



## INDUSTRIAL APPS FOR OPERATIONAL INTELLIGENCE

- Be Connected
- Be Informed
- Be Efficient
- Be Competitive

**Presented by:**  
**Keith Flynn, President & Founder**

POWERED BY



A worker in a blue shirt and jeans is welding a metal structure in a factory setting. The background shows industrial equipment and a window. The text overlay is positioned to the right of the worker.

“One Canadian IoT technology company that has figured out the ROI from its products is RtTech Software, a Moncton, N.B. firm. The company has developed apps that help industrial clients – ranging from window and door manufacturers and bottling plants to corporate giants such as Michelin, Rio Tinto and Potash Corp – improve their operational efficiency.”



GE imagination at work

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# ABOUT RtTECH

RtTech is a company formed in November 2011 as a spin-off of **ADM's** Software division formed in 2002.

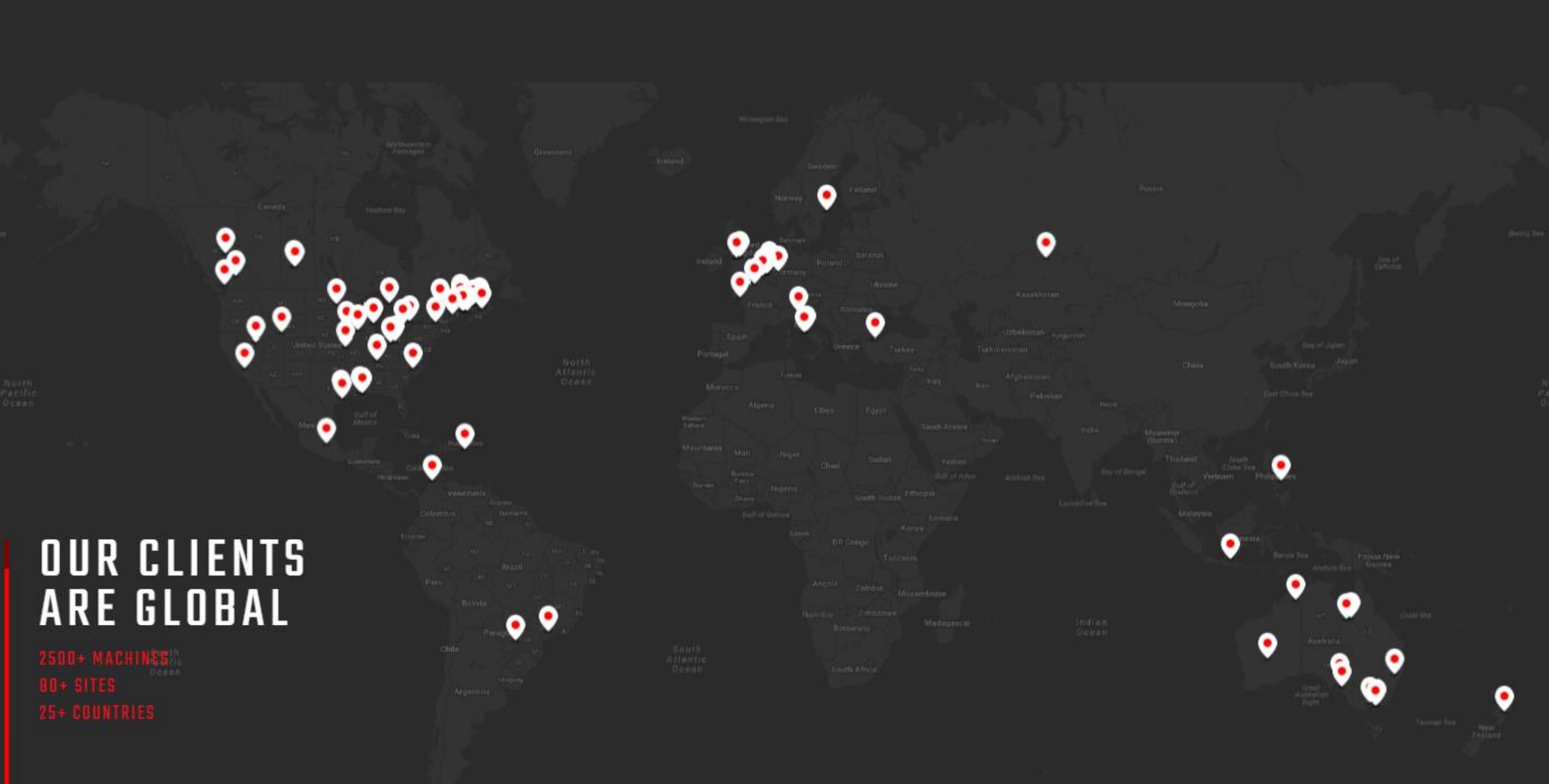
Based in NB, Canada with offices in **UK**, and **Australia**

Develops Industrial Apps to improve **asset availability**, **utilization** and **utilities consumption**. Apps present operational intelligence on performance and energy consumption of industrial assets.

