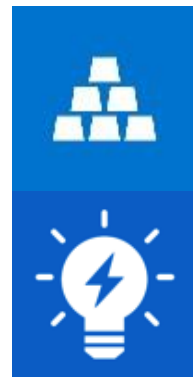




Enabling Enterprise Operational Intelligence in the Process Industries: **Improvements, Innovation and Reinvention**



Presented by **Dr. Osvaldo A. Bascur,**
IP and OSIPress Initiative

Abstract:

Large industrial complexes have more data than a small city and much of it is in “real-time”, changing rapidly as internal and external conditions evolve. As corporations buy and sell assets and reengineer their staff, the structure and tools that were used to understand these data are lost. This results in significant deterioration in the ability to maintain a “smart” operation.

By embracing a real-time infrastructure with a data centric approach mining companies are enabling their people to optimize the availability of their assets and reducing operating costs. The integration of chain supply for asset and energy optimization are one of the most critical factors due to the large changes in the raw materials.

This presentation summarizes how early adopters are empowering their local and strategic support teams to get insight from the overall process effectiveness index based on key variables such as losses due to (mobile or static) equipment availability, energy savings, and production optimization.

Three commonalities become evident:

- People empowerment aligned to Enterprise Mission,
- A continuous Improvement and Innovation program at the local and enterprise, and
- A data Infrastructure to facilitate local operational intelligence and enterprise intelligence.

In summary, these organizations are embracing a smart data infrastructure to move ahead to become leaders in their field.



Agenda



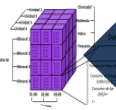
Current Industry Challenges and the Evolving Operations



Are you really using your information?



