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GLOBAL WEBINAR

# Enabling Your Community to Increase Efficiencies

Presenters:
Thomas Christiansen, Senior Vice President, Strategic Power Systems, Inc.®
Dominic John, VP of Marketing, OSIsoft

April 12, 2018

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# Strategic Power Systems, Inc.®


## Tom Christiansen

christiansen@spsinc.com

Senior Vice President

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# Dominic John

djohn@osisoft.com

VP of Marketing & Tech. Com.

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# Agenda

Digital Transformation and The Last Mile

OSIsoft's Vision and Technology Direction

Community Driven Operational Efficiency Examples

# We believe People with Data can Transform their world

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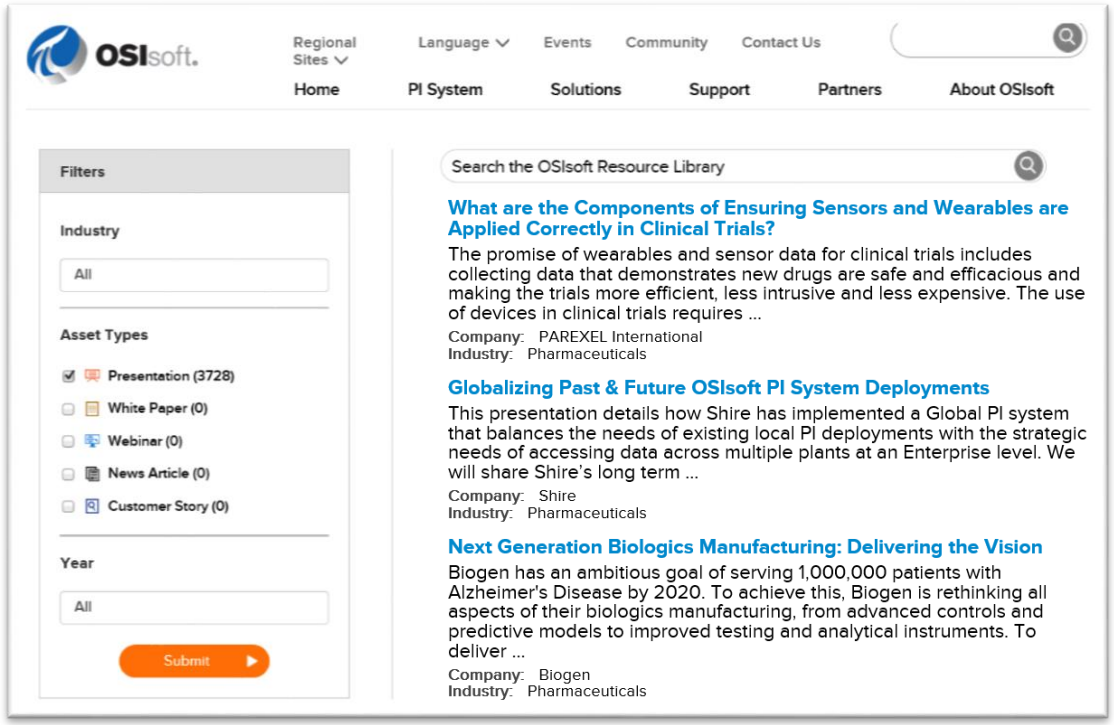
# Digital Transformation
# 2000+ Industry Presentations

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# Digital Transformation Results

| Safety & Security | Energy | Process Efficiency | Asset Health | Quality | Regulation |
|---|---|---|---|---|---|
| PETRONAS | BARRICK | Xcel Energy | ALCOA | Maynilad | janssen |
| 5 less plant shutdowns | $12M/yr/mine $O_2$ savings | $46M saved & 37% less errors | $5-40M per event | Saved 640M liters water | 1000+ less paper documents |


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# Connecting the Value Chain Across the Community

Processing

Process Efficiency

Maintenance

Asset Health

Equipment

Utilities

Energy

Industrial Enterprise

Quality

Production

3rd Party Services

Regulators

Facilities

Safety & Security

Regulation

Environment

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# Why the Need for Digital Transformation?

| Revenue Growth | Profit | Shareholder Returns |
| --- | --- | --- |
| 5X | 8X | 2X |
| Their rivals | Their rivals | Their rivals |

*Source: McKinsey and Company-McKinsey Digital Quotient, Capital IQ*

# Journey Towards Operational Optimization

Data Insights Driven from The Last Mile

# Engaging Analytics for the Last Mile of Operational Efficiency

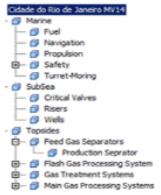
Traditional Operations

Sense

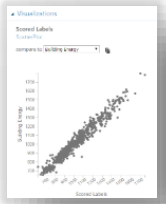
Process/ Control System

Connect

Store

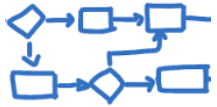


Structure



Analyze

Model



Implement

Automate



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# Engaging Analytics for the Last Mile of Operational Efficiency

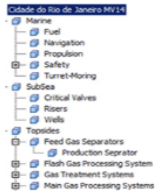
**Traditional Operations**

Sense

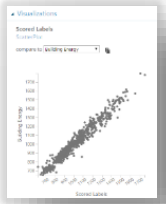
Process/ Control System

Connect

Store

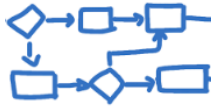


Structure



Analyze

Model



Implement

Automate

**IIoT Enabled Operations**

Sense

Connect/ Gateway

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# Engaging Analytics for the Last Mile of Operational Efficiency