# OUR CLIENTS ARE GLOBAL

2500+ MACHINES<sup>IN</sup>  
80+ COUNTRIES

80+ SITES  
25+ COUNTRIES



# TIER-1 CLIENT BASE



GLENCORE

abbvie

RioTinto

AGL

nyrstar

ALCOA

Lilly

CANFOR

LSR  
LOUISIANA SUGAR REFINING, LLC

IRVING  
J.D. IRVING, LIMITED

McCain

bhpbilliton  
resourcing the future

BARRICK

GDF SUEZ

P&G

MICHELIN

PAN PAC

FortChicago

newgold

TRONOX

SUGAR  
ILLOVO  
GROUP

NASA

Cargill

CALPORTLAND

International Power  
Hazelwood

Imperial

Manufacturing Group™

PotashCorp  
Helping Nature Provide

VERESEN

Huhtamaki

Western  
UNIVERSITY - CANADA

NALCO  
An Ecolab Company

canexus

SANDVIK

syngenta

Bristol-Myers Squibb

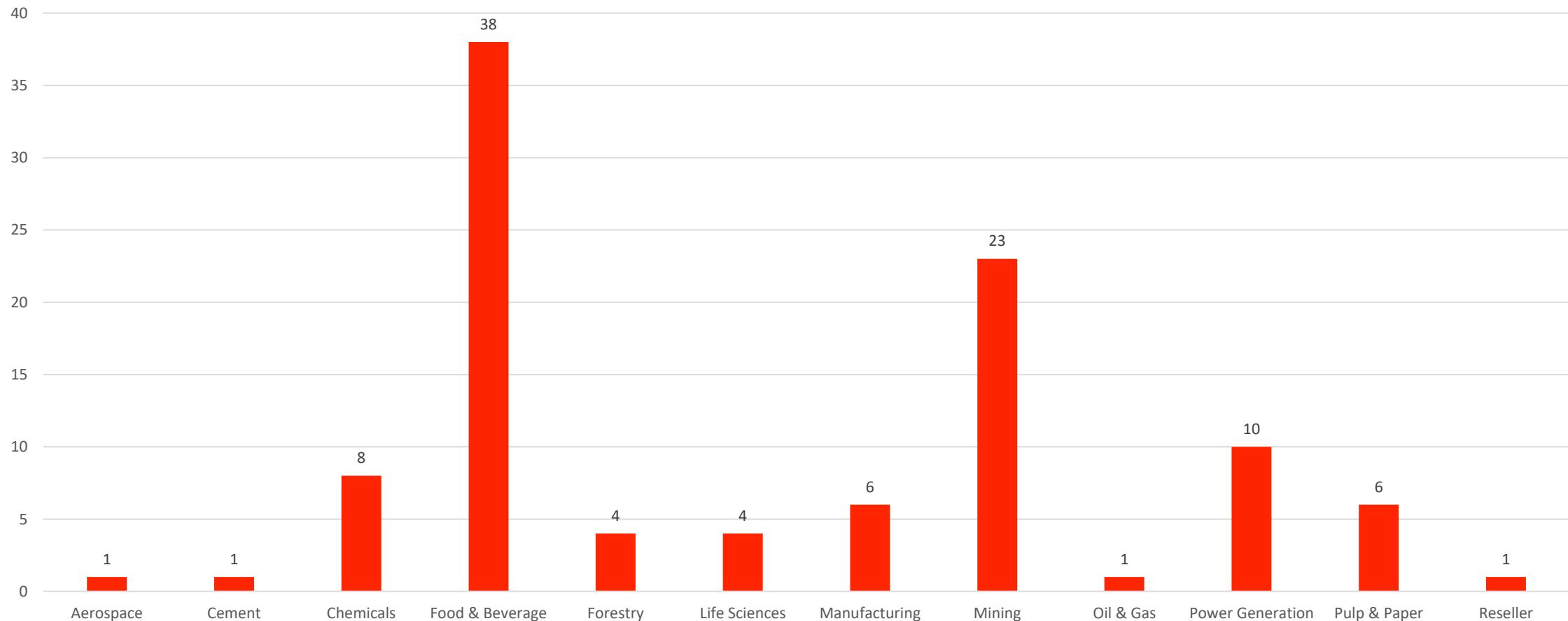
BAYER

Bayer MaterialScience

ORGANIGRAM  
LICENSED MEDICAL MARIJUANA

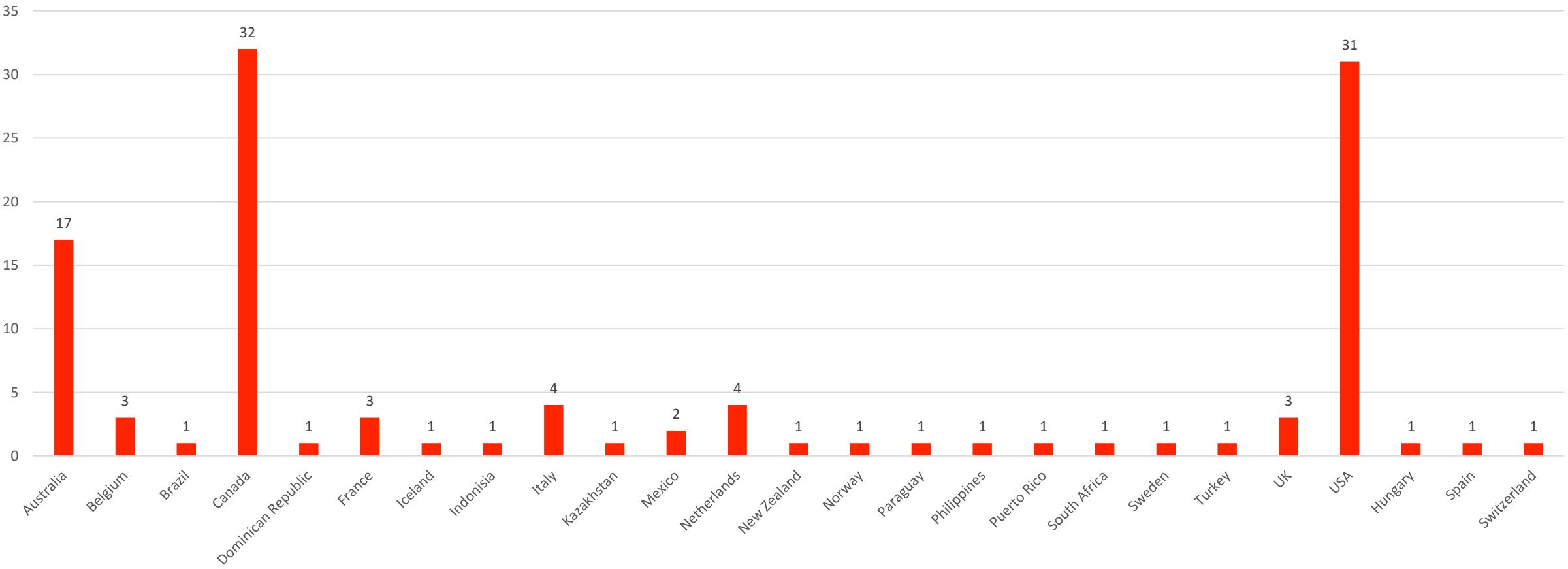
# TIER-1 Client Base (by Industry)

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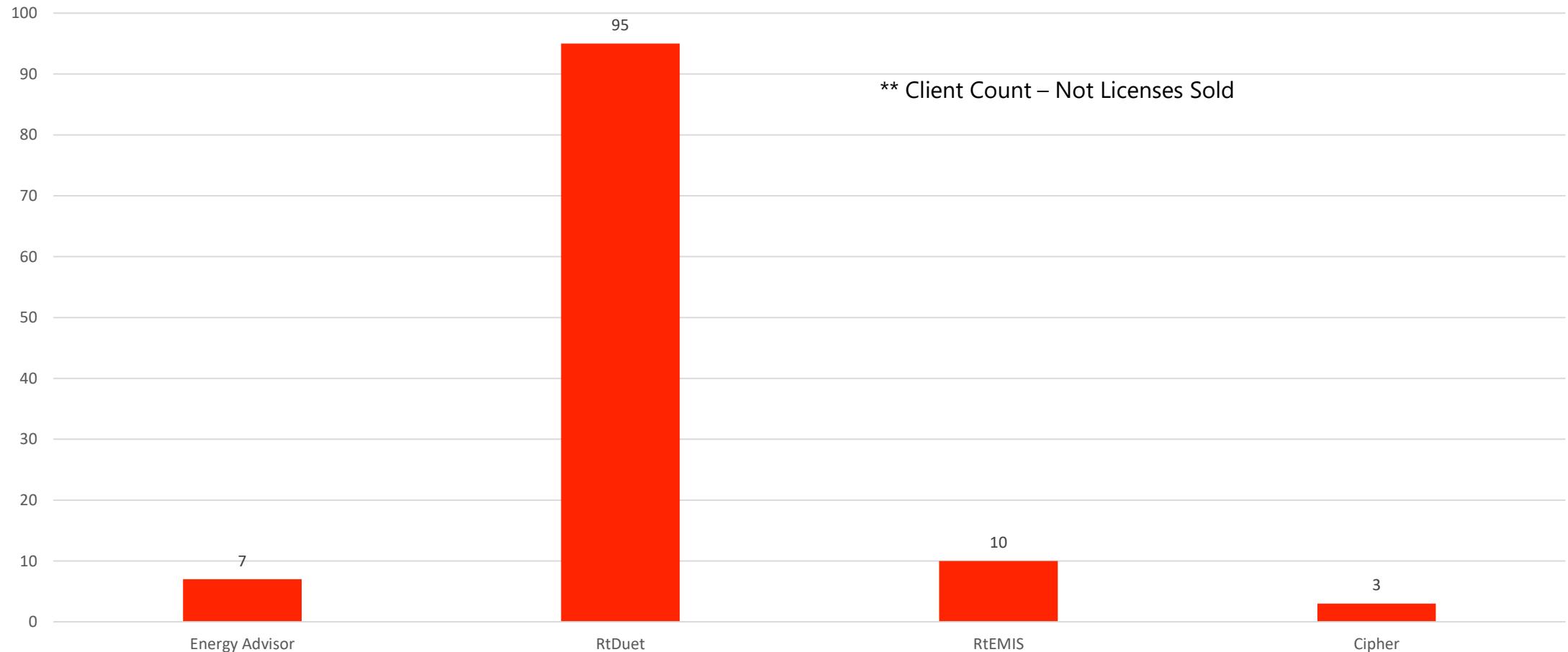
# TIER-1 Client Base (by Country)

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# TIER-1 Client Base (by Product)

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# CASE STUDIES



## CASE STUDY



AGL is one of Australia's leading integrated energy companies. With 175 years in business, AGL has a diverse portfolio including retail and merchant energy businesses, power generation assets and gas.

### CHALLENGE:

- Rapid growth from 300-10,000 MW results in disconnected operations
- Unable to share data across sites
- Lacked industry compliance (IEEE + NERCS)

### SOLUTION:

- RtDUET for asset management
- Multiple site installation
- Integration with existing process log-books
- Standardized KPI calculation across sites

5% data accuracy gain

Compliant with industry standards (IEEE + NERCS)



## CASE STUDY



**BARRICK**

Headquartered in Toronto, Canada, Barrick is the world's leading gold mining company, with mines and projects on five continents.

### CHALLENGE:

- Eroding margins push need for operational efficiency
- Unknown production loss areas
- Production loss data inaccurate

### SOLUTION:

- RtDUET for automatic downtime detection
- Automatic calculation of standard metrics
- Integration with existing data historian.

Increased data accuracy

Assists in project justification



## CASE STUDY



### CHALLENGE:

- Departure of in-house developer rendered existing system inoperable
- Behind on technology advances
- Dependent on user-input

### SOLUTION:

- RtDUET captured, analyzed, downtime
- Event frames record production delays
- Value-based reports

90% of errors automatically reported

Fewer events requiring investigation



## CASE STUDY

### newgold™

New Gold is an intermediate gold mining company with a New Afton, British Columbia mine that produces gold and copper with a design capacity of 11 000 tonnes per day.

#### CHALLENGE:

- New mining location
- Desire to meet ISO 50001 standard
- High standards for operational efficiency

#### SOLUTION:

- RtEMIS for Energy Management Information System
- Improved Financial Cost Accounting
- Completed All Fuels Audit prior to implementation

17% decrease in consumption on one machine

Efficient energy reporting



## CASE STUDY

### Flakeboard

COMMITTED • PASSIONATE • SUSTAINABLE

Flakeboard manufactures a variety of particleboard, medium density fiberboard (MDF) and FIBREX® thin high density MDF.

#### CHALLENGE:

- Significant growth
- Increased energy costs
- Difficult to attribute energy costs

#### SOLUTION:

- RtEMIS for Energy Management Information System
- Real-time energy consumption data
- Energy targeting based on environmental variables

\$953,279 saving in 3 years

Reduced monthly demand by 1.2 MW



## CASE STUDY

### VERESEN

Also known as PEI Energy, Veresen's district energy systems offer a cost-competitive, cleaner and greener alternative to heating and cooling buildings currently using in-house boilers and chillers.

#### CHALLENGE:

- Failing to meet industry incinerator temperature standards, which results in environmental fines
- Monthly operations reports
- Manual data input

#### SOLUTION:

- RtDUET to automatically detect temperature deviations and record
- Automatic alerts and reporting process

Avoided environmental fines by regulating incinerator temperatures



## CASE STUDY

### MICHELIN

A better way forward

Michelin manufactures and sells tires for all types of vehicles ranging from automobiles to the space shuttle. The plant in Granton, Nova Scotia specializes in the manufacturing of semi-finished goods.

#### CHALLENGE:

- Manual data recording
- Phantom downtime events
- Data current only at month-end
- Inconsistent downtime coding

#### SOLUTION:

- RtDUET for automatic data recording including micro-events
- Real-time data visualization
- Daily reporting

Reduced hours recording data

Delayed CapEx due to improved efficiency

# PARTNERSHIPS

TECHNOLOGY



DISTRIBUTION



ASSOCIATION



INTEGRATION



[◀ Back to Results](#)

## Partner Profile



### RtTech Software Inc.

Registered Partner

Region(s): Worldwide

Solution Focus: Analytics

Target Vertical(s):  
Communication  
Energy  
Manufacturing  
Natural Resources  
Transportation & Logistics  
Other: Government/Defense

Target Use Case(s):  
Automated Process/Quality Control  
Compliance & Documentation  
Factory Optimization  
Fleet Management  
Predictive Maintenance  
Remote Asset Management  
Smart Metering/Energy Management

Qualified Dell Product:  
Edge Gateway 5000 Series

RtTech Software develops and markets industrial-grade analytic apps for manufacturing and mining specializing in high cost areas such as operations and energy management. Industrial apps from RtTech Software aggregate machine and sensor data from across the production process and use advanced analytics to provide operational intelligence in context via an intuitive dashboard. The solutions integrate within the areas of the operation with the biggest bottom line impact: asset utilization and utilities consumption. Benefits include the ability to empower operators with real-time intelligence, maximize production capacity, improve product quality, reduce downtime and unplanned shutdowns, and optimize utilities consumption to energy costs. RtTech solutions are deployed in over 80 sites throughout 20+ different countries for blue chip companies such as Cargill, BHP Billiton, Barrick Gold, Rio Tinto, and more.