Examples of Success



Defining our Journey to Operational Excellence



Conclusion and Call to Action

Rethinking our approach to innovation



Collaboration



**Knowledge
transfer**



**New
approaches**



Creating sustainable value



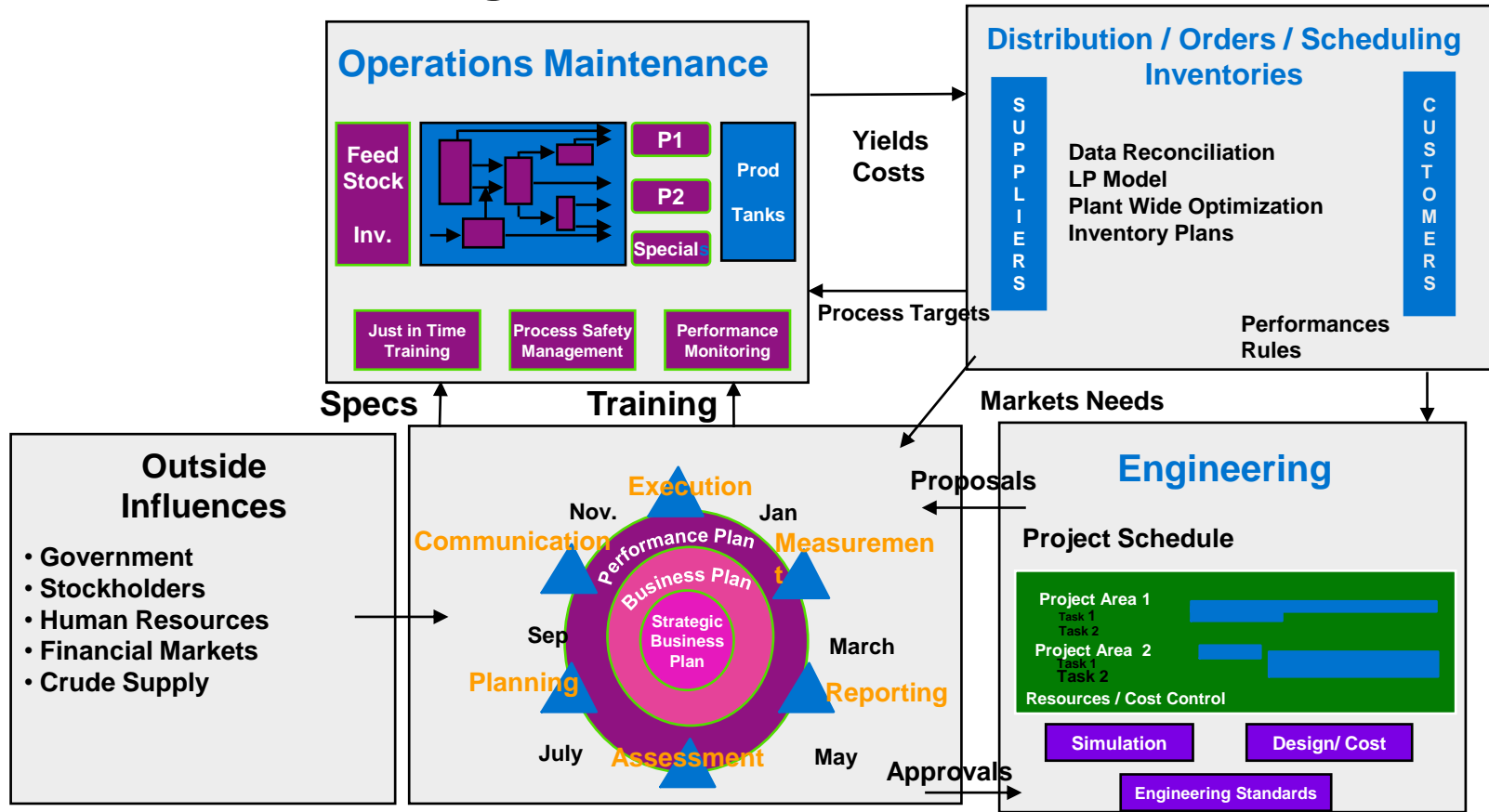
Local partnerships

Innovation is the key to solving these challenges