**Traditional Operations**

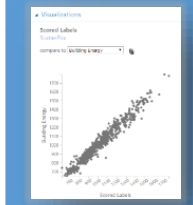
Sense

Process/ Control System

Connect

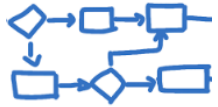
Store

Structure



Analyze

Model



Implement

Automate

**IIoT Enabled Operations**

Sense

Connect/ Gateway

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# Engaging Analytics with a Community of Data

California Independent System Operator

Photo Copyright California ISO



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# Predicting the Demand For the 6th Largest Economy in the World a Day Ahead

Today's Outlook | Demand | Supply | Prices | Emissions

AS OF 21:15 04/03/2018

## Current and forecasted demand AS OF 21:15

View official data in OASIS

### Capacity status

35,441 MW
Available capacity*

27,056 MW
Current demand

28,243 MW
Forecasted peak

*Available capacity varies due to outages, congestion and emergencies. View all outage reports.

35,441 MW
Available capacity*

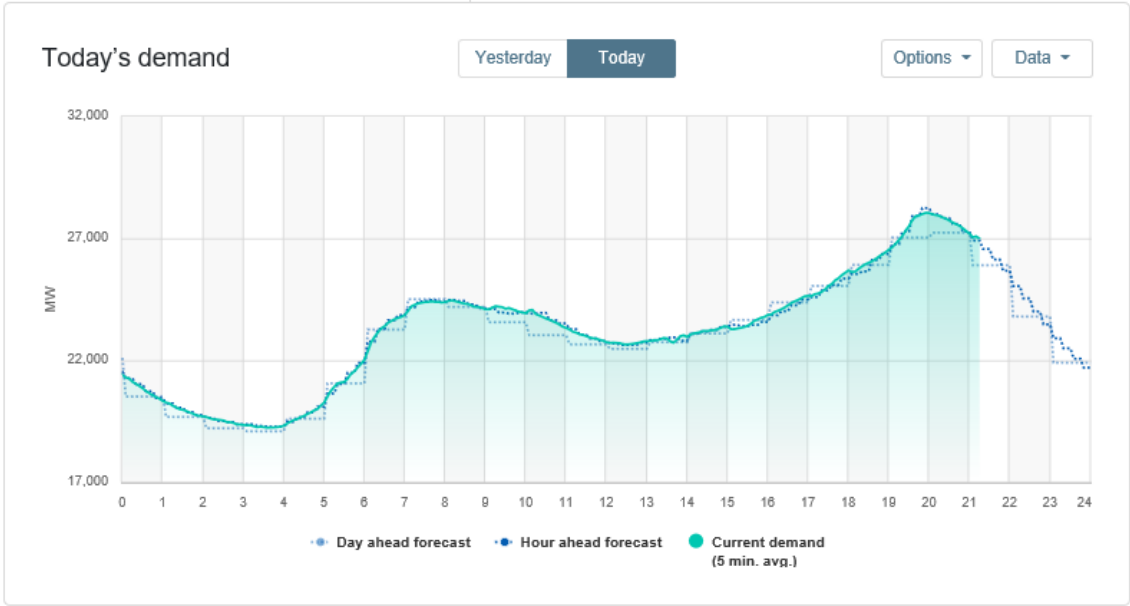
27,056 MW
Current demand

28,243 MW
Forecasted peak

50,270 MW
Historical peak
(Jul 24, 2006)

28,241 MW
Today's peak
(19:52)

27,625 MW
Tomorrow's forecast

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# Having Your Assets Supported by The Community