**Product Description:** RtTech's 'equipment to apps' solution collects data from multiple sources including: MQTT, OPC, Modbus, ODBC, OSIsoft, HART, Flat Files and others. Auto-discovery finds available data sources via a simple configuration dashboard. The solution provides: end-to-end data collection, aggregation and analytics using a centralized management console; integration layer with RESTful API to eliminate custom programming; enterprise-level networking and storage to support scalability; token based connection security; wireless-enabled with redundancy to support disconnected operation; and market-proven apps such as asset-health monitoring, manufacturing analytics and energy management.

### RtTech Software Inc.

HQ: 770 St. George Blvd, Moncton, New Brunswick Canada E1E2C6

[rttechsoftware.com](http://rttechsoftware.com)

# RtDUET for Downtime Tracking

Track downtime & performance KPIs such as Overall Equipment Effectiveness (OEE)

## At-A-Glance

### Solution Type

- › Downtime Tracking
- › Asset Performance Management
- › Overall Equipment Effectiveness (OEE)

### Regions Available

- › North America
- › Europe
- › Latin America
- › Australia

### Industries

- › Food & Bev
- › Chemicals

## BUSINESS CHALLENGES

Downtime at your plant is like a shot to the heart. While downtime is usually tied to equipment failure or breakdown, it can also include any unplanned event that stops or slows down a line. Without RtDUET, short downtime events can go unnoticed, and seemingly insignificant events can add up to significant productivity loss.

RtDUET provides extended functionality for users of the PI System, including access to the underlying data records for downtime events, advanced downtime tracking tools, and maintenance and reliability KPIs (e.g. OEE) through advanced analytics. Drive production and keep your finger on the pulse of your operation with RtDUET downtime tracking and real-time performance analytics.

# INDUSTRIAL APPS FOR OPERATIONAL INTELLIGENCE.

OPTIMIZE ASSET  
UTILIZATION



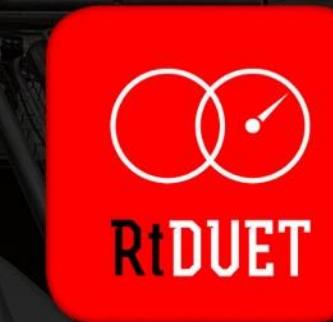
REDUCE DOWNTIME  
AND SLOWDOWNS



INCREASE WORKER  
PRODUCTIVITY



REDUCE ENERGY  
COSTS



# REAL-TIME EQUIPMENT MONITORING & ASSET PERFORMANCE MANAGEMENT

**RtDUET**

**Monitors equipment status and detects downtime events.**

**Automatically calculates maintenance and reliability KPIs.**

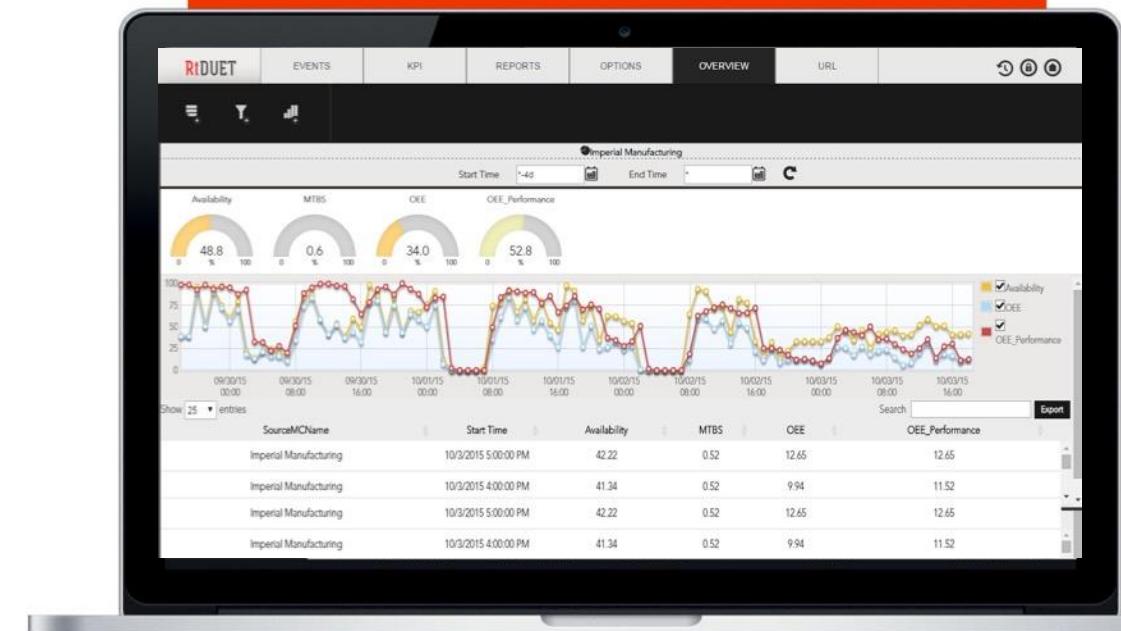
- Decrease unplanned downtime
- Assess maintenance strategies
- Meet production targets



**RtDUET**

*"RtDUET helps us to determine downtime but also to accurately and easily associate production losses for slowdowns and to quickly drill down to root causes for those production losses."*

*- Ron Butler, Nystar*



# REAL-TIME ENERGY MANAGEMENT INFORMATION SYSTEM

**RtEMIS**

## Industrial Energy Management Information System.

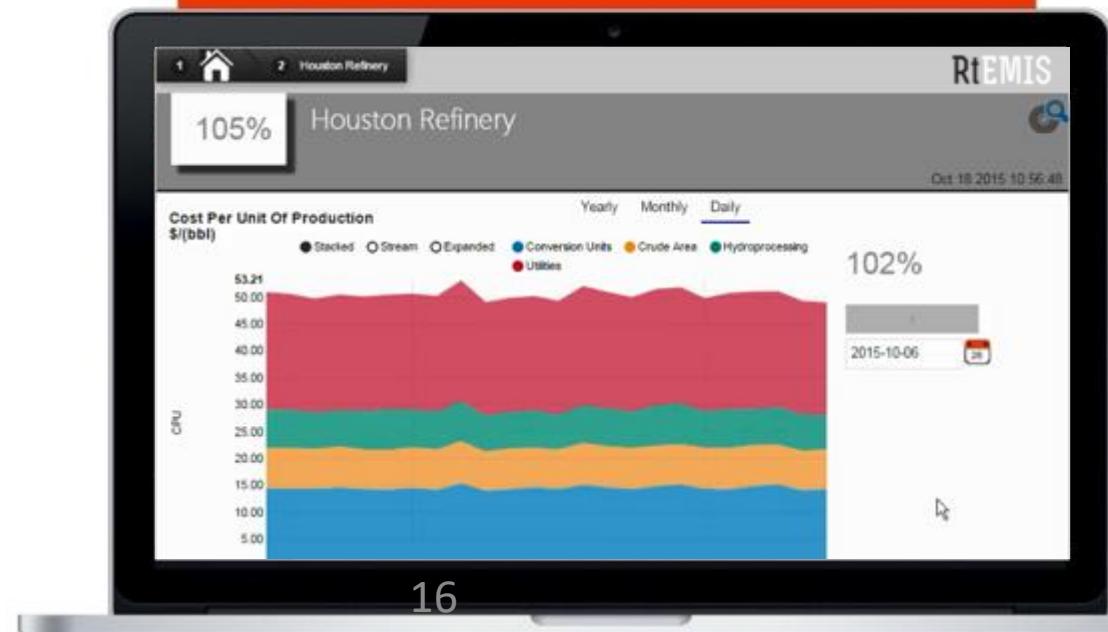
**Proven to reduce industrial energy consumption by 5-10%.**

- Reduce overall energy consumption
- Transform energy from a given expense to a controllable item
- Manage footprint using Carbon Accounting reports and dashboards



*"We have had tangible benefits, for instance, our pebble crusher was down for a short while. Using the information from RtEMIS we found out we were using 17% more energy per tonne when that equipment was down as opposed to when it was running."*

- Andrew Cooper, New Gold Inc.