Mining needs to leap forward 20 years in the next five

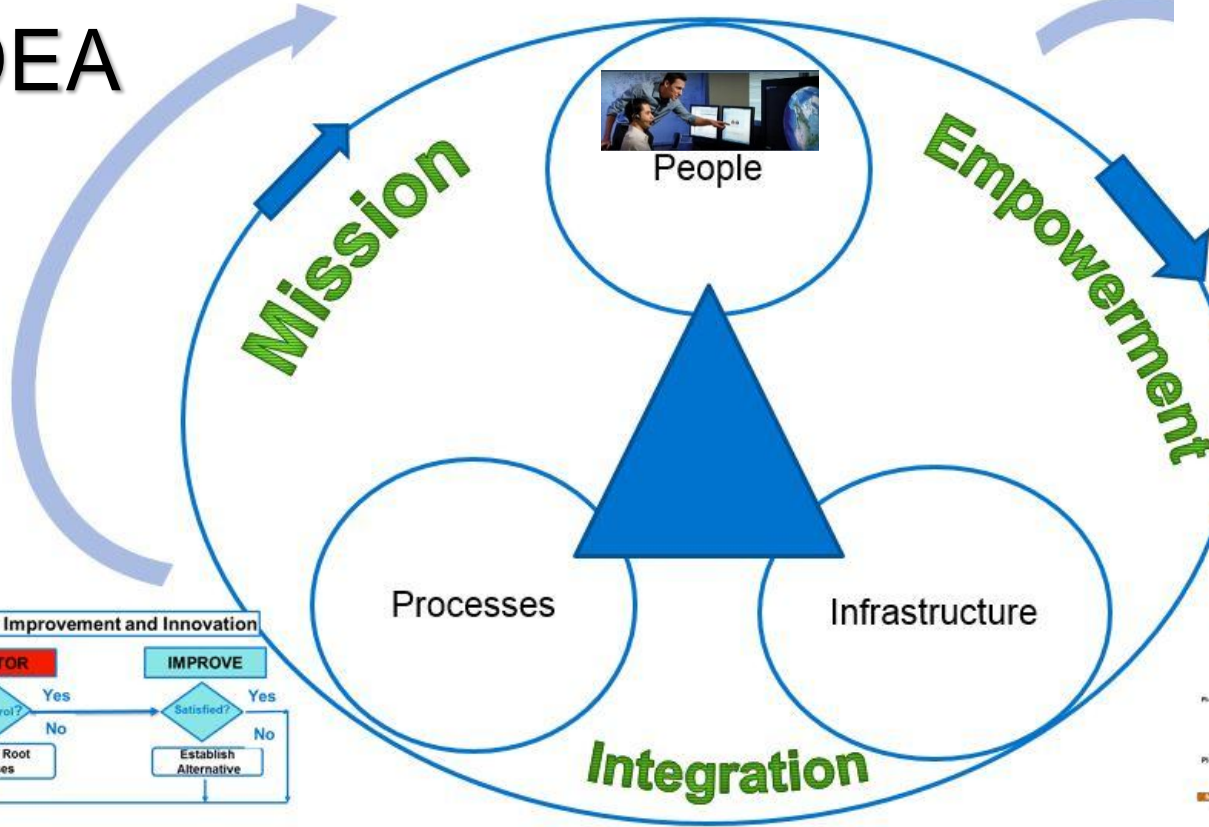


Coordination and Integration

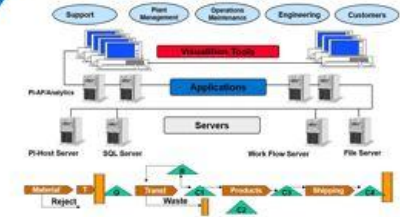
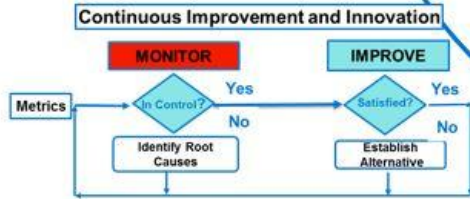
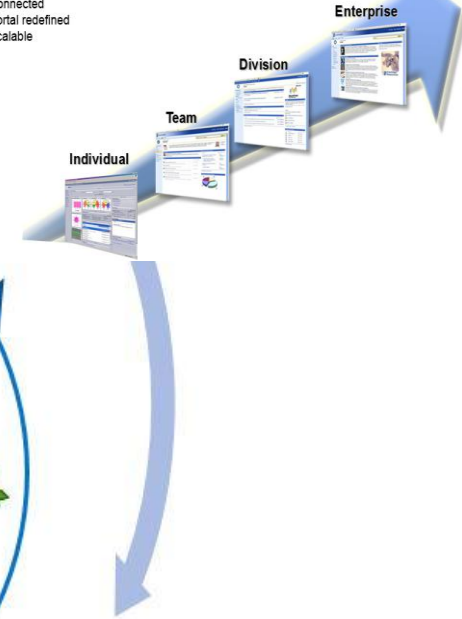


Infrastructure Data Engineering Analysis

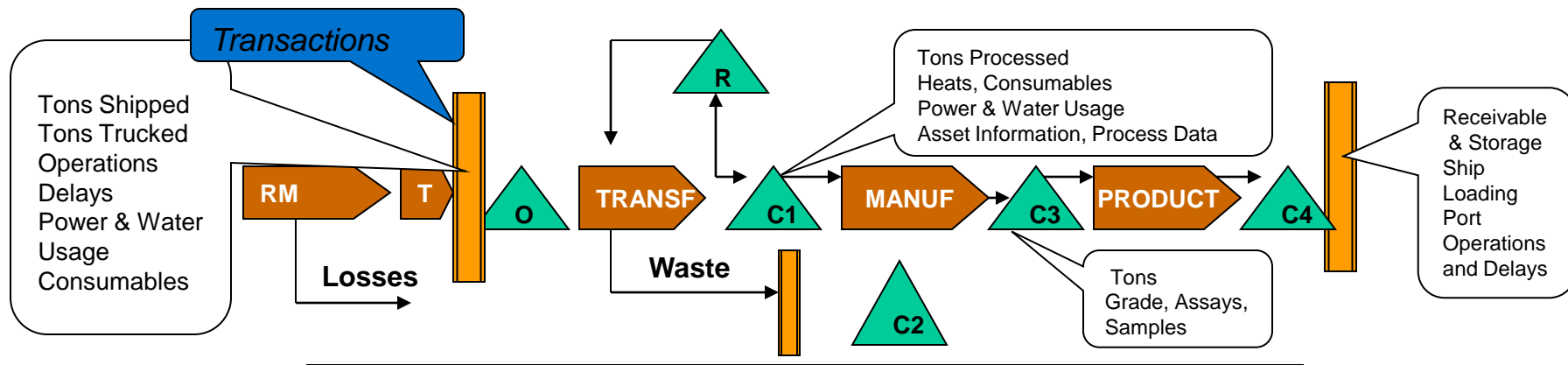
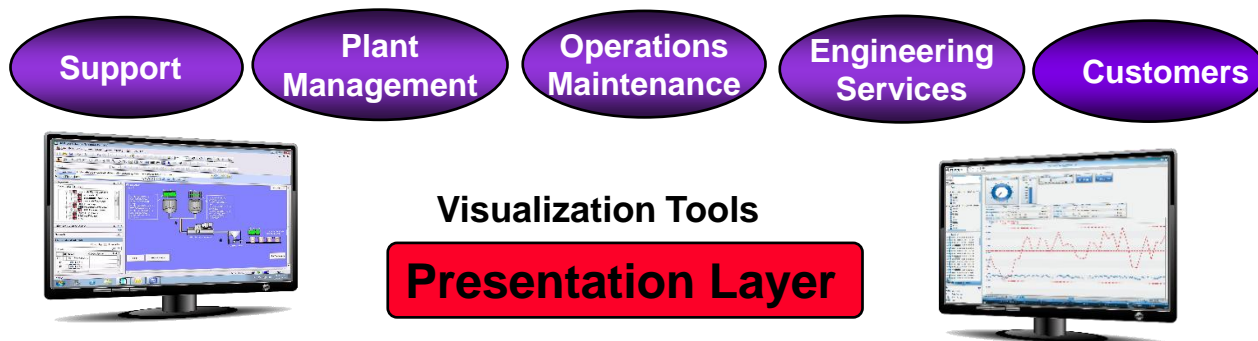
IDEA



