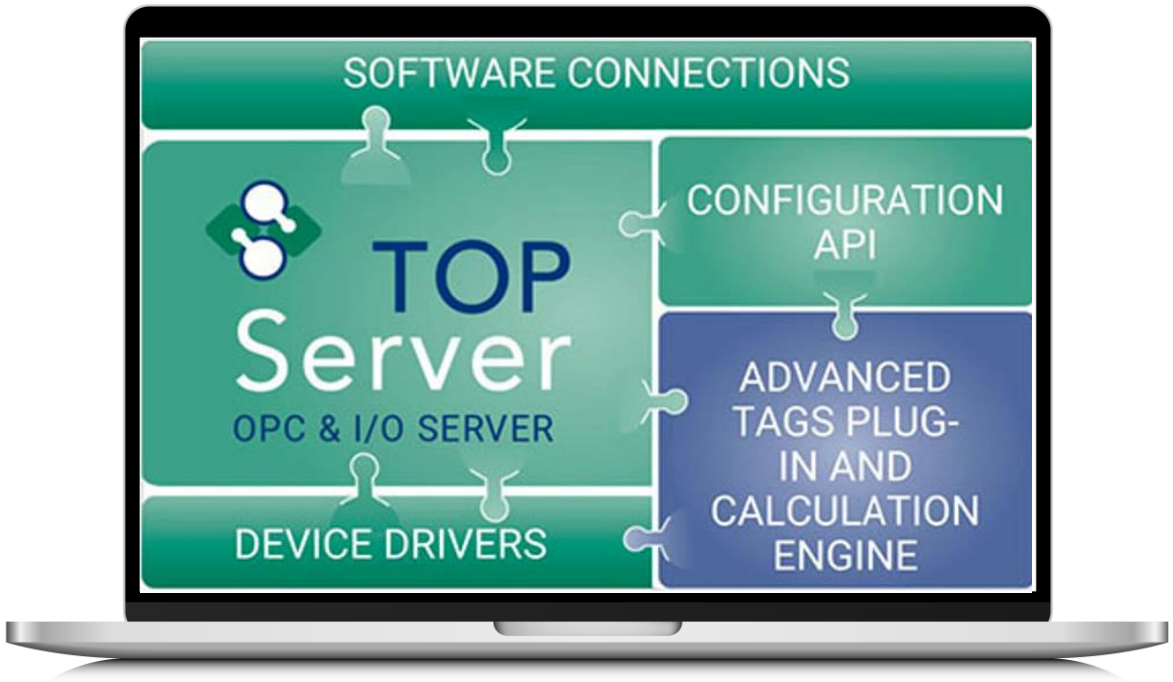
Getting You Connected



100+ Drivers

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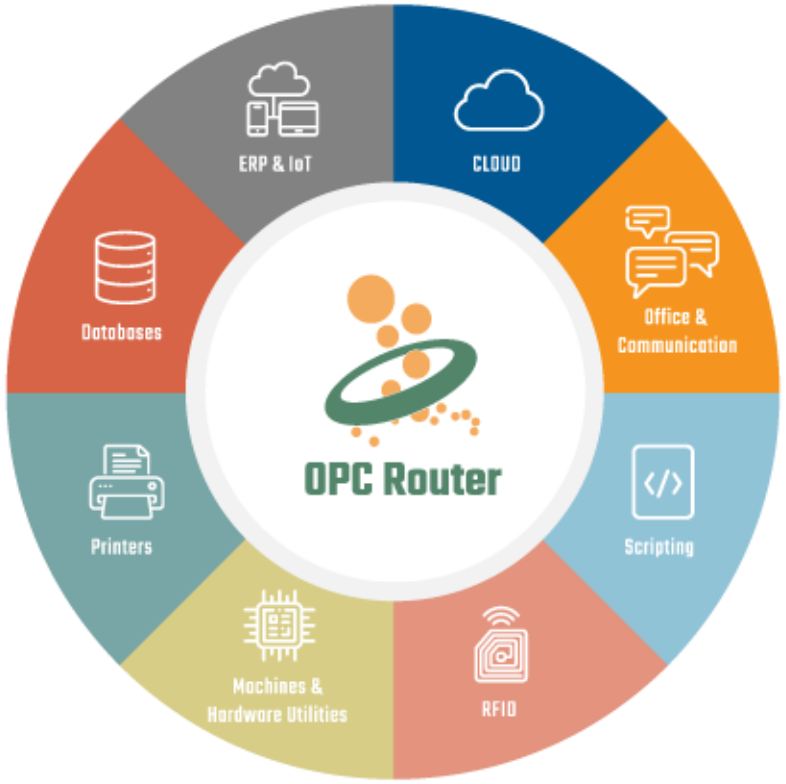
OPC Router Solution Contribution