# CIPHER

THE SOLUTION:  
INDUSTRIAL-GRADE IIoT INFRASTRUCTURE

POWERED BY



RtTECH  
SOFTWARE

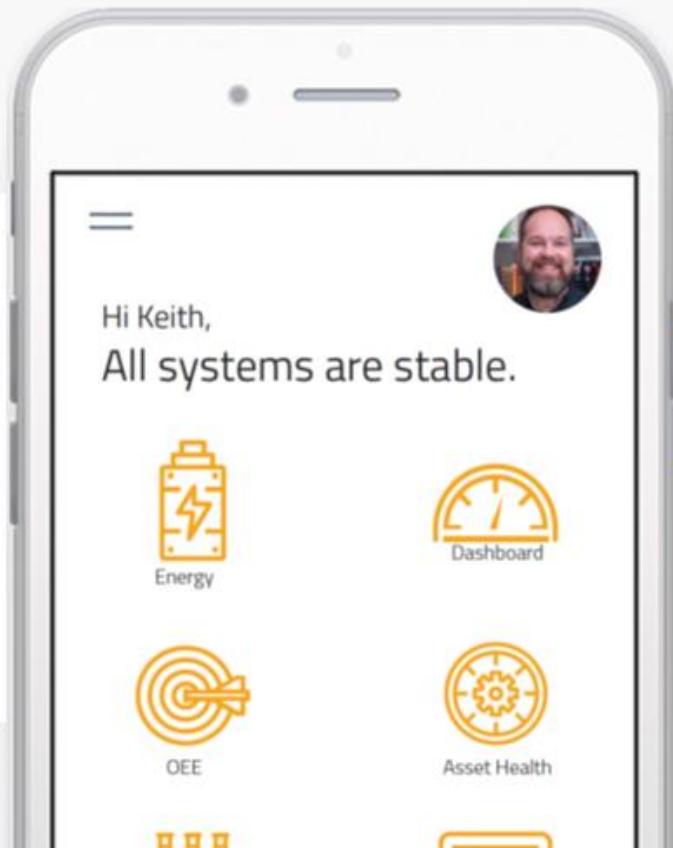
POWERED BY  RtTECH  
SOFTWARE



- **Be Connected**  
Bring your production data with you wherever you go. Connect any asset, sensor, MES, or ERP data source that drives your operations with a flexible IIoT infrastructure.
- **Be Informed**  
Get accurate real-time data to any mobile device so you can keep your finger on the pulse of your operation no matter where you are.
- **Be Efficient**  
Recognize trends in your operation and make proactive decisions eliminating unnecessary costs.
- **Be Competitive**  
Making proactive decisions based off accurate real-time data from any asset gives you the competitive advantage



# CONNECT EVERYTHING.



Industrial



Mining



Oil & Gas



Utilities



Food & Bev



Agricultural



Renewables



Life Sciences

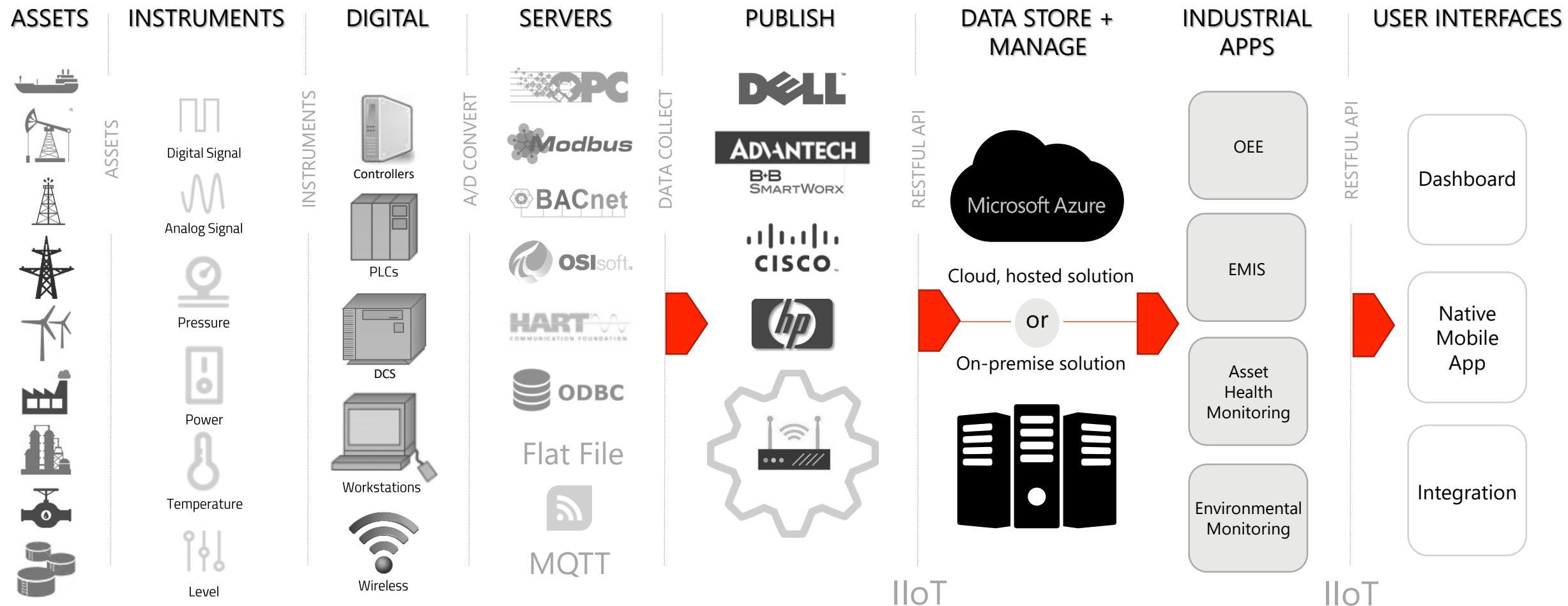


- Cipher is RtTech's NEW fully integrated, flexible IIoT solution that:
  - Is not based on any 3rd party platforms
  - Is a full Infrastructure and is 100% owned by RtTech
  - Delivers Industrial Apps without the historian prerequisite
  - Takes advantage of today's cloud based technology
  - Allows traditional on site deployments if required





# CIPHER

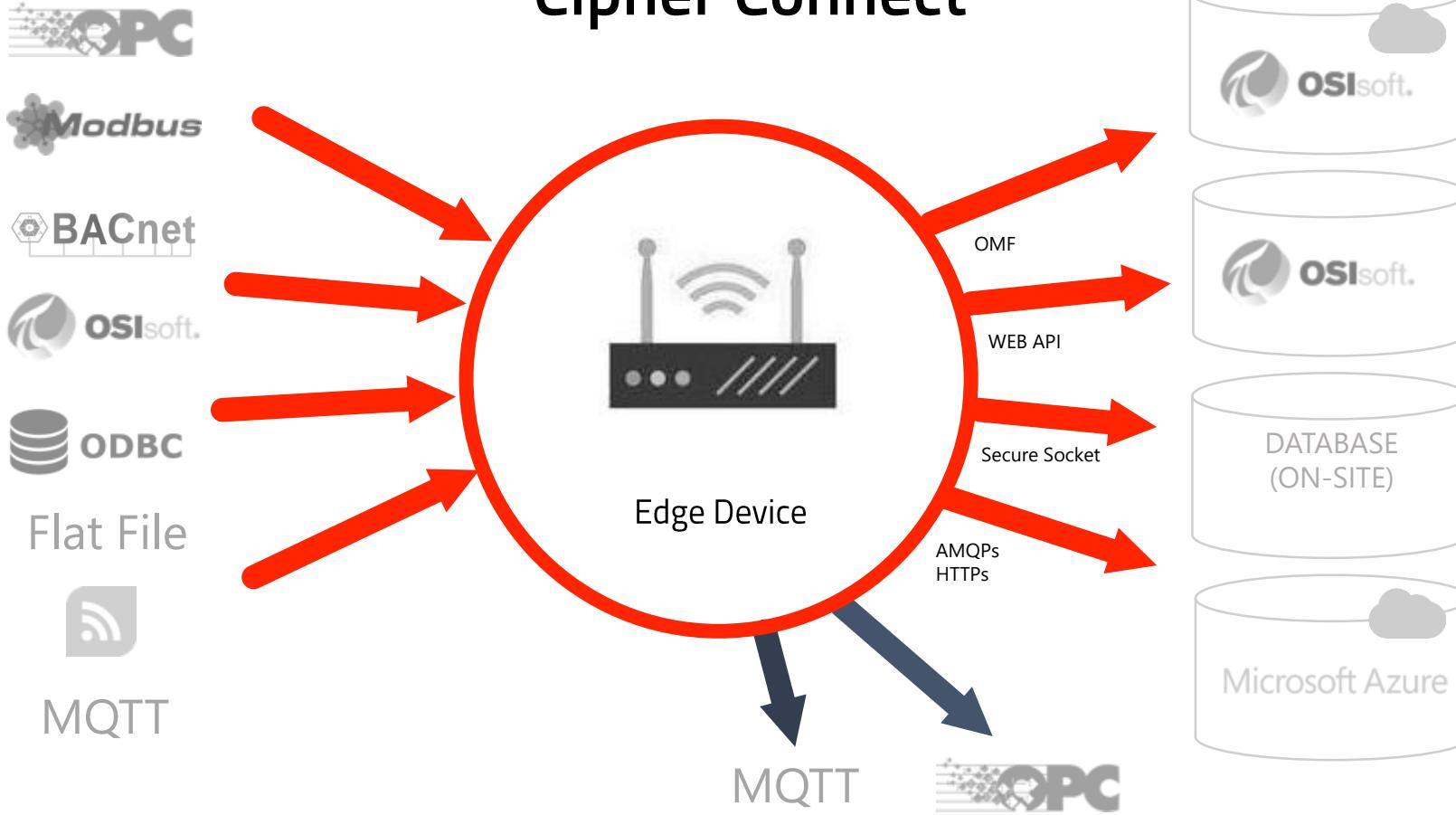




## ■ Be Connected

- High Connectivity
  - Windows and Linux platforms
  - Single connector supports simultaneous multi-server connections
  - Embedded hardware solutions
    - Edge Based Analytics
    - Distributed load balancing on edge devices.
  - OPC Certification
- Optimize networking and storage to support scalability
  - Secure data transport using AMQPs
    - AMQPs (Advanced Message Queuing Protocol Secure)
  - Advanced compression algorithms
  - Token based connection security
  - Redundancy on collectors and disconnected data collection
  - Continuous integrity monitoring with notifications
- Advanced triggers with dynamic and complex logic
- Centralized management console
- Integration layer (RESTful API)

