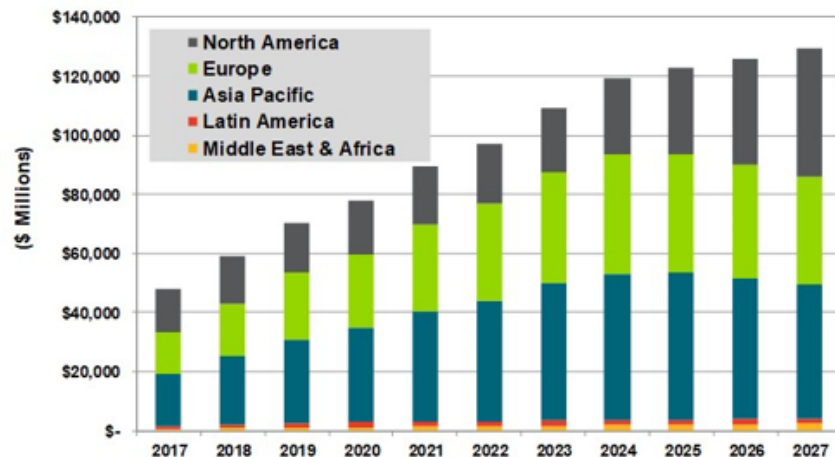


ROI in Digital Transformation: Five Rules to Follow

Neil Strother and Michael Kanellos

A \$144.6 Billion Opportunity

Industrial IoT Device Revenue by Region,
World Markets: 2017-2027



Source: Navigant Research

OBSERVATION

Combined annual revenue from devices, software, and service bundles projected to grow to \$144.6 billion in 2027, a compound annual growth rate of 11.4%

DRIVERS

- More efficient energy use
- Predictive, preventive maintenance
- Competitive differentiation
- Transforming businesses, customer experiences
- Increased worker safety
- Falling component costs
- Falling data management costs

So How Come Some Succeed Better Than Others?



We Decided to Find Out








WHITE PAPER

Finding the ROI in Digital Transformation

Case Studies and Analysis of the OSIsoft PI System

Commissioned by OSIsoft

Published 1Q 2019

					
CHALLENGE	<ul style="list-style-type: none">Processes were generating a lot of underutilized digital data	<ul style="list-style-type: none">Growing rapidly, creating a significant data management challenge	<ul style="list-style-type: none">Unwanted temperature spikes in new fermentation tanks during the cooling process	<ul style="list-style-type: none">Losing ~32% of managed water due to water main leaks	<ul style="list-style-type: none">Hera plant underperformingLarge debt burden
OUTCOMES	<ul style="list-style-type: none">Realized a return of \$20-\$25 million in 1 yearIncremental return of \$20-\$25 million expected in 2018	<ul style="list-style-type: none">\$A21 million estimated (\$15.2 million) savings in first 3 yearsPayback in software investments in 9 months	<ul style="list-style-type: none">Shortened the process time by 24 hours<ul style="list-style-type: none">Led to estimated \$450,000 of more beer produced/yrAchieved payoff in first ~3 months	<ul style="list-style-type: none">Recovering ~\$1.6 million water annuallyDelayed \$15-\$20 million upgradeCut data prep from 6 hours to 10 minutes/day	<ul style="list-style-type: none">Within 12 days, improved gold recovery by 1%, paying for investmentGold recovery climbed from 74.6% to 88.6% in 1 year

[Download today](#)

Rule #1: Think Architecture, Not Algorithms



The Integrated Collaboration Center (ICC) Business Transformation In Action: Operations of the Future - Now