- Create event-driven visual workflows
- Connect databases to extract and transform values into other systems
- Interact with RESTful Web Services and deploy its own
- Convert values into OPC UA points (Methods, Pub/Sub, Companion Specs)

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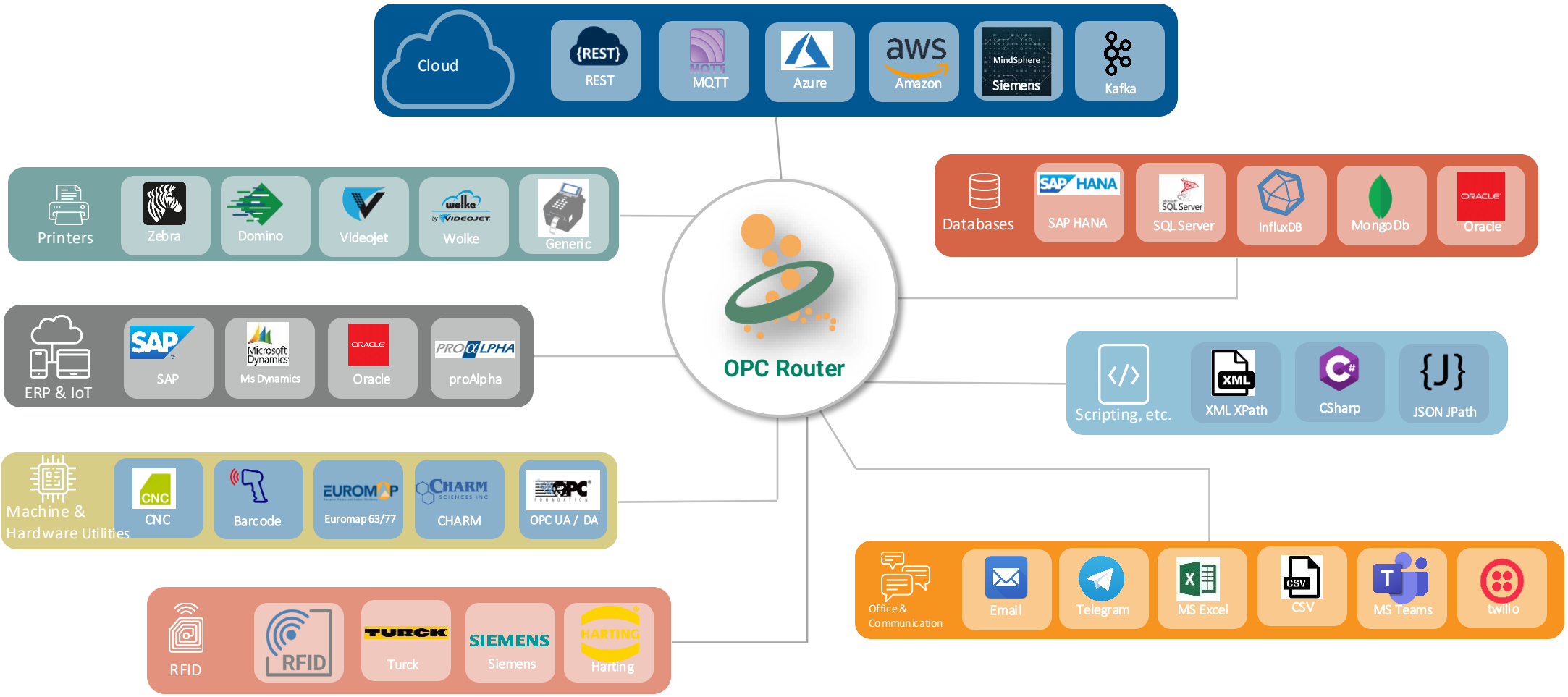
OPC Router Event Driven Visual Integration