## Cipher Connect

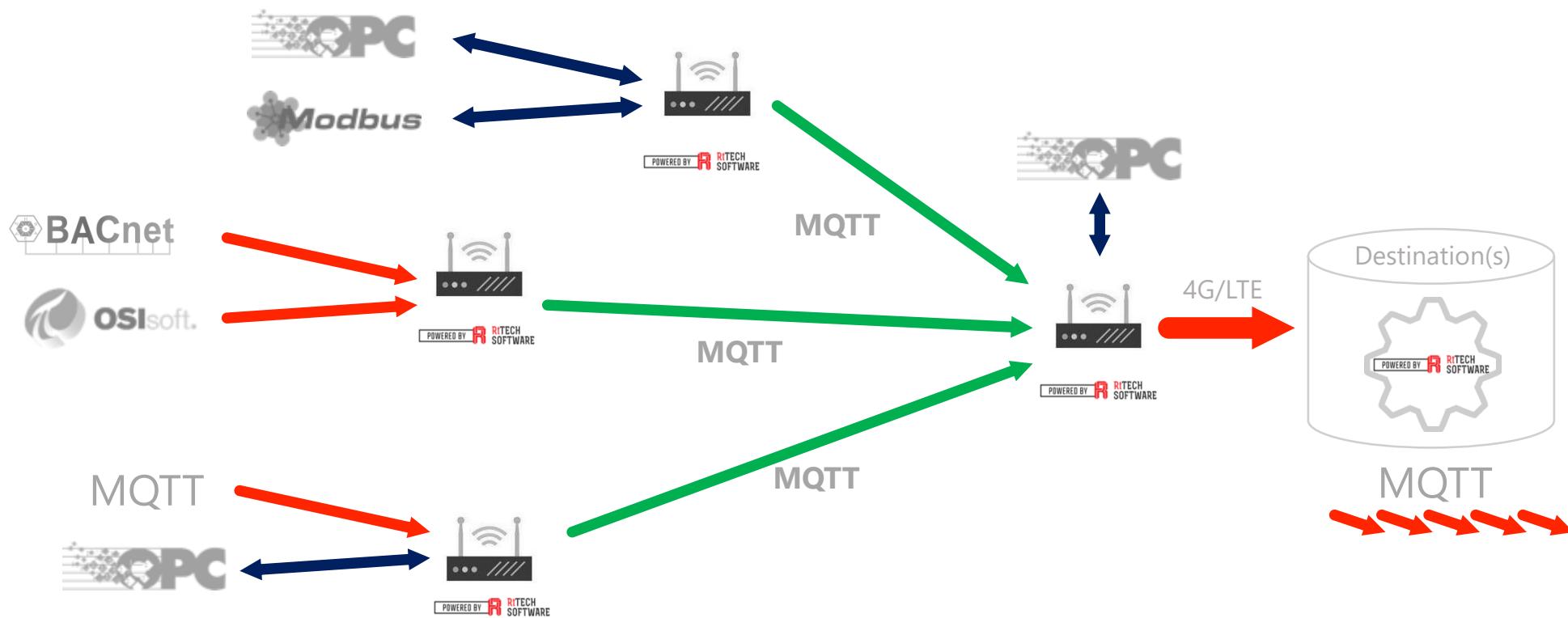






IoT Solutions  
Partner

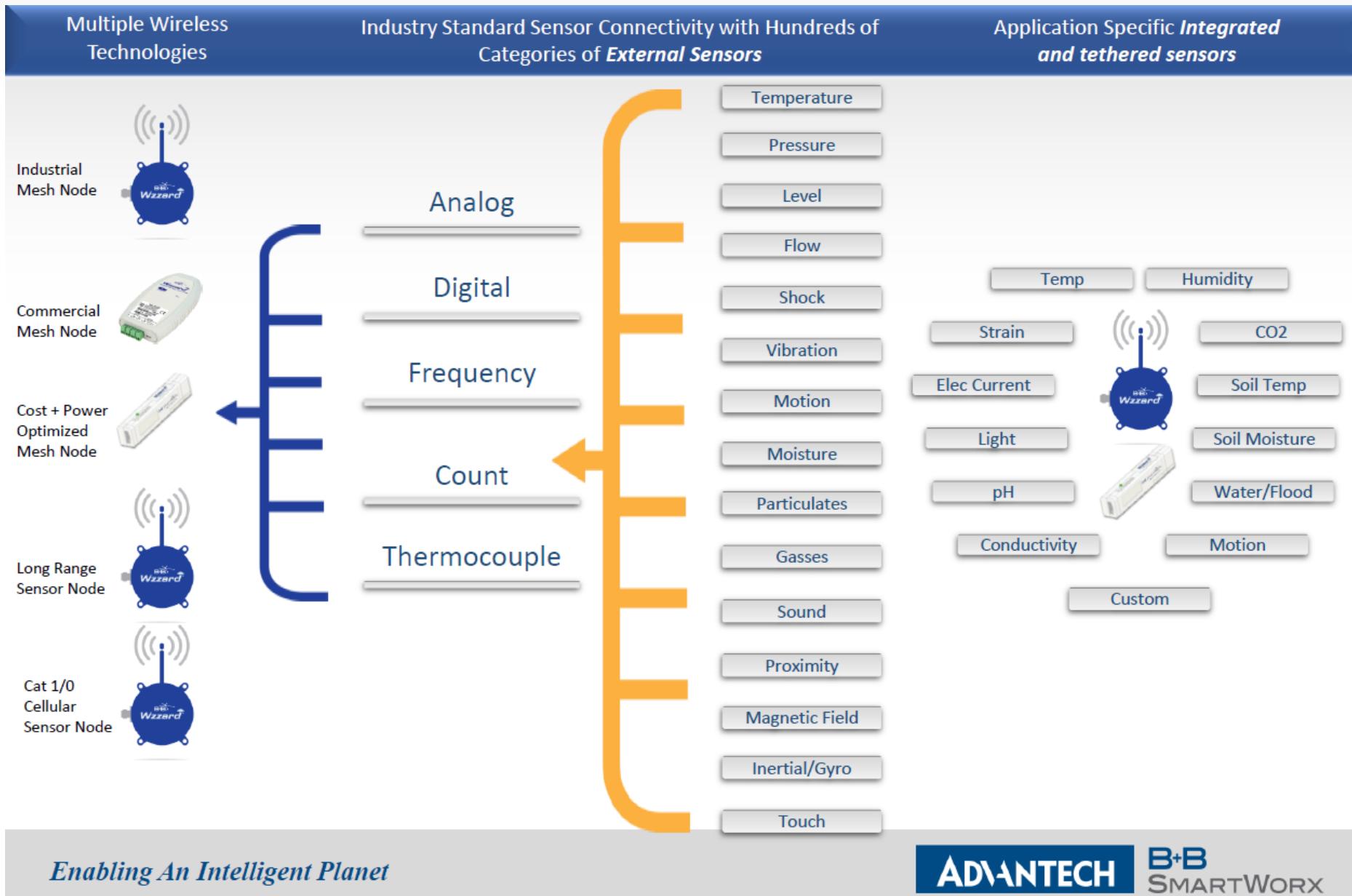
## Cipher Mesh



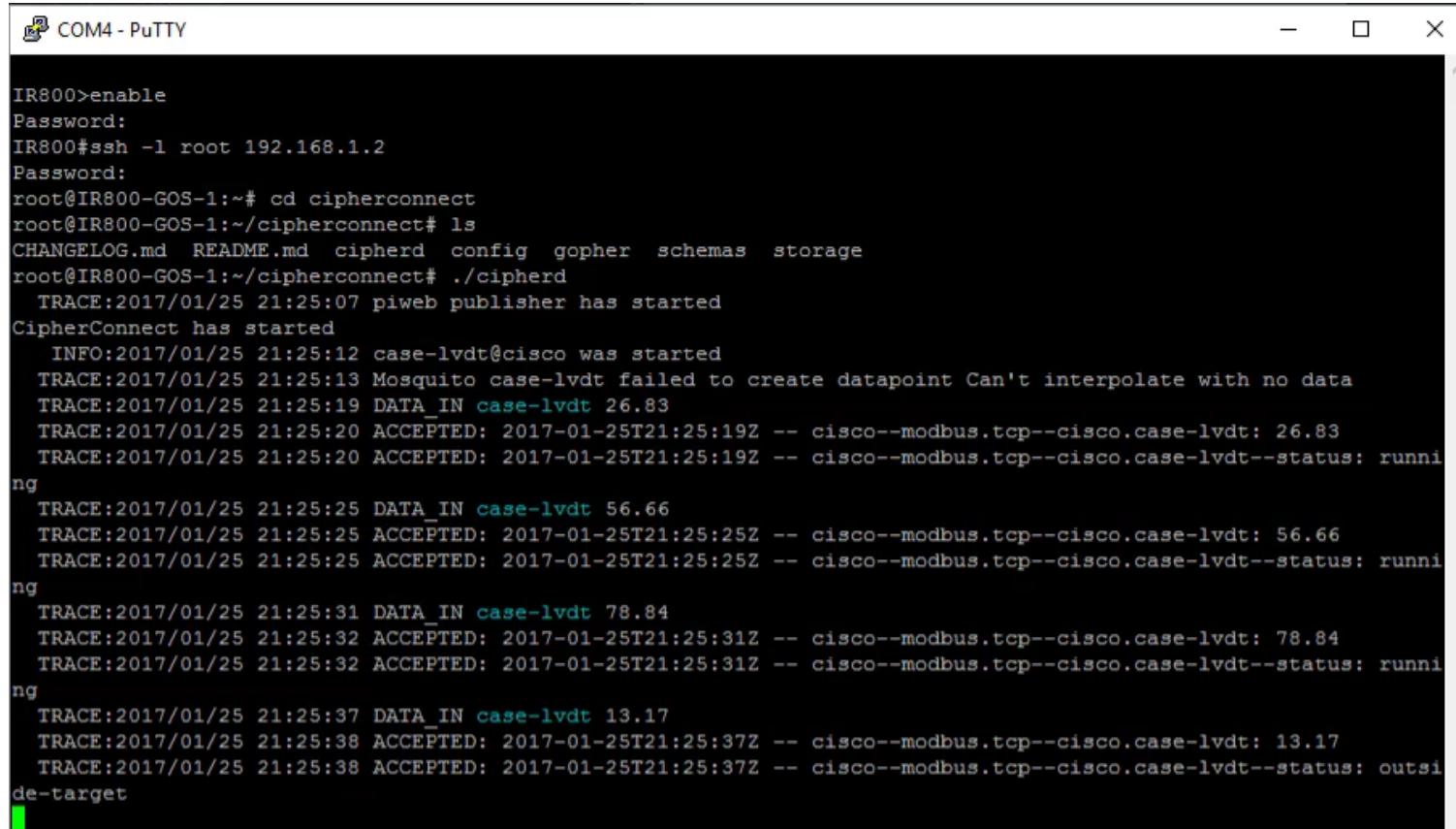
## Cipher Wireless Sensors



# Cipher Wireless Sensors



# Cipher Connect - Embedded



```
COM4 - Putty

IR800>enable
Password:
IR800#ssh -l root 192.168.1.2
Password:
root@IR800-GOS-1:~/cipherconnect
root@IR800-GOS-1:~/cipherconnect# ls
CHANGELOG.md  README.md  cipherd  config  gopher  schemas  storage
root@IR800-GOS-1:~/cipherconnect# ./cipherd
    TRACE:2017/01/25 21:25:07 piweb publisher has started
CipherConnect has started
    INFO:2017/01/25 21:25:12 case-lvdt@cisco was started
    TRACE:2017/01/25 21:25:13 Mosquito case-lvdt failed to create datapoint Can't interpolate with no data
    TRACE:2017/01/25 21:25:19 DATA_IN case-lvdt 26.83
    TRACE:2017/01/25 21:25:20 ACCEPTED: 2017-01-25T21:25:19Z -- cisco--modbus.tcp--cisco.case-lvdt: 26.83
    TRACE:2017/01/25 21:25:20 ACCEPTED: 2017-01-25T21:25:19Z -- cisco--modbus.tcp--cisco.case-lvdt--status: running
    TRACE:2017/01/25 21:25:25 DATA_IN case-lvdt 56.66
    TRACE:2017/01/25 21:25:25 ACCEPTED: 2017-01-25T21:25:25Z -- cisco--modbus.tcp--cisco.case-lvdt: 56.66
    TRACE:2017/01/25 21:25:25 ACCEPTED: 2017-01-25T21:25:25Z -- cisco--modbus.tcp--cisco.case-lvdt--status: running
    TRACE:2017/01/25 21:25:31 DATA_IN case-lvdt 78.84
    TRACE:2017/01/25 21:25:32 ACCEPTED: 2017-01-25T21:25:31Z -- cisco--modbus.tcp--cisco.case-lvdt: 78.84
    TRACE:2017/01/25 21:25:32 ACCEPTED: 2017-01-25T21:25:31Z -- cisco--modbus.tcp--cisco.case-lvdt--status: running
    TRACE:2017/01/25 21:25:37 DATA_IN case-lvdt 13.17
    TRACE:2017/01/25 21:25:38 ACCEPTED: 2017-01-25T21:25:37Z -- cisco--modbus.tcp--cisco.case-lvdt: 13.17
    TRACE:2017/01/25 21:25:38 ACCEPTED: 2017-01-25T21:25:37Z -- cisco--modbus.tcp--cisco.case-lvdt--status: outside-target
```

# Cipher Connect – Config Tool

RtTech Software - [OPC UA Setup]

File Edit View Tools Windows Help

OPC UA MQTT Modbus OPC Classic PI BACnet

opc.tcp://RTTECH-BRADLEY:49320 - [SignAndEncrypt:Basic128Rsa15:Binary] Connect

Server \_System ATS Channel1 Channel2 Data Type Examples Siemens Simulation Examples \_Statistics \_System Functions \_System Ramp1 Ramp2 Ramp3 Ramp4 Random1 Random2 Random3 Random4 Sine1 Sine2 Sine3 Sine4 TESTYTAG User1 User2 User3 User4

	Description	Active	Value
▶	Ramp1	Yes	95
	Ramp2	Yes	172.75
	Random1	Yes	67
	Random2	Yes	203
	Sine1	Yes	-19.38017
	Sine2	Yes	-3.138364

Publish To Settings

Azure  PI Web API PI-VM  PI Tag Name: Cipher-Test  SQL Server  OMF  OPC UA  Tag Name:  Namespace: 0  ID Data Type:  OPC DA  Tag Name:  On Premis (SSL Socket)

Save

opc.tcp://RTTECH-BRADLEY:49320 (SignAndEncrypt) UABinary Server Status: Running 2016-09-17 14:06:43 0/0

Status

# Cipher Connect – Config Tool

RtTech Software - [MQTT setup]

File Edit View Tools Windows Help

OPC UA MQTT Modbus OPC Classic PI BACnet

MQTT Broker Address: 192.168.2.152 MQTT Parent Topic # Discover Filter: [ ]

	Subscribe	Topic	Value Entity
	<input checked="" type="checkbox"/>	BB/0013430F220B/data/tempint	tempint
▶	<input checked="" type="checkbox"/>	BB/00134316DEC8/data/tempint	tempint
	<input checked="" type="checkbox"/>	BB/00134316DEBE/data/tempint	tempint
	<input checked="" type="checkbox"/>	BB/00134316DEE9/data/tempint	tempint
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sys/bid	bid
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sys/ft	ft
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sensor/vbatt/ahi	ahi
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sensor/vbatt/alo	alo
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sensor/temp/int/ahi	ahi
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sensor/temp/int/alo	alo