Enterprise Data Hub Integration

BUSINESS ENTERPRISE SYSTEMS

BIG DATA ANALYTICS

Dealer/Customer/CAT Apps

Augmented Reality Service & Inspection

Remote Diagnostic & Service

Digital Twin Simulation & Analytics


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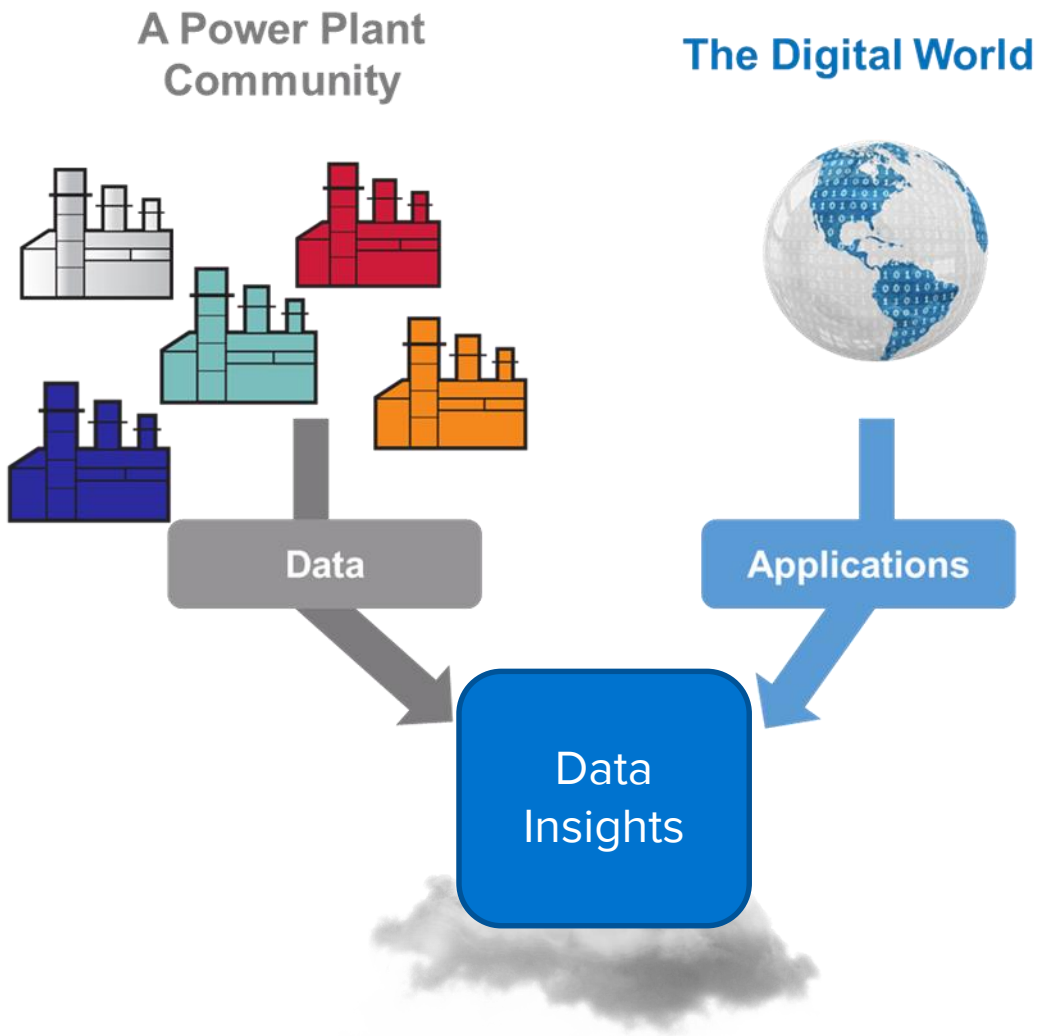
# Gaining Intelligence From The Community





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# Polling Question

| On a scale 1-5 how much do you feel sharing your operational data with 3rd parties in the value chain is important for driving more efficiency? |
| --- |
| A. 5 - high |
| B. 4 |
| C. 3 |
| D. 2 |
| E. 1 - low |

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# Our Vision- Edge to Community Transformations

**Sensors**

Millions of **Smart Devices**

**Assets**

Multiple **Sensors**

**Plant**

Multiple **Assets**

**Enterprise**

Multiple **Plants**

**Community**

Multiple **Enterprises**

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# Our Vision- Edge to Community Transformations

| Sensors | Assets | Plant | Enterprise | Community |
|---|---|---|---|---|
| Millions of **Smart Devices** | Multiple **Sensors** | Multiple **Assets** | Multiple **Plants** | Multiple **Enterprises** |
| **1.5 Billion Tags** | **1,000,000's** | **21,000 Sites** | **100's+ Enterprise Agreements** | **100's Connected Services** |

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# OSIsoft's Software and Services Direction

Pervasive Data Collection

OSIsoft Cloud Services

| Sensors | Assets | Plant | Enterprise | Community |
|---|---|---|---|---|
| | | | | |
| Millions of **Smart Devices** | Multiple **Sensors** | Multiple **Assets** | Multiple **Plants** | Multiple **Enterprises** |

PI System



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# Introducing SPS Inc's Community

Thomas Christiansen
Sr. VP, SPS

Cloud

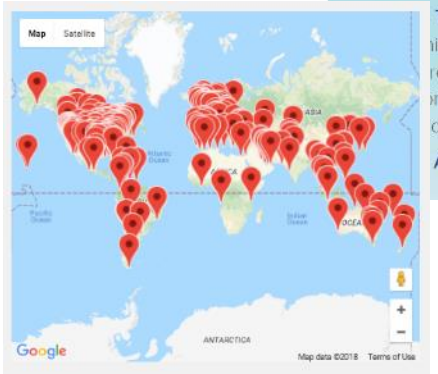
OSIsoft. PartnerEcoSphere

SPS DATA FIRST

## Asset Analytics & Performance Benchmarks for Power

More reliable, productive, and profitable plants through data transformation

Community



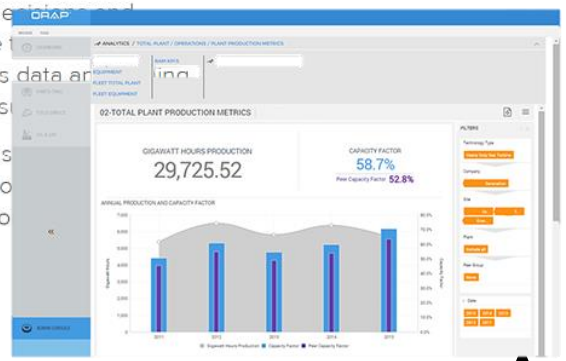

At-A-Glance

Type
ing streaming power plant
reliability and performance
r informed decisions with
onnected Services.
Available