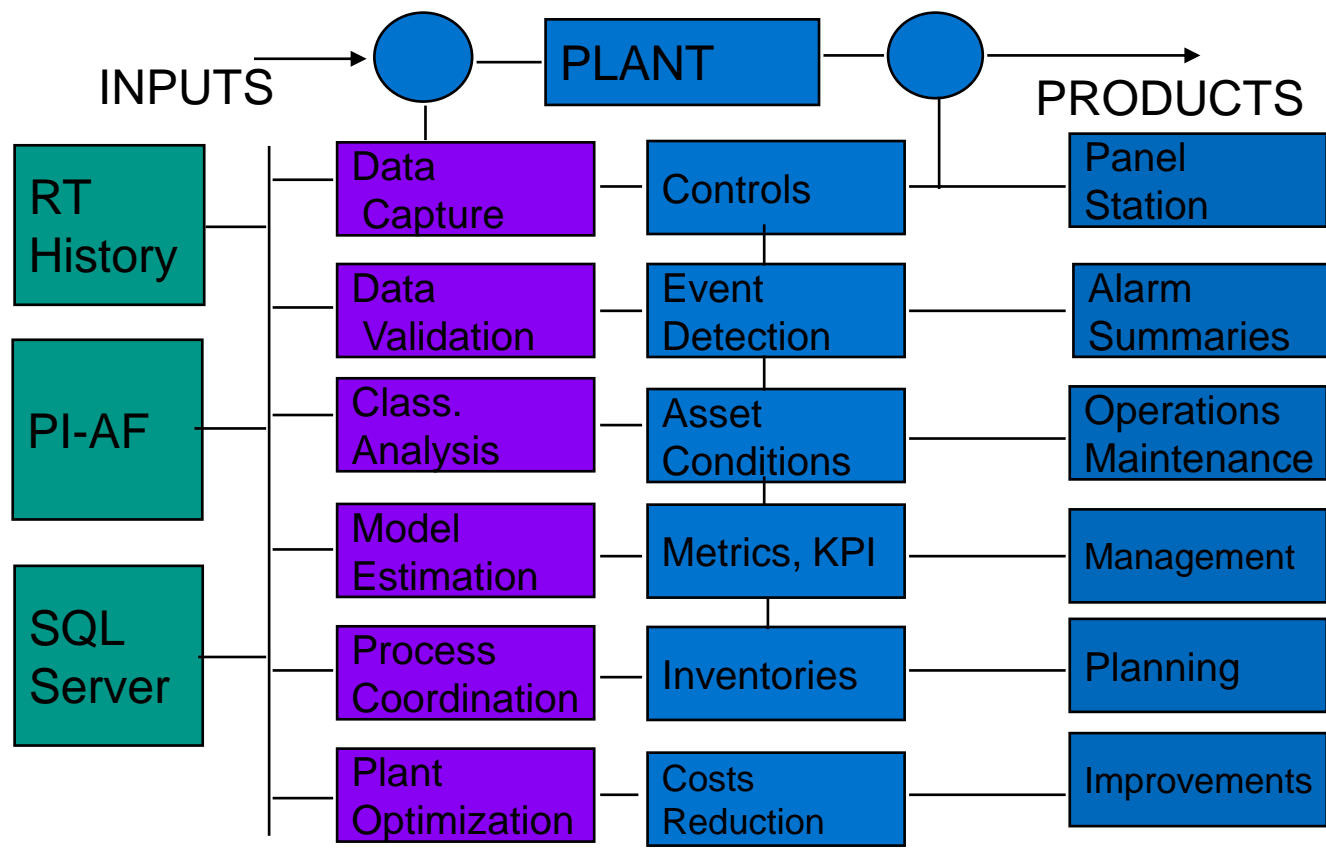
- Content-centric
- Connected
- Portal redefined
- Scalable