OSIsoft.
PIWorld SAN FRANCISCO 2018

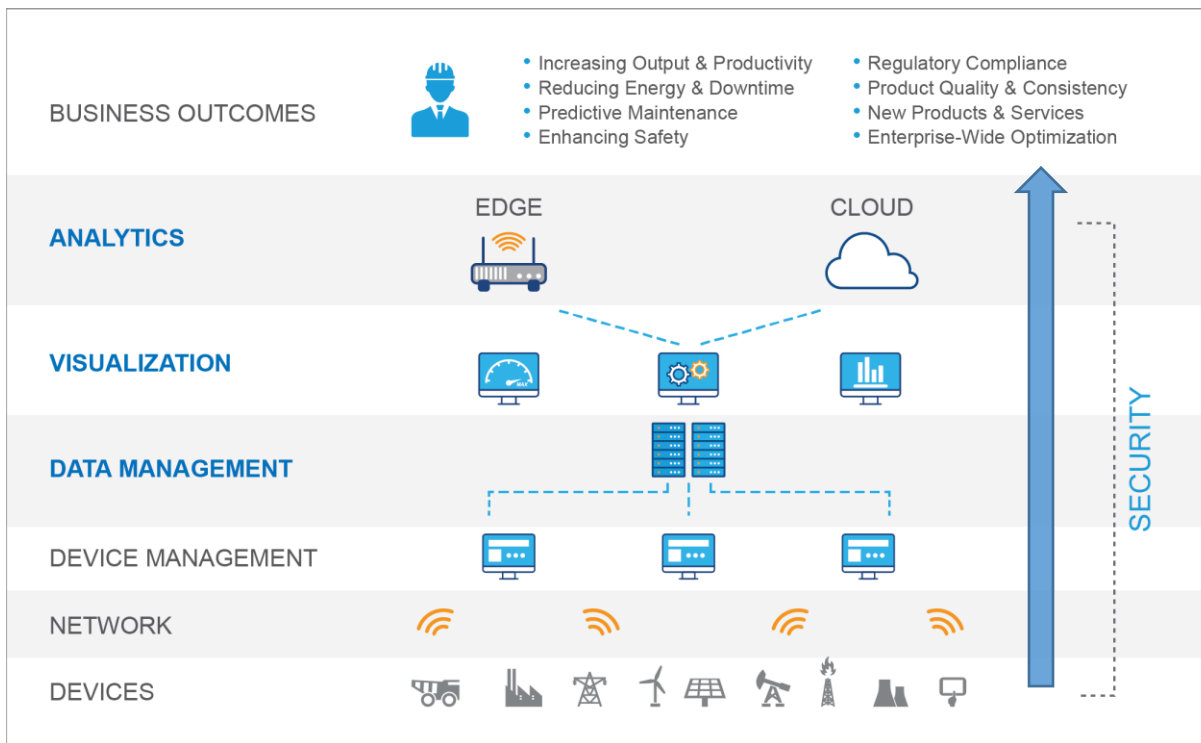
#OSIsoftUC #PIWorld ©2018 OSIsoft, LLC

A Comprehensive Plan

- Combine OT and IT
- Extensive Technology Due Diligence
- An Integrated Control Center
- \$20-\$25M Invested
- \$20-\$25M Returned Yr. 1
- \$20-\$25M Returned Yr. 2



Another Way to Look at It



Rule #2: To Think Big, Think Small



Hera Processing Plant

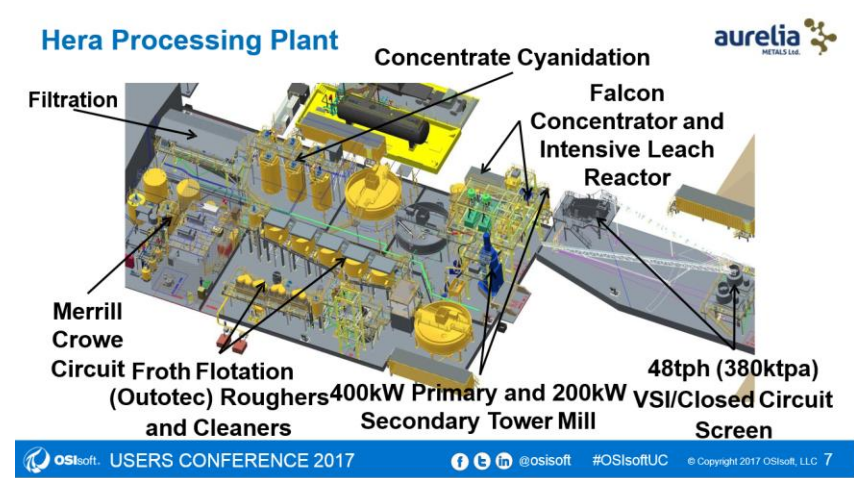
Six Months to Live

- Gold Recovery Low (74.6%)
- Debt High (A\$125 million)
- 700 Jobs on the Line
- Two Vendors Flopped
- So They Turned to This Guy