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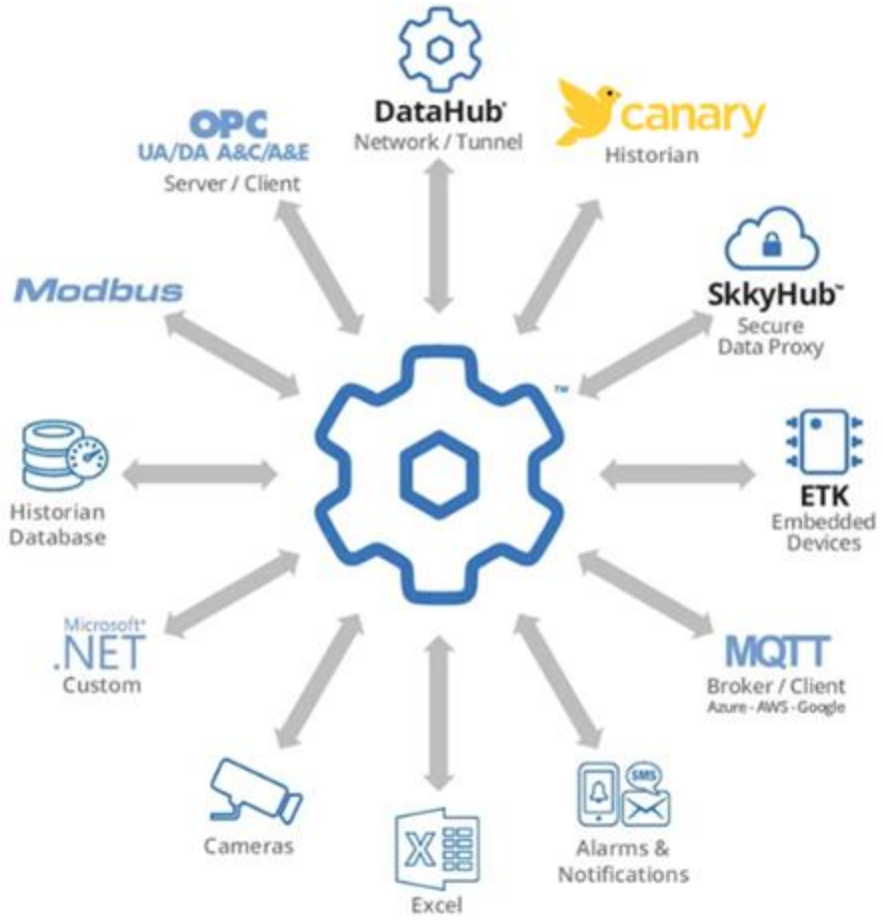
Cogent DataHub Solution Contribution



- Wide support for real-time data integration protocols
- Natural aggregator creates a common data set for teams
- Secure Data Tunneling, reverses the port connection to connect OT and IT systems

Real Time Middleware Platform

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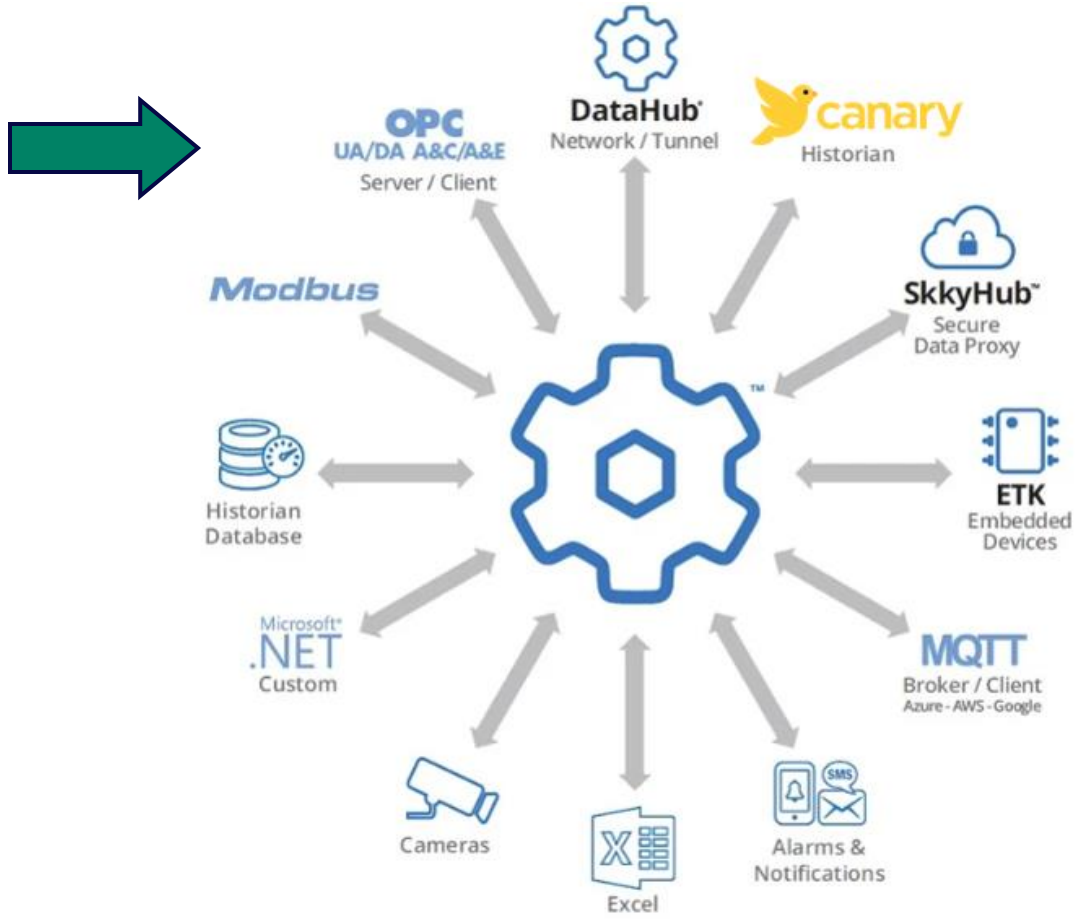
OPC Router