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sensor/geoloc/ovr	ovr
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sensor/dout/2/inv	inv
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sensor/ain/2/ahi	ahi
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sensor/ain/2/alo	alo
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sensor/ain/2/sp	sp
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sensor/ain/2/zp	zp
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sensor/ain/1/ahi	ahi
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sensor/ain/1/alo	alo
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sensor/ain/1/sp	sp
	<input type="checkbox"/>	BB/00134316DEE9/cfg/sensor/ain/1/zp	zp
	<input type="checkbox"/>	BB/00134316DEE9/cfg/dust/id	id
	<input type="checkbox"/>	BB/00134316DEE9/cfg/dust/jd	jd

Servers/Topics

Item Topic: BB/00134316DEC8/data/tempint

Name: BB/00134316DEC8/data/tempint

Broker: 192.168.2.152

Timestamp Entity: t

Value Entity: tempint

Data:

```
{
  "s": 3,
  "t": "2016-09-17T13:24:45Z",
  "q": 192,
  "c": 3,
  "tempint": 21.5,
  "vbatt": 3.29
}
```

Publish To Settings

Azure

PI Web API PI-VM

PI Tag Name: BB/00134316DEC8/data/tempint

SQL Server

OMF

OPC UA

Tag Name:

Namespace: 0

ID Data Type:

OPC DA

Tag Name:

On Premis (SSL Socket)

Save

Status

## Cipher Connect Roadmap

Protocols/Features		Connect-E (Linux/Embedded)		Connect-W (Windows)	
Group	Detail	Input (Read From)	Output (Write To)	Input (Read From)	Output (Write To)
ModBUS	Serial (RTU, ASCII)	✓	Q2	✓	●
	TCP	✓	Q2	✓	●
Cipher Portal	Azure	●	✓	●	✓
MQTT	Advantech JSON	✓	Q2	✓	✓
	Generic JSON	✓	✓	✓	●
	Sparkplug	✓	Q2	✓	✓
BacNET	IP	Q2	Q2	✓	Q2
	Generic	Q2	Q2	✓	Q2
OPC	UA	✓	Q2	✓	✓
	DA	●	●	✓	✓
EtherNet/IP	Standad	Q2	Q2	Q2	Q2
ZigBee	Standad	Q2	Q2	Q2	Q2
OSISoft PI	Web API	Q2	✓	✓	✓
	OMF	●	✓	●	✓
Database/File	ODBC	Q2	●	✓	✓
	Flatfile	●	●	✓	✓
Weather	OWM	✓	●	●	●
		Supported		Supported	
Analytics	Linear equations	✓		●	
	Basic math operations	✓		●	
	Unit conversions	✓		●	
	Logical Operations	✓		●	
	Statistical Average	✓		●	
	Rate of change	✓		●	
Configuration	Local/Text	✓		●	
	Local/UI	●		✓	
	Remote/Web	✓		●	
	Remote/Setup Tool	Q2		●	

# OPC CERTIFICATION

- OPC certification provides credibility within the (IIoT) ecosphere
- OPC UA is key to enabling interoperability between devices and assets
- Critical for plants and factories that are connecting new and legacy systems
- Standardized communication, security, and protocols for a wide range of industrial equipment and software.

"RtTech Software successfully certified their product in the OPC Foundation certification lab, truly meeting and exceeding the high standards of quality that end-users of OPC products have come to expect."

- THOMAS J. BURKE, OPC FOUNDATION PRESIDENT & EXECUTIVE DIRECTOR



## USER INTERFACES

- Dashboard
- Native Mobile App
- Integration

### RtDuet

Performance Analyzed. Production Maximized

RtDuet is your partner in achieving OEE goals. Now you can have your finger on the pulse at all times and be sure that your plant is performing at its optimal capacity

### RtEMIS

Energy Analyzed. Efficiencies Optimized.

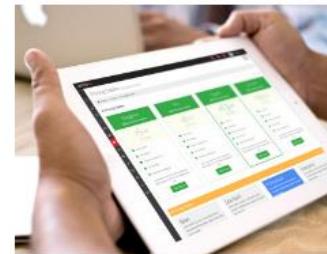
RtEMIS automates your roadmap to energy management across your production facility. Using real-time data, RtEMIS builds models to calculate target energy consumption rates for each of your machines and compares it to your actual energy usage.

RtNimbus - Starting point for efficient operations!

 Login

### Mobile Platforms

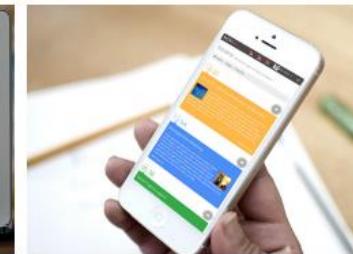
See what is happening while you are on the shop floor and record reason for events as they occur! Ditch the clipboard, not need to waste time jotting it down only to then have to enter it in the computer when you get back to your desk.