BUSINESS CHALLENGES

Every power plant requires data to make informed de
satisfy their numerous reporting requirements. While
tremendous amount of data available, organizing this data ar
it into actionable information is difficult and time cons

The varying metrics, output formats, and time periods
satisfy key stakeholders further complicates efforts to
from data. The person responsible for providing repo




Analytics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# Strategic Power Systems, Inc.®


## Tom Christiansen

christiansen@spsinc.com

Senior Vice President

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# Agenda

- Who is SPS
- Our Community
- Challenges
- Response

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# A Community System

- Every Plant Has Its Own Experience
- Hundreds of Similar Plants in Operation
- Why Not Learn From Each Other
- Intelligence Connecting Plants
  - Global Community of Users
  - Third-Party, Unbiased
  - 30+ Years of Data
  - Multiple Technologies, Applications, & OEMs
  - Industry Standards (e.g. IEEE 762)

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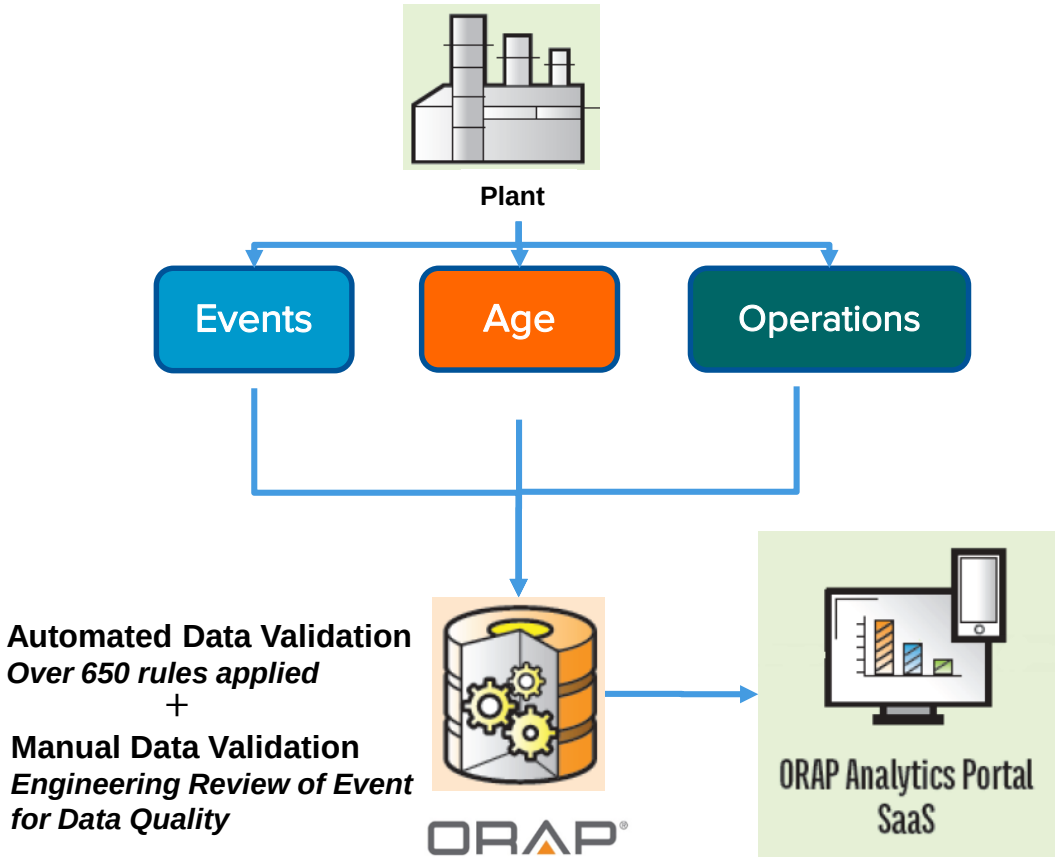
# The Community Solution

- Plants Operating All Around the World (~3,300 units)
  - Daily/Weekly/Monthly Data
  - Events, Age and Operations
- SPS Performs Engineering Validation
- Analytics – Key Performance Indicators (KPIs)
  - Collaborative
  - Benchmarking
  - Leverage Insights from Community
  - Highlight Opportunities for Improvement
  - Unlock Intelligence

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# Community Benchmarking & Analytics

Your Operating Profile versus the Community

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# Community Benchmarking & Analytics