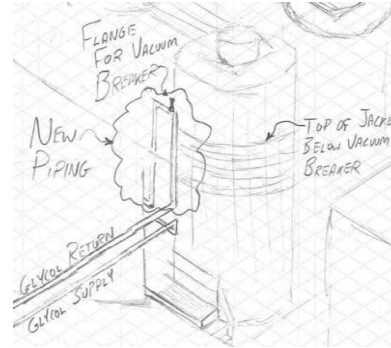
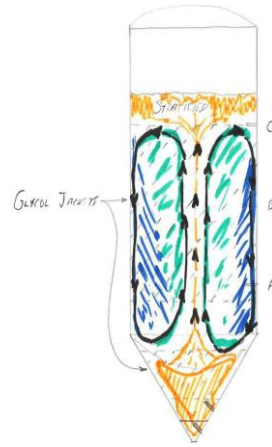


A Step-by-Step Transformation

- Crushing to Grinding to Flotation
- Recovery Climbs to 88.6%
- PI System Return in 12 Days
- Facility Above Nameplate
- Vendor Hugs Integrator



Rule #3: It's About People



Source: Deschutes Brewery



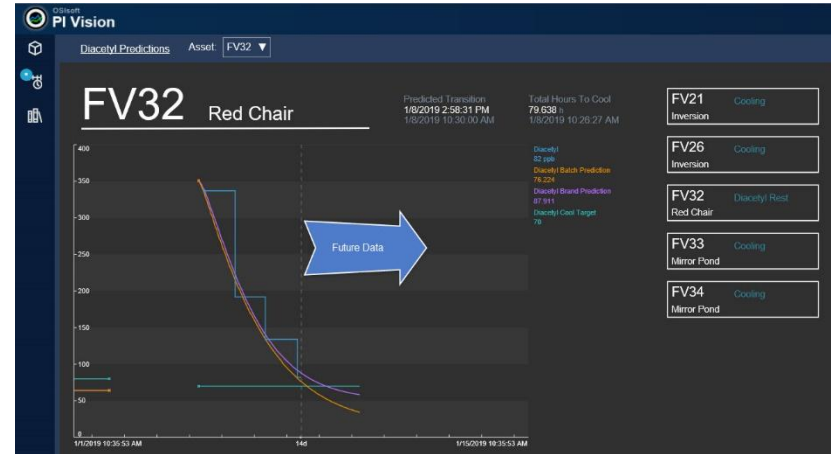
The Earn While You Learn School of Engineering

A Buttery Smell

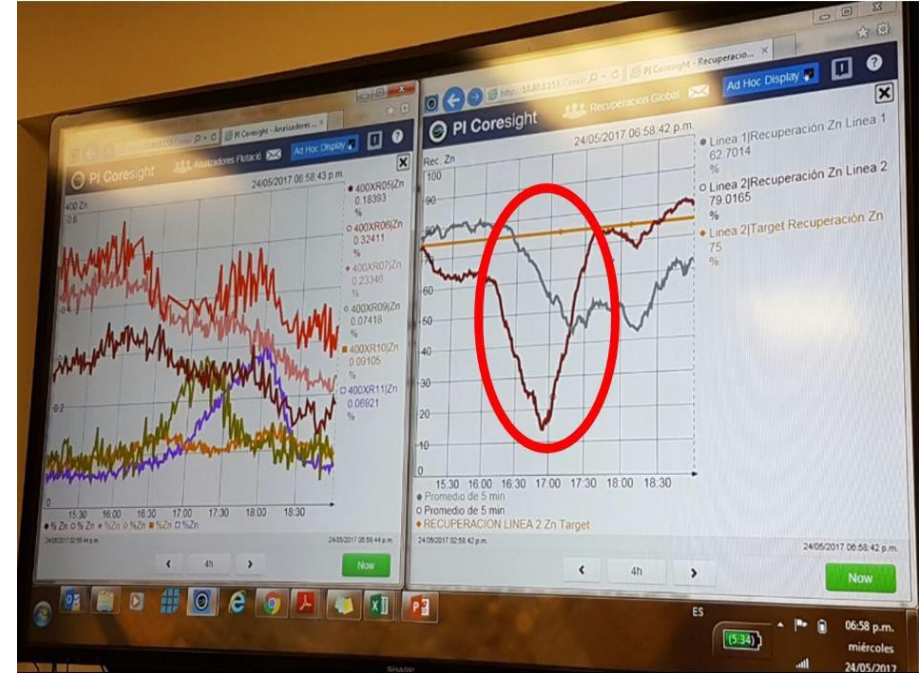
- Solved with a sensor and Monitoring
- Payback in 3 months
- \$450,000 increase in output