Tablet



Laptop



Cell Phone

## CENTRALIZED MANAGEMENT CONSOLE

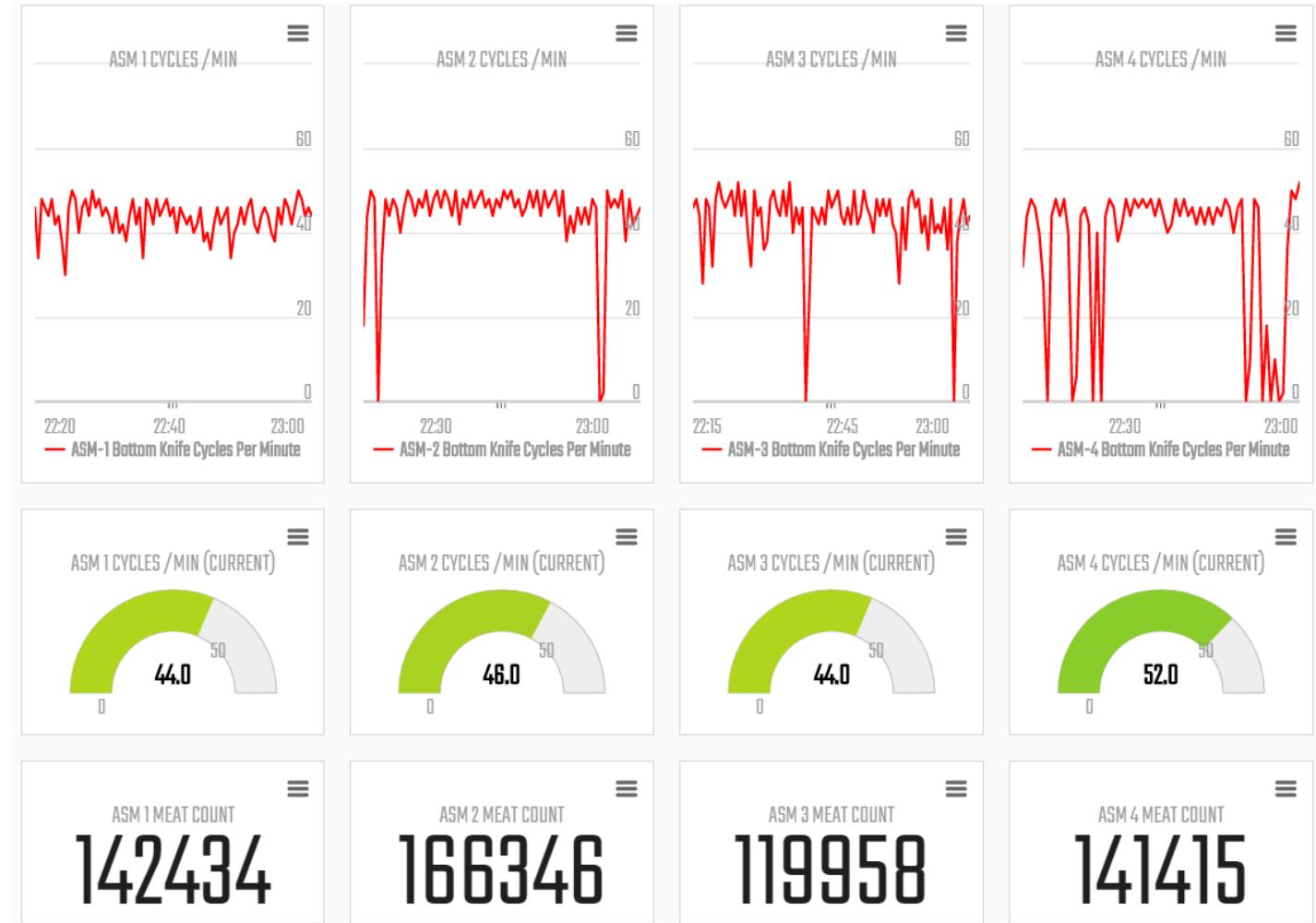


## ■ Be Informed

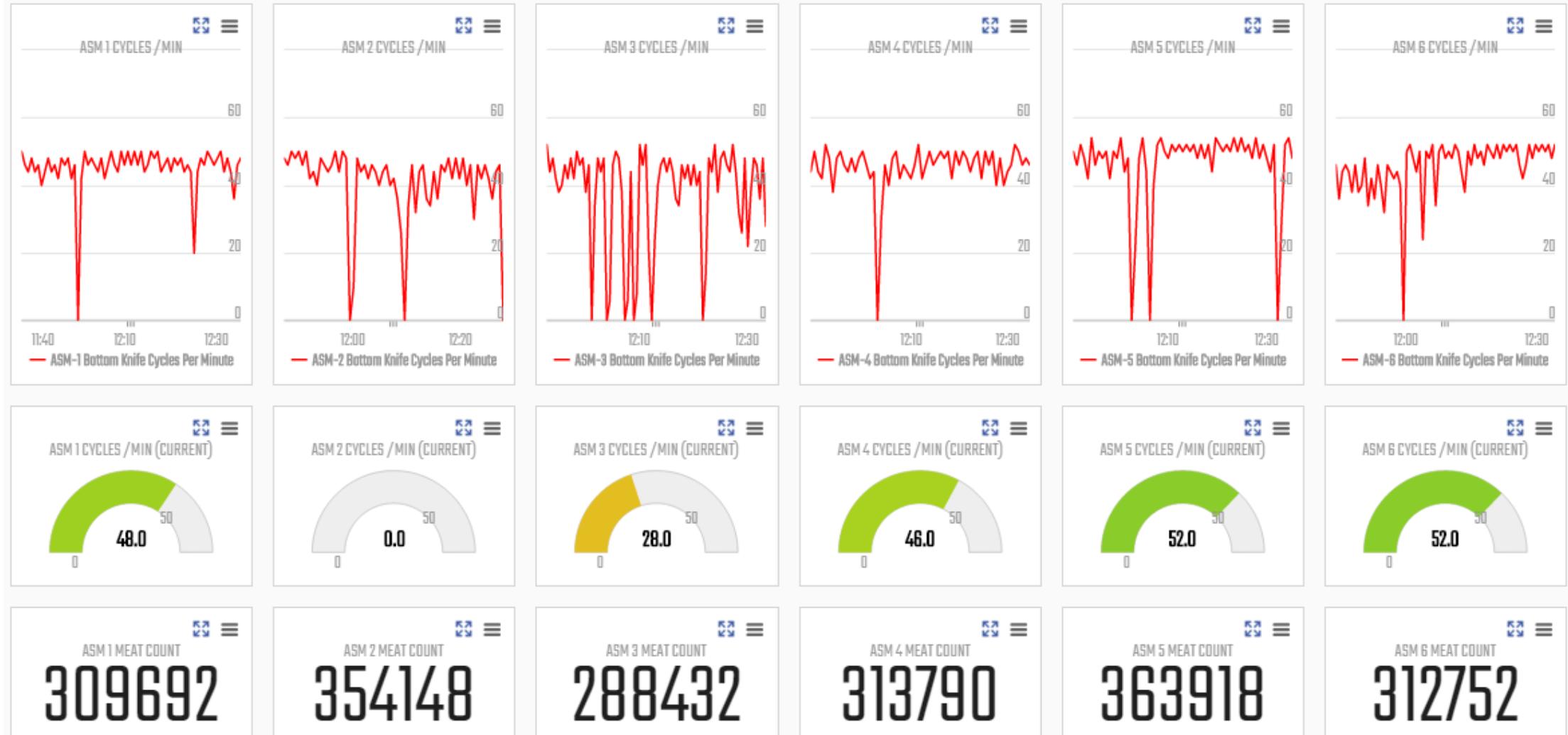
- Interactive + adaptable dashboard
- Native iOS + Android mobile apps with push notifications
- Multilingual functionality including complex language definitions
- Login-based security with role definitions
- Embedded diagnostics
  - Audit logs
  - Application exceptions
  - Health checks