**Your Plant RAM Performance versus the Community**

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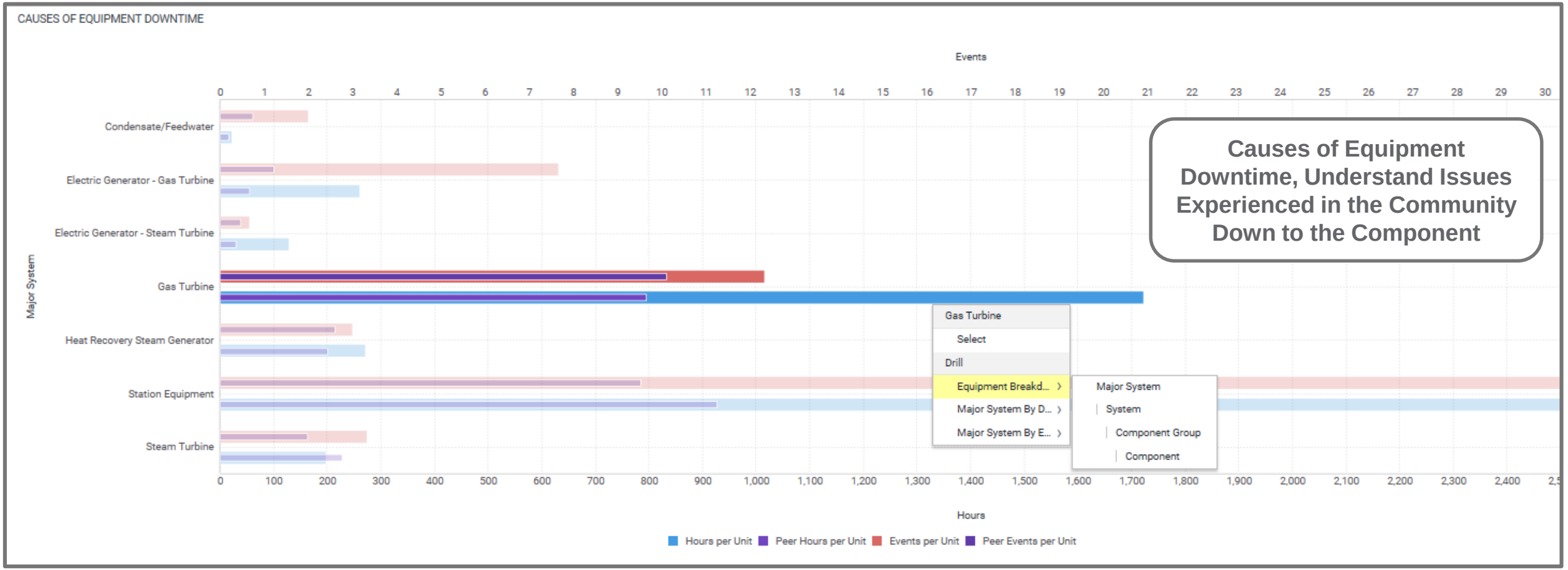
# Community Benchmarking & Analytics

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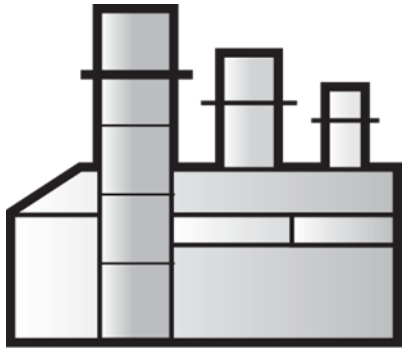
# The World of a Typical Power Plant

- Flat or Declining Demand
- Impact of Renewables
- Changing Regulatory Requirements
- Increasingly Complex Technology
- Digitization of Assets
- Mergers & Acquisitions
- Shrinking Plant Staff Size
- Others…

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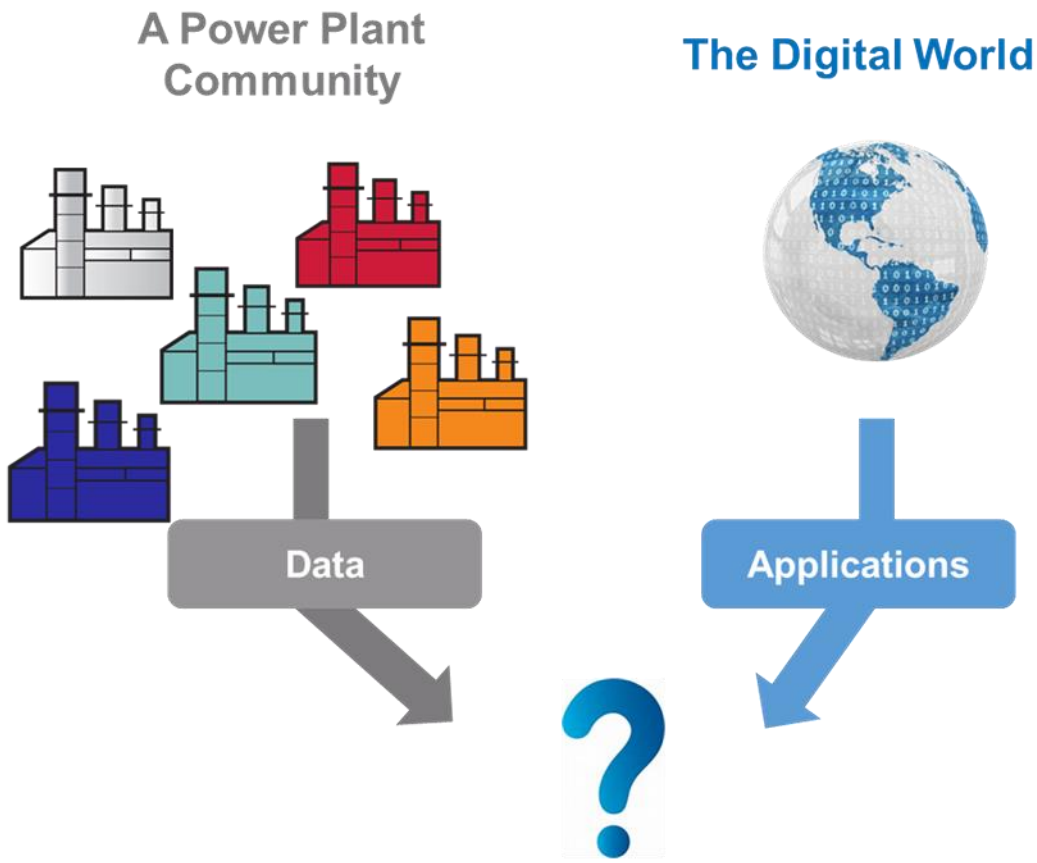
# Convergence of Data and Applications