Next

- Let's remove a cooler
- And reduce manual checks
- A data driven culture



Yes, Facebook Can Hurt Productivity



Rule #4: Calculate All the Costs (and Benefits)



\$1.3M Invested in Hardware, Software, Services Delivers...

Reduced Leakage

- \$400,000 in year one
- \$900,000 in year two
- \$350,000 in year three

Reduced Data Prep

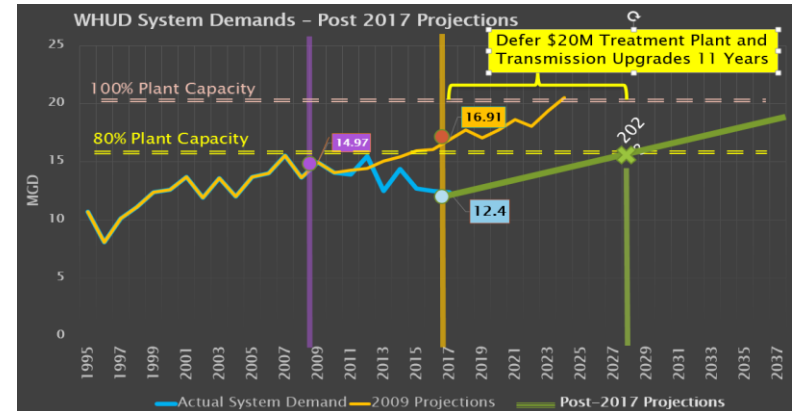
- 6 hrs a data to 10 mins
- \$30,000 est. savings

Avoided SCADA Upgrade

- \$200,000 avoided costs

Postponed Upgrades

- \$600,000 in annual interest avoided
- \$15+ million project postponed 11 years
- Credit rating increased



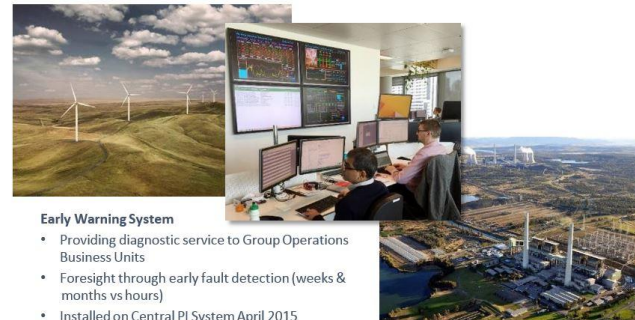
Rule #5: Don't Stop Thinking About Tomorrow



Predict It

Advanced Pattern Recognition

"Finding failures before they find us"



Early Warning System

- Providing diagnostic service to Group Operations Business Units
- Foresight through early fault detection (weeks & months vs hours)
- Installed on Central PI System April 2015
- Over 2700 models monitoring over 45k critical points every 5 minutes
- Proven tool to reduce forced outage events and optimise maintenance effort

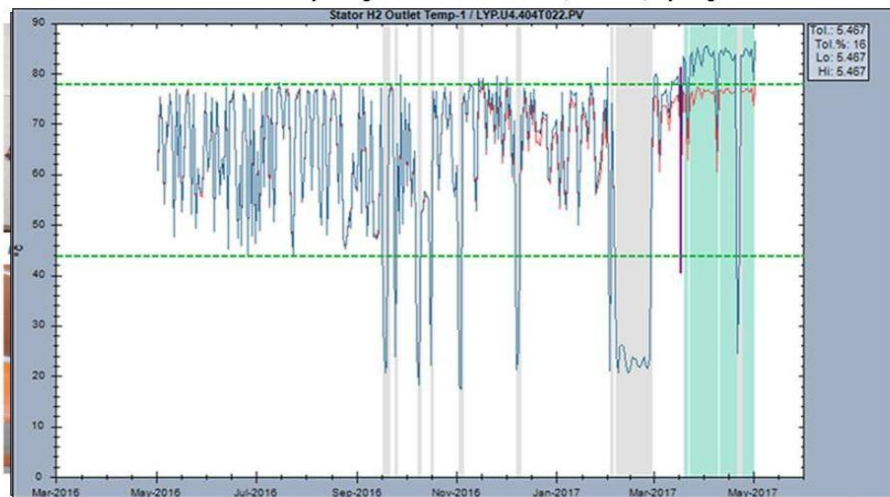
\$18.7M value realised since installation