Coordination and Collaboration



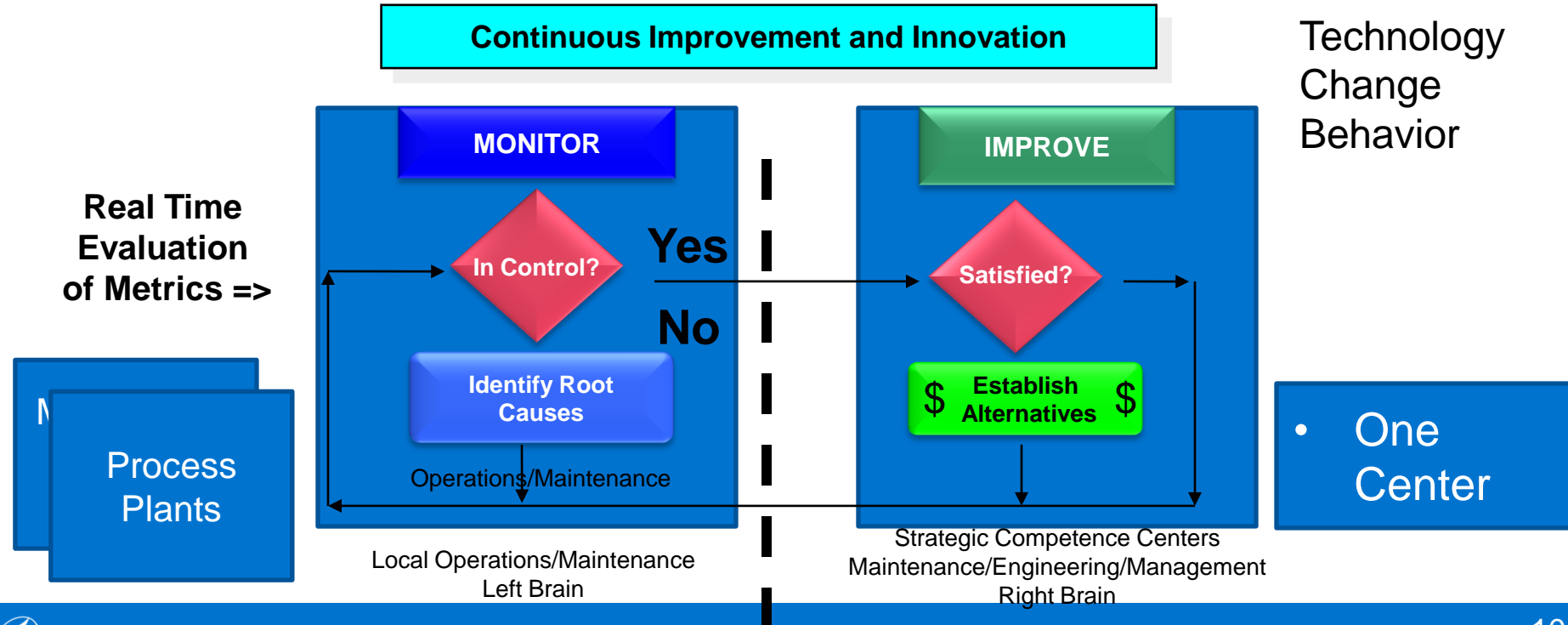
Enterprise Dynamic Performance and Notification