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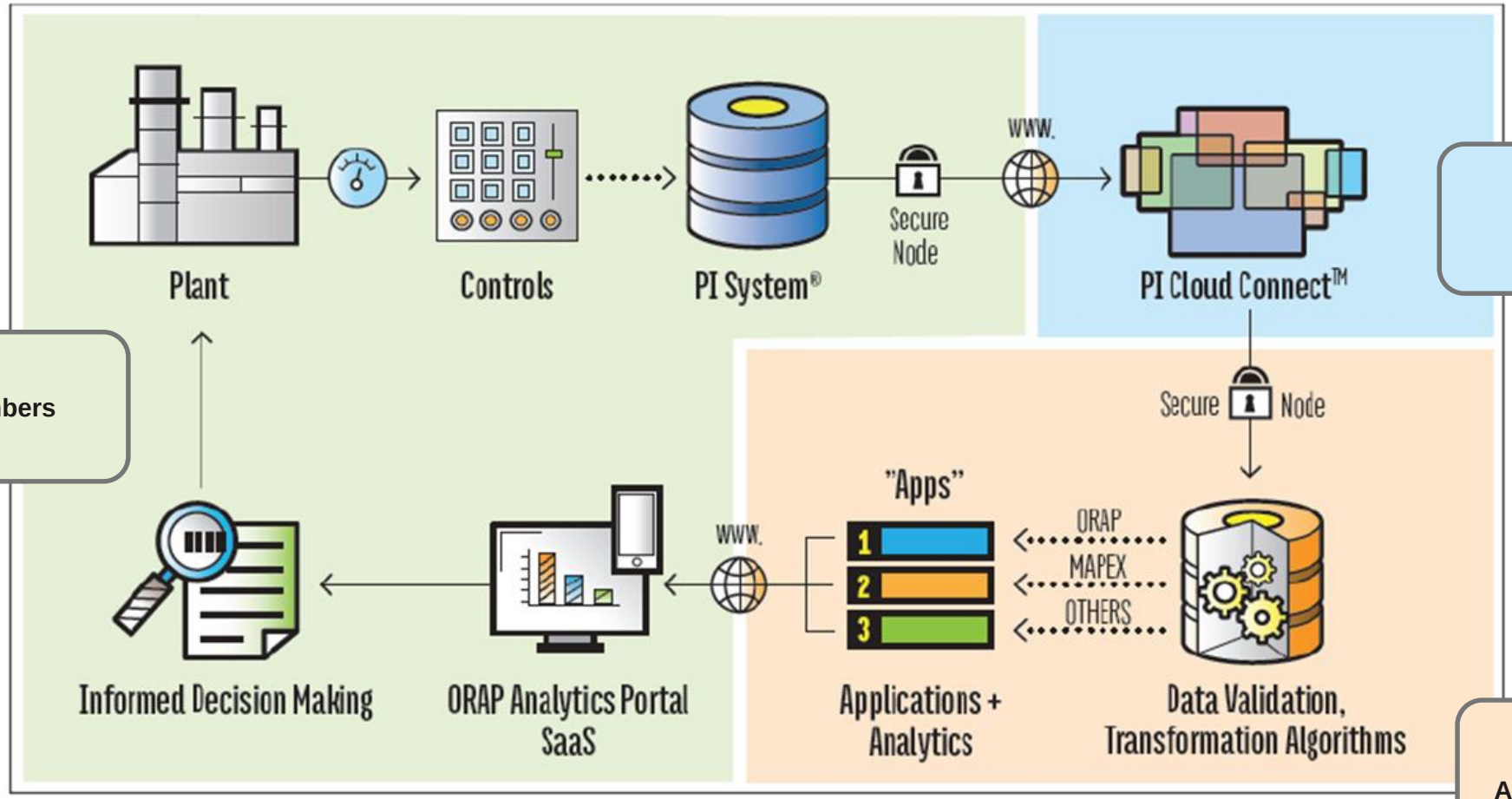
# Architecture of a Community System

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# Enabling the Community with the Cloud

- Past Constraints
  - Onsite Installation – multiple days
  - Hardware and system maintenance
  - Software updates difficult to schedule
  - Dedicated VPN required
- Current Solution
  - Installation via phone in a few hours
  - Use existing plant infrastructure
  - Reduced cost
  - Streamlined security

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# Best Practices:
# Sharing Data in a Digital World

- No Direct Access to Plant Control Systems
  - Historian Provides Data
- Plant Regulates Information Flow
- Secure and Encrypted Data
- Data Ownership Resides with the Plant
- Must Successfully Pass CIP Audits (US)

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# High Fidelity Data Simplified

Electric Utility in California

Challenge: Manually Entering Approximately 1,800 Reserve Shutdown Events Each Year

Solution: Productivity through Automation - Time to Report Reduced by >90%

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# Reporting KPIs Across a Community