- Total set up cost \$1.2M
- Annual running costs \$620k

Predictive Maintenance Followed

July 17 ODC: Significant Failure Avoided

- Loy Yang Station U4 Generator, 560MW, Hydrogen Cooled Stator



- Repairs in situ: 4.5 to 5 weeks
- Avoided 12-14 week shutdown
- Savings: \$50 to \$70 million

Next: Optimizing Wind and Thermal Plants

WYOS (under development)

Mission:

Increase Wind Portfolio Yield (1-2%)

Design / Build:

- Identify underperforming turbines and true performance level
- Turbine alarm trending system
- Turbine uptime/downtime tracking
- Improve Wind resource understanding & forecasting (in PI)
- Improve Capability to sense high stress operating conditions & trends (Eg. Yaw error, feathering etc)

How:

- Use existing software (Primarily PI), combined with cloud computing
- OSIsoft (Centre of Excellence)
- Internal dedicated resource to develop and build the system (+ some support from OSIsoft skilled contractors)



TPOS (under development)

Mission:

Optimise fuel burn, output & CO2 Emissions on our fossil fuel power stations (0.5% Fuel Reduction for same output)

Design / Build visualisations and reports to:

- Identify and guide operators to reduce controllable losses in real time
- Manage operator
- ify
- Identify lost by
- Identify thermal in



In Summary

1. Think Architectures, Not Algorithms
2. To Think Big, Think Small
3. It's About the People
4. Consider All the Costs (and Benefits)
5. Don't Stop Thinking About Tomorrow

Questions?

Please wait for
the **microphone**

State your
name & company



Please remember to...

TO DOWNLOAD APP,
SEARCH OSISOFT
PI WORLD



謝謝 KEA LEBONA
TARADH LEIBH 고맙습니다
BAЯPЛAЛAА MISAOTRA ANAO
DZIĘKUJĘ CI NGIYABONGA TEŞEKKÜR EDERIM GRACIES OBRIGADO شڪرا SALAMAT
DANKON TANK TAPADH LEAT
DANKIE TERIMA KASIH
KÖSZÖNÖM
СПАСИБО
PAKMET CIZGE
GO RAIBH MAITH AGAT
БЛАГОДАРЯ GRACIAS
ТИ БЛАГОДАРАМ MAHADSANID
TAK DANKE
РАҢМАТ
HATUR NUHUN
CẢM ƠN BẠN
WAZVIITA
FALEMINDERIT
DANK JE
AČIŮ SALAMAT MAHALO IĀ 'OE TAKK SKALDU HA
GRAZZI PAKKA PĒR PAXMAT CAĞA
EΥΧΑΡΙΣΤΩ GRATIAS TIBI
DI OU MÈSI
ĐAKUJEM
MATUR NUWUN
UA TSAUG RAU KOJ
ТИ БЛАГОДАРАМ
СИПОС
MULTUMESC
FAAFETAİ
ESKERRIK ASKO
HVALA ХВАЛА ВАМ
TEŞEKKÜR EDERIM
HVALA
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Navigant Research provides in-depth analysis of clean, intelligent, mobile, and distributed energy. The team's research methodology combines supply-side industry analysis, end-user primary research and demand assessment, and deep examination of technology trends to provide a comprehensive view of these industry sectors.

Power & Utilities



Automotive



High Tech & IT



Building Tech



Telecommunications



- Emerging value chain analysis
- Market sizing and forecasting
- Strategic marketing services

- Trend monitoring and analysis
- Market demand for new products
- Competitive intelligence