## USER INTERFACES

-  **Dashboard**
- Native Mobile App**
- Integration**



## DASHBOARDS

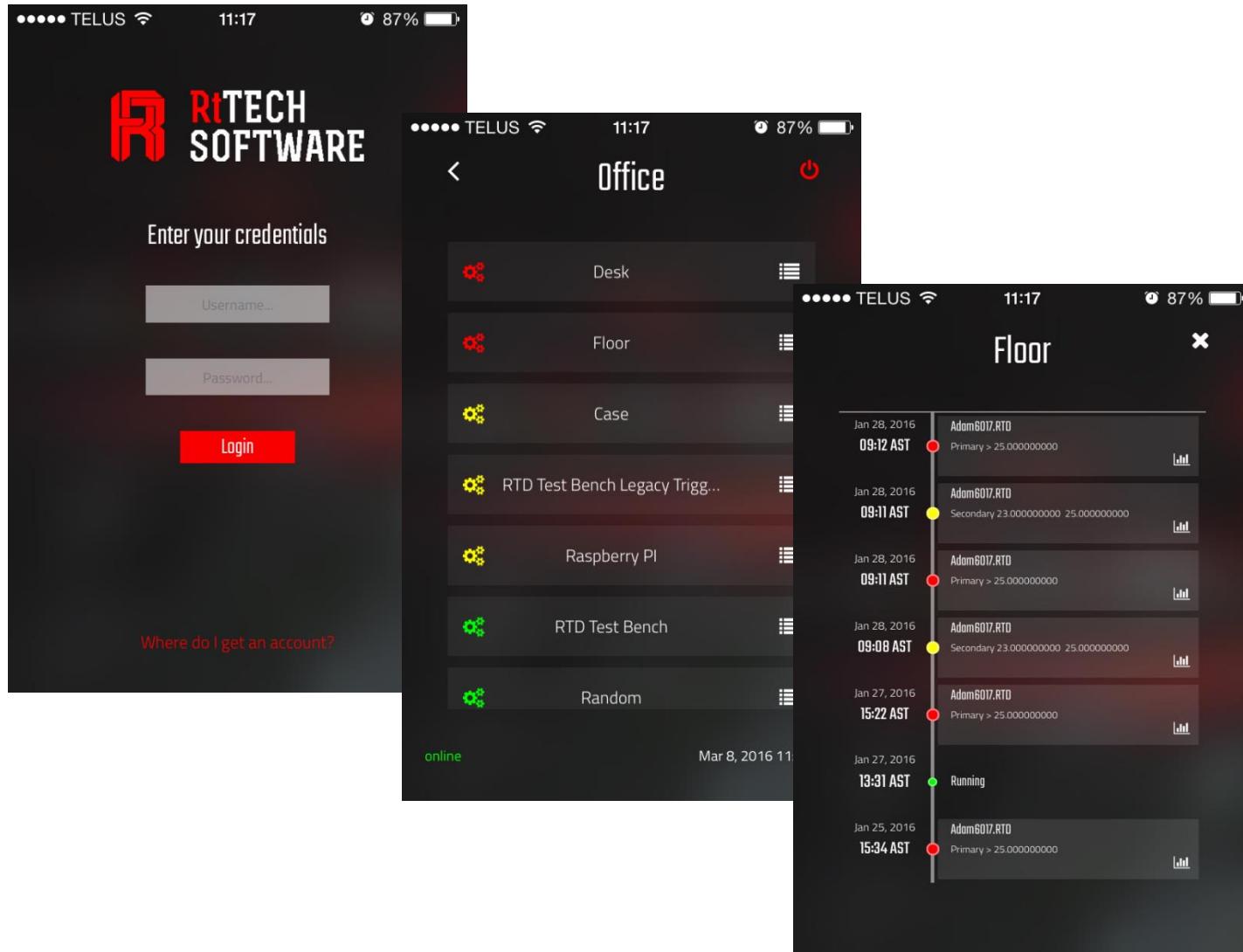


## USER INTERFACES

Dashboard

Native  
Mobile  
App

Integration



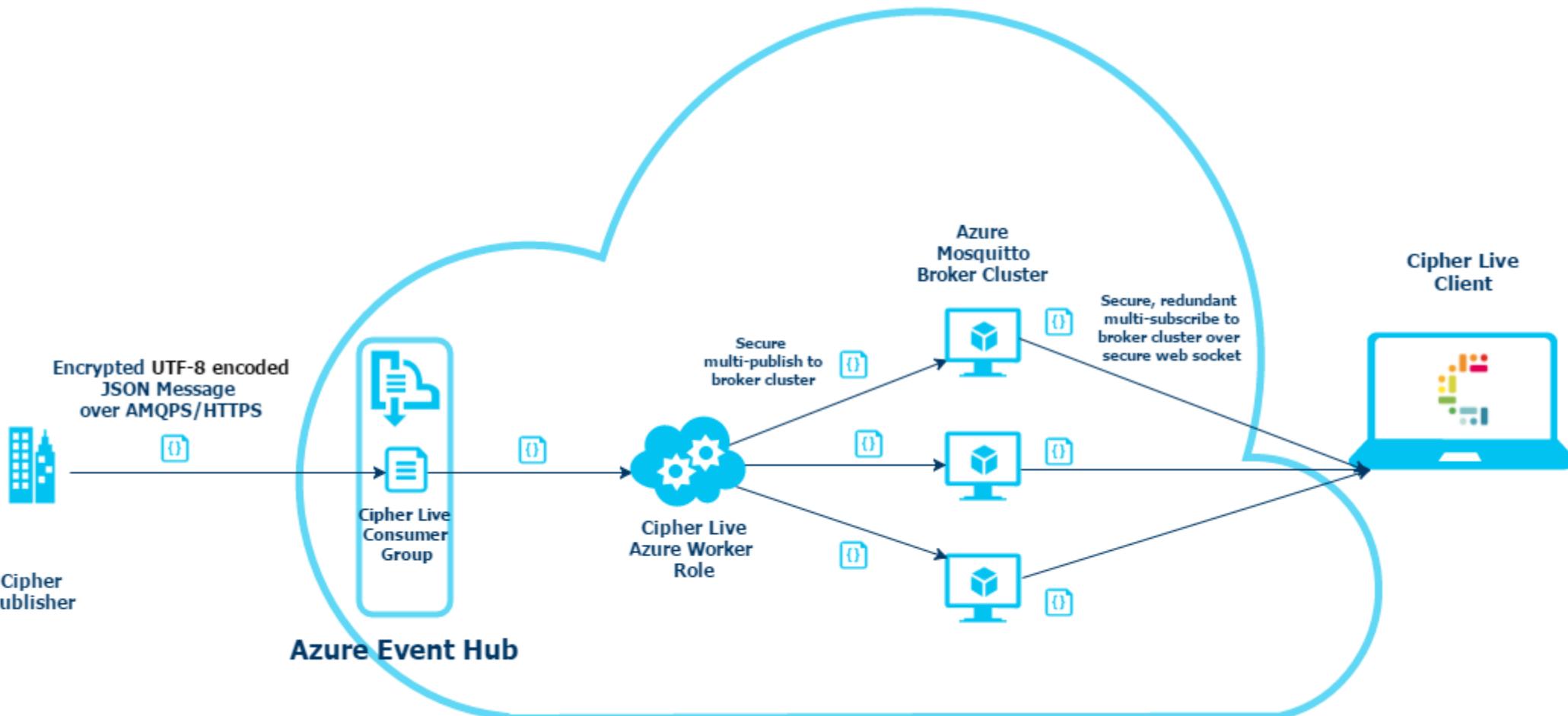
## MOBILE APPS



## USER INTERFACES



## INTEGRATION



## INTEGRATION

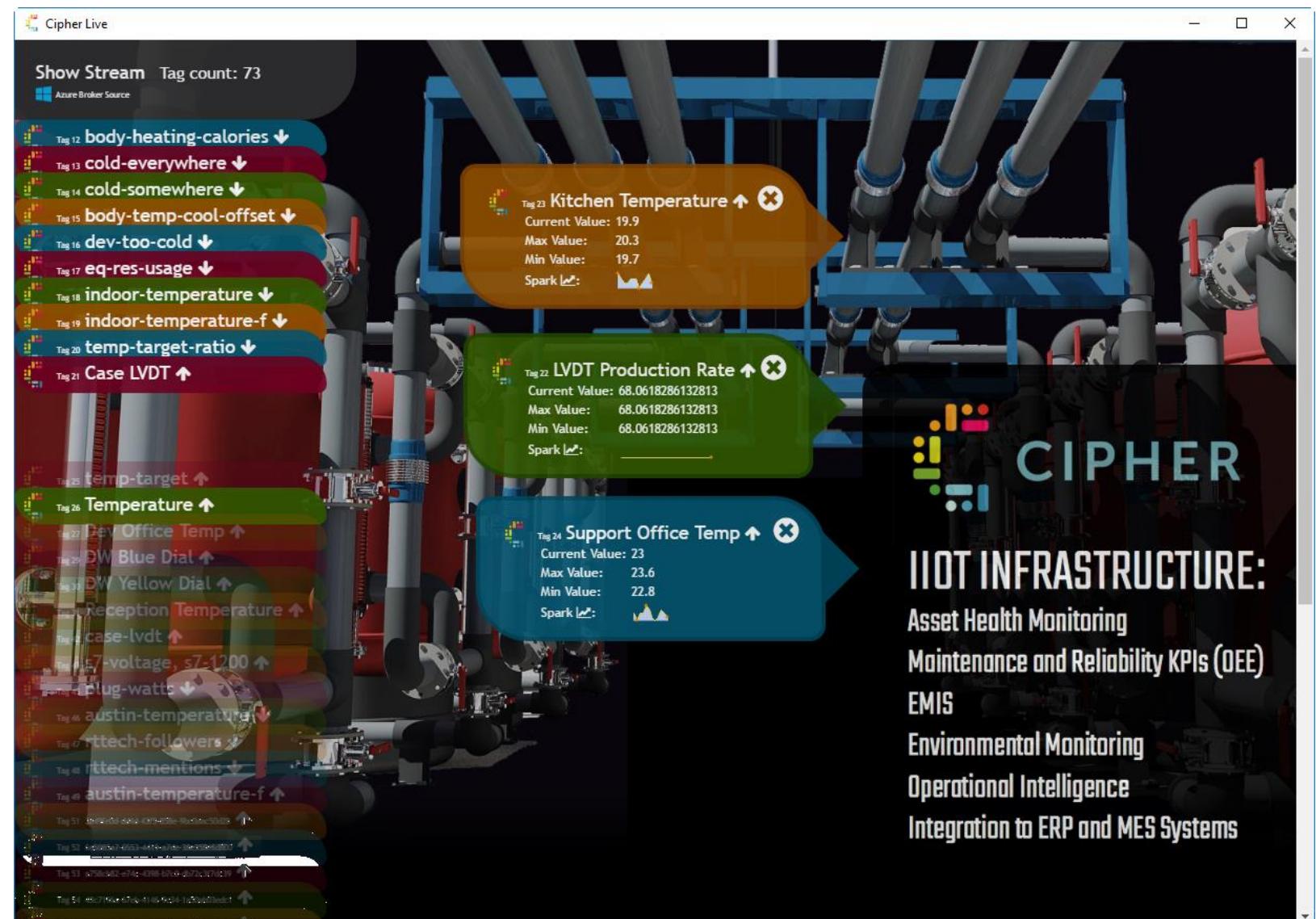


# CIPHER

## MQTT BROKER

3rd Party Apps

## INTEGRATION



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# THANKS



RtTECH  
SOFTWARE

KILLER APPS FOR INDUSTRIAL ANALYTICS.

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