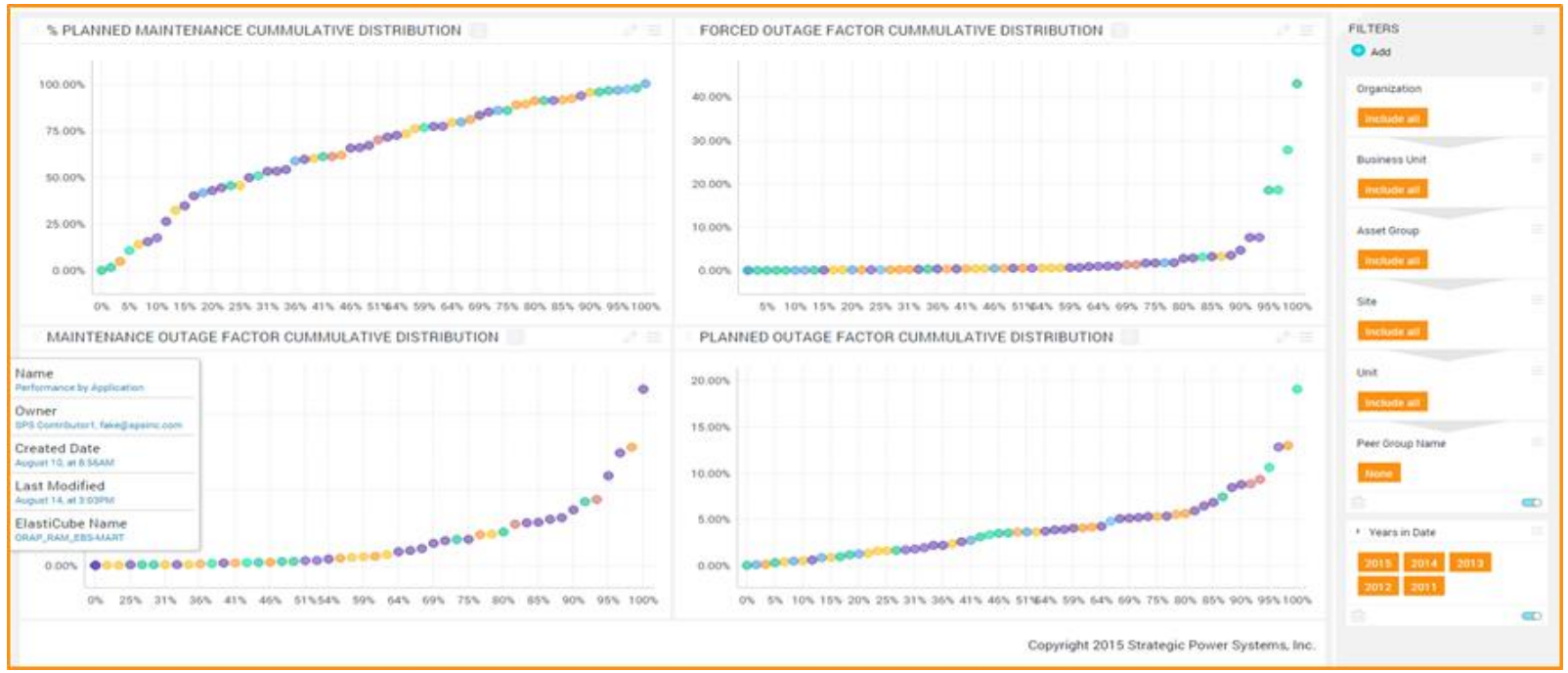
## Chevron

"The new ORAP Analytics Portal allows us to quickly look at our fleet in different ways using an intuitive and responsive interface.  The dashboards in this Portal have helped us to identify new strategies across our fleet that were not obvious when we were previously reviewing more traditional static reports."

Rick Tomlinson, Chevron Power & Energy Management

## Challenge: KPI Standardization

## Solution: Accurate, Timely, Consistent Reporting Across Company - NO Additional Work

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# Capital Parts Optimization