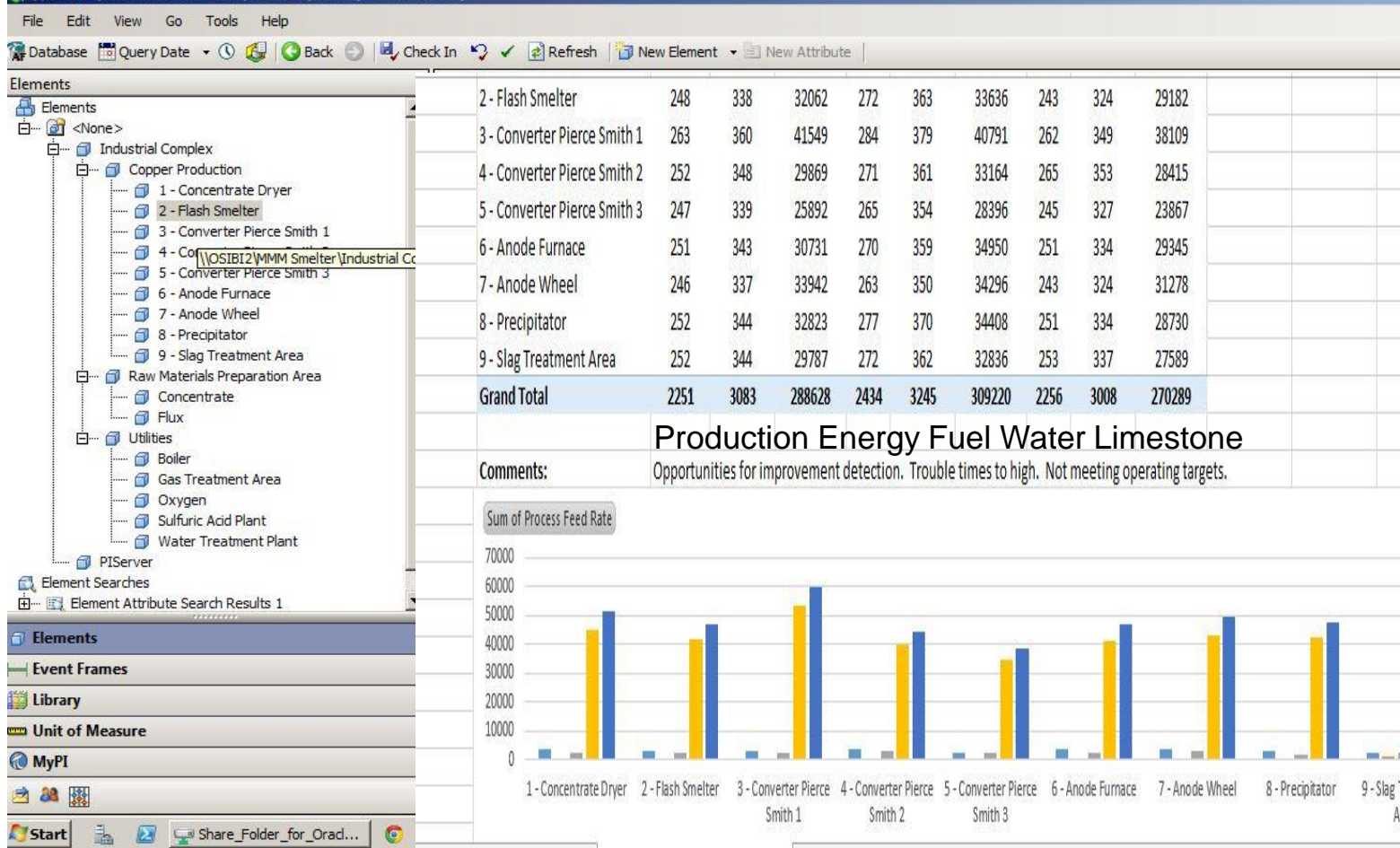


Bascur
1988, ISA

Bimodal Continuous Improvement and Innovation

Metrics: Production, Quality, Costs, Equipment Availability, Environmental and Safety alerts with fast resolution and improved decision making.







Agenda



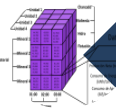
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Examples of Success



Defining our Journey to Operational Excellence



Conclusion and Call to Action

PI System Infrastructure in CEMEX

2011 - 2013

1995



First
PI System
Installed

1995-2004



Expanding
PI System
Installs

2005 - 2006



Enterprise
Agreement

2007 - 2008

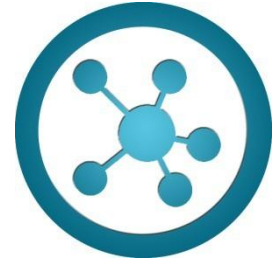


Worldwide
PIMS Project

2009 - 2010



PI Infrastructure
as Enterprise
Platform



Cement
Production
Management



EA Agreement – Access to Industry
Principals, Center of Excellence,
Software, etc.