Integrate, aggregate & distribute data securely between industrial & enterprise systems

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Results

- **Unlocked access** at corporate level to previously siloed datasets
- Created new **standard to rollout** across existing sites, and for new projects with plans of doubling their operation footprint
- Expansion of **visualizations** in both Canary and PI built off the same **common data-set**

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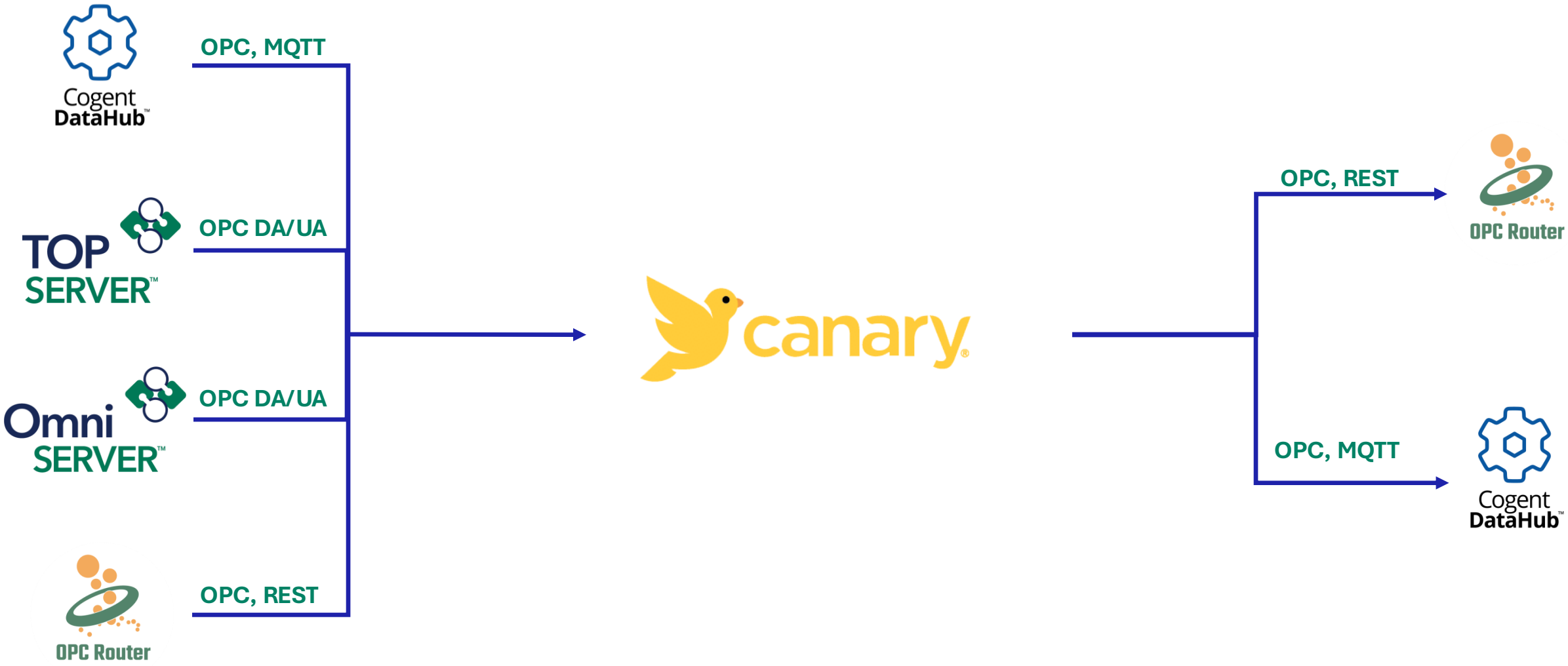
Lessons Learned