## Kindle Energy – Lonestar Generation

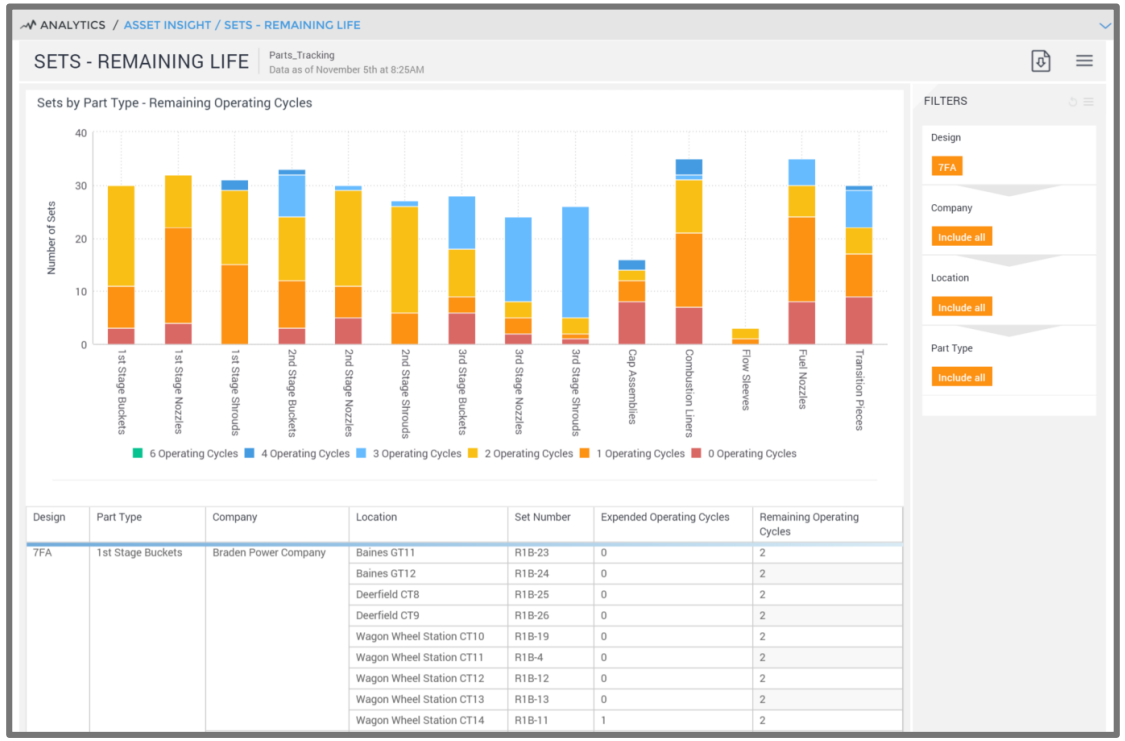
“Parts Tracking and Life Calculator solves two problems for me, one is I meet with my accountants once a month and we run a depreciation model based on hours and starts and also I know where every part is and how many hours and starts and how much life is remaining and what I need to budget for.”

Ed Fuselier - Director - Asset Management

## Challenge: Manually Tracking Parts Life in Excel

## Solution: All Capital Hot Gas Path Parts Life Tracked at a Serial Number Level - ROI <1 Year

## Next Step: Sharing experience with different OEMs and Common Parts




| Design | Part Type | Company | Location | Set Number | Expended Operating Cycles | Remaining Operating Cycles |
|---|---|---|---|---|---|---|
| 7FA | 1st Stage Buckets | Braden Power Company | Baines GT11 | R1B-23 | 0 | 2 |
| | | | Baines GT12 | R1B-24 | 0 | 2 |
| | | | Deerfield CT8 | R1B-25 | 0 | 2 |
| | | | Deerfield CT9 | R1B-26 | 0 | 2 |
| | | | Wagon Wheel Station CT10 | R1B-19 | 0 | 2 |
| | | | Wagon Wheel Station CT11 | R1B-4 | 0 | 2 |
| | | | Wagon Wheel Station CT12 | R1B-12 | 0 | 2 |
| | | | Wagon Wheel Station CT13 | R1B-13 | 0 | 2 |
| | | | Wagon Wheel Station CT14 | R1B-11 | 1 | 2 |

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# Helping Plants Make Data-Driven Decisions

1. Gaining Experience and Insight from the Community
   - Leverage community intelligence to improve plant performance
   - Understand where you fit in, what you can do to improve
2. Optimize Digital Technology
   - Automation for improved productivity and quality
   - “Run Your Plants – Not Reports”

Trusted Source of Operations Data

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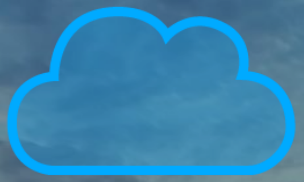
# Technology Is Critical to Realize the Last Mile



Capture and share data across the value chain

Capture data that You couldn’t before

Go beyond human and real time insights

# OSIsoft: Supporting the Last Mile

# Questions and Answers

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# Next

- Stayed tuned for follow-up email
  - Link to OSIsoft On-Demand webinars
  - Visit PI Square
- Social media. Keyword OSIsoft
- Conversation

Thomas Christiansen
Sr. VP, SPS
christiansen@spsinc.com

Dominic John
VP of Marketing & Tech. Comm., OSIsoft
djohn@osisoft.com

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# Learn More at PI World 2018

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SAN FRANCISCO
APRIL 23-27, 2018

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MISAOTRA ANAO
SALAMAT
DZIĘKUJĘ CI
NGIYABONGA
TEŞEKKÜR EDERIM
GRÀCIES
OBRIGADO
شكرا
DANKIE
TERIMA KASIH
DANKON
TANK
TAPADH LEAT
KÖSZÖNÖM
СПАСИБО
MULȚUMESC
OSIsoft
РАКМЕТ СІЗГЕ
FAAFETAI
HVALA
GO RAIBH MAITH AGAT
ESKERRIK ASKO
MAHADSANID
HVALA
ХВАЛА ВАМ
БЛАГОДАРЯ
GRACIAS
THANKYOU
TEŞEKKÜR EDERIM
ТИ БЛАГОДАРАМ
DANK JE
ΕΥΧΑΡΙΣΤΩ
GRATIAS TIBI
GRAZIE
TAK
DANKE
AČIŪ
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MAHALO IĀ ʻOE
TAKK SKAL DU HA
ДЗЯКУЙ
RAHMAT
MERCI
DI OU MÈSI
GRAZZI
ÞAKKA ÞÉR
ありがとうございました
ĎAKUJEM
HATUR NUHUN
PAXMAT САГА
SIPAS JI WERE
TERIMA KASIH
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CẢM ƠN BẠN
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