Cemex Production Model

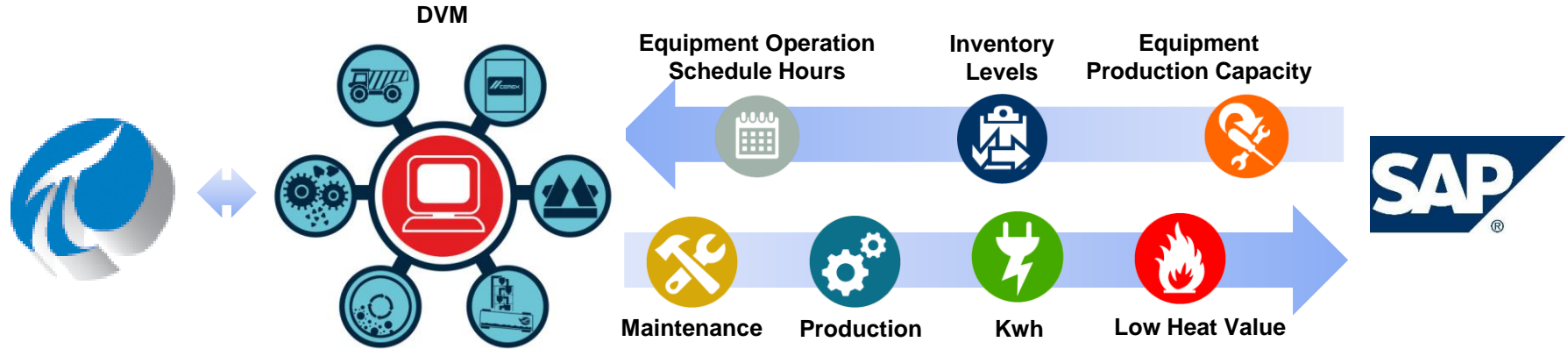
Sys. Administrator

Plant Configuration

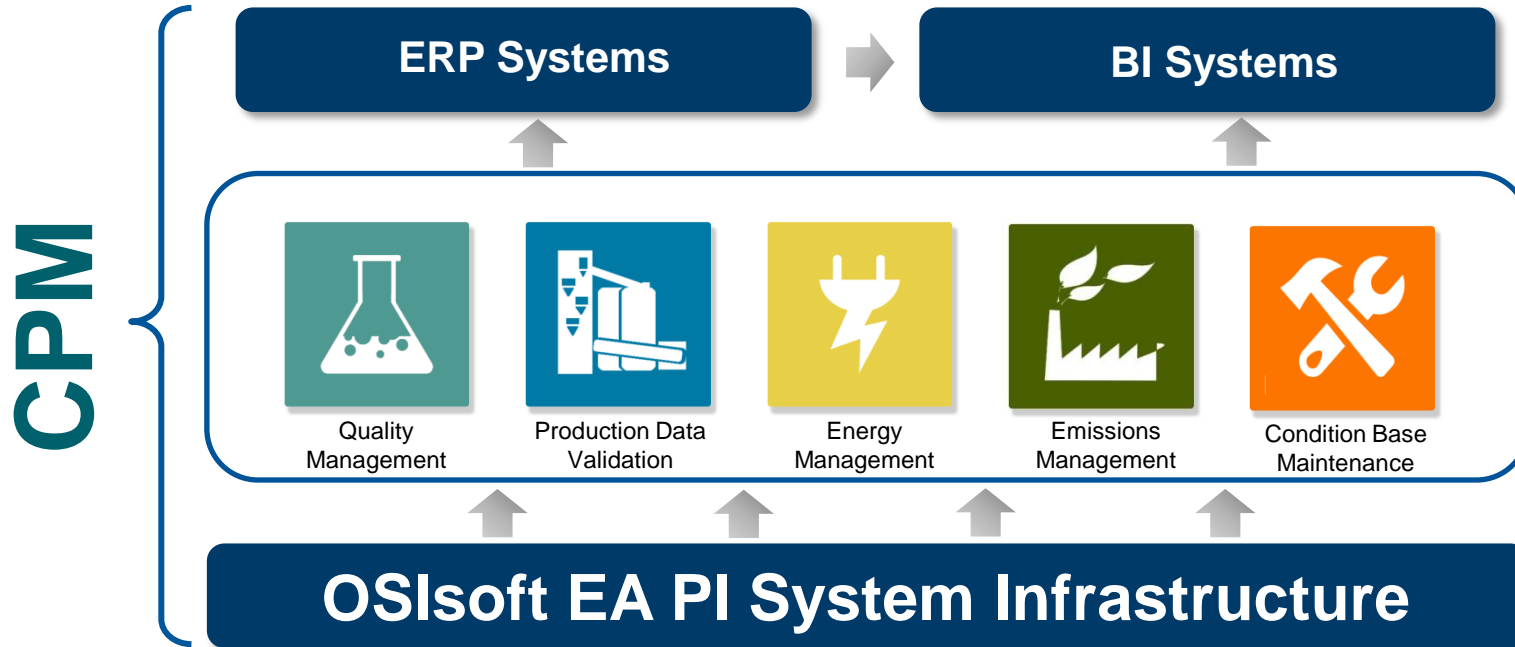
Daily Validation

SAP Interfaces

Reports



Cement Production Model



Sustainable Value Added to the Enterprise

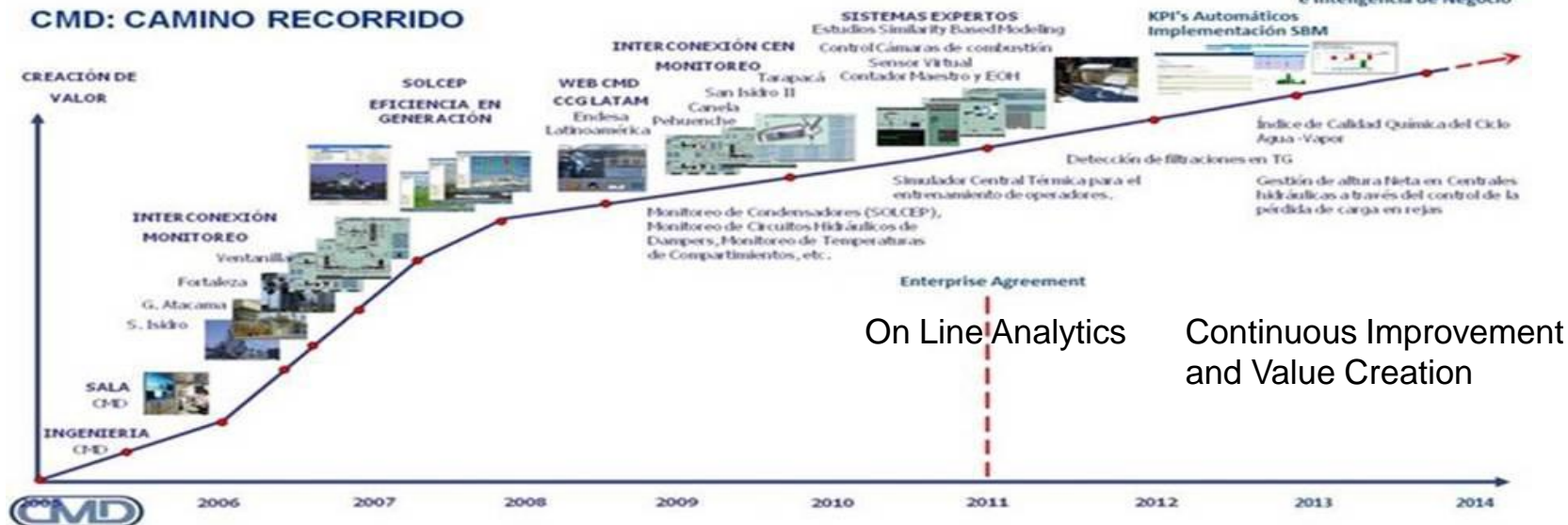
Center for Monitoring and Diagnosis

Centro de Monitoreo y Diagnóstico



Operational Excellence