- Understand Needs First
- Inventory Data Sources
- Leverage Industry Standards
- Run Parallel Systems (New/Old)

Software Toolbox & Canary



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The Software Toolbox Experience

Solutions

Industrial Connectivity
Digital Transformation
Application Development
HMI & SCADA Add Ins

Industry Experts

Collaboration
Strategic Partnerships
Continuous Improvement

Customer Feedback

97% say “Awesome” or “Great”

Software toolbox

Industries

Oil & Gas

- Shell
- Energy Transfer
- California Resources Corporation
- ENSTAR Natural Gas Company
- Hess
- Marathon Oil
- ExxonMobil
- Diamondback Energy

Energy

- NextEra Energy
- Duke Energy
- Kaukauna Utilities
- TEP
- Constellation
- edp Renewables
- WEC Energy Group
- Central Lincoln — A Community-Owned Electric Utility
- Westinghouse

Food & Bev, CPG

- P&G
- AB InBev
- Campbell's
- Ocean Spray
- General Mills
- Amway
- Unilever

Life Science & Pharma

- Genentech
- Bayer
- Lonza
- Biovectra
- Alcon
- Pfizer
- GSK

Infrastructure

- ATAL
- Copeland
- Schneider Electric
- Iowa
- ENGIE
- Emerson Climate Technologies
- UCLA

Metals, Mining

- bhpbilliton
- Alcoa
- ArcelorMittal
- United States Steel
- Newmont
- Rio Tinto
- Nucor
- Freeport McMoRan Copper & Gold

Automotive & Manufacturing

- GM
- Delphi
- Ford
- Toyota
- Cooper Tires
- Magna
- Aisin

Water Wastewater

- City of Charlotte
- Water Corporation
- Veolia
- Montréal
- City of Austin — Founded 1839
- Watercare
- WSSC Water — Delivering the Essential

More at softwaretoolbox.com

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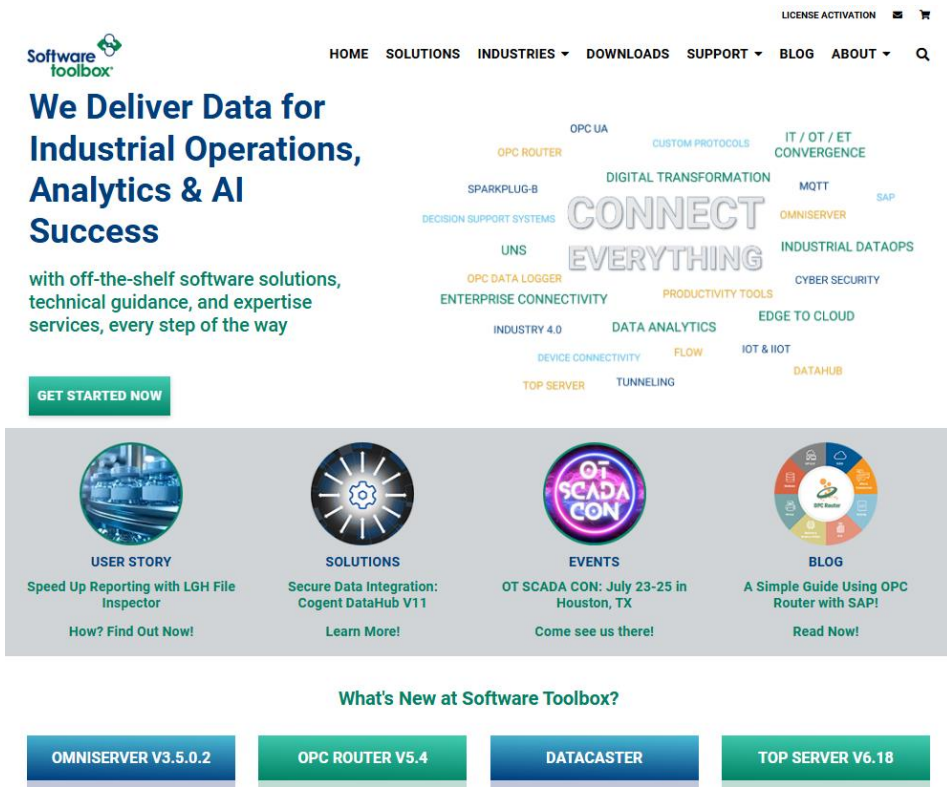

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