Integración de Información e Inteligencia de Negocio



6

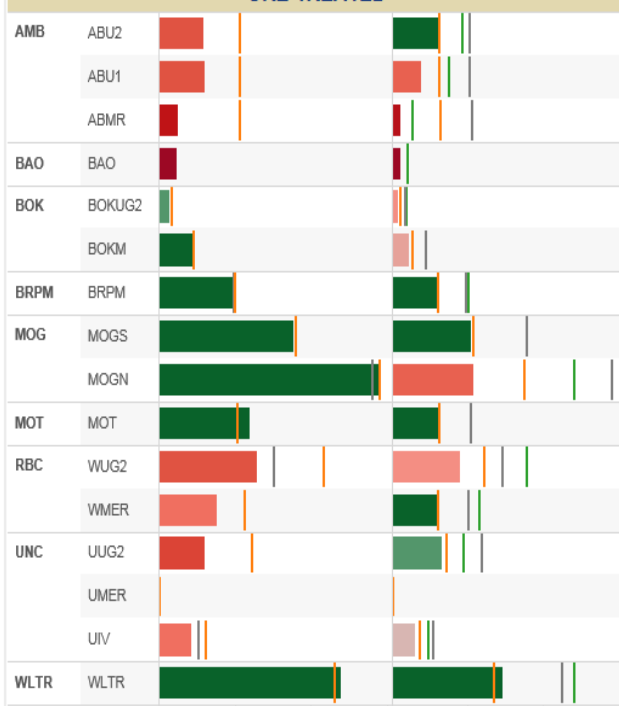


Drastic Energy Reductions

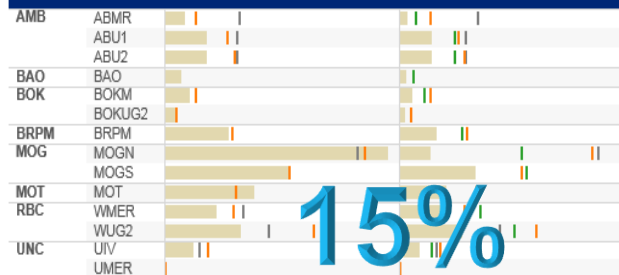
October
November

Concentrator Management Dashboard Site Monthly View

ORE TREATED



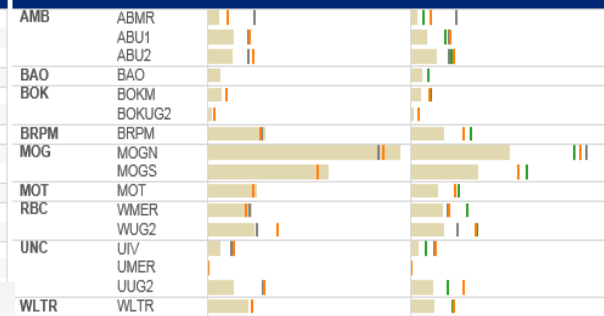
ORE RECEIVED



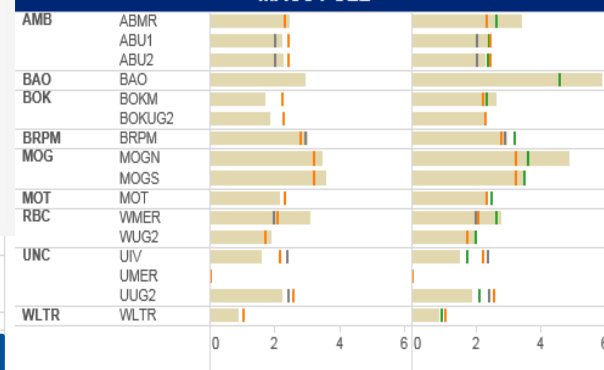
15%



CONC DISPATCHED



MASS PULL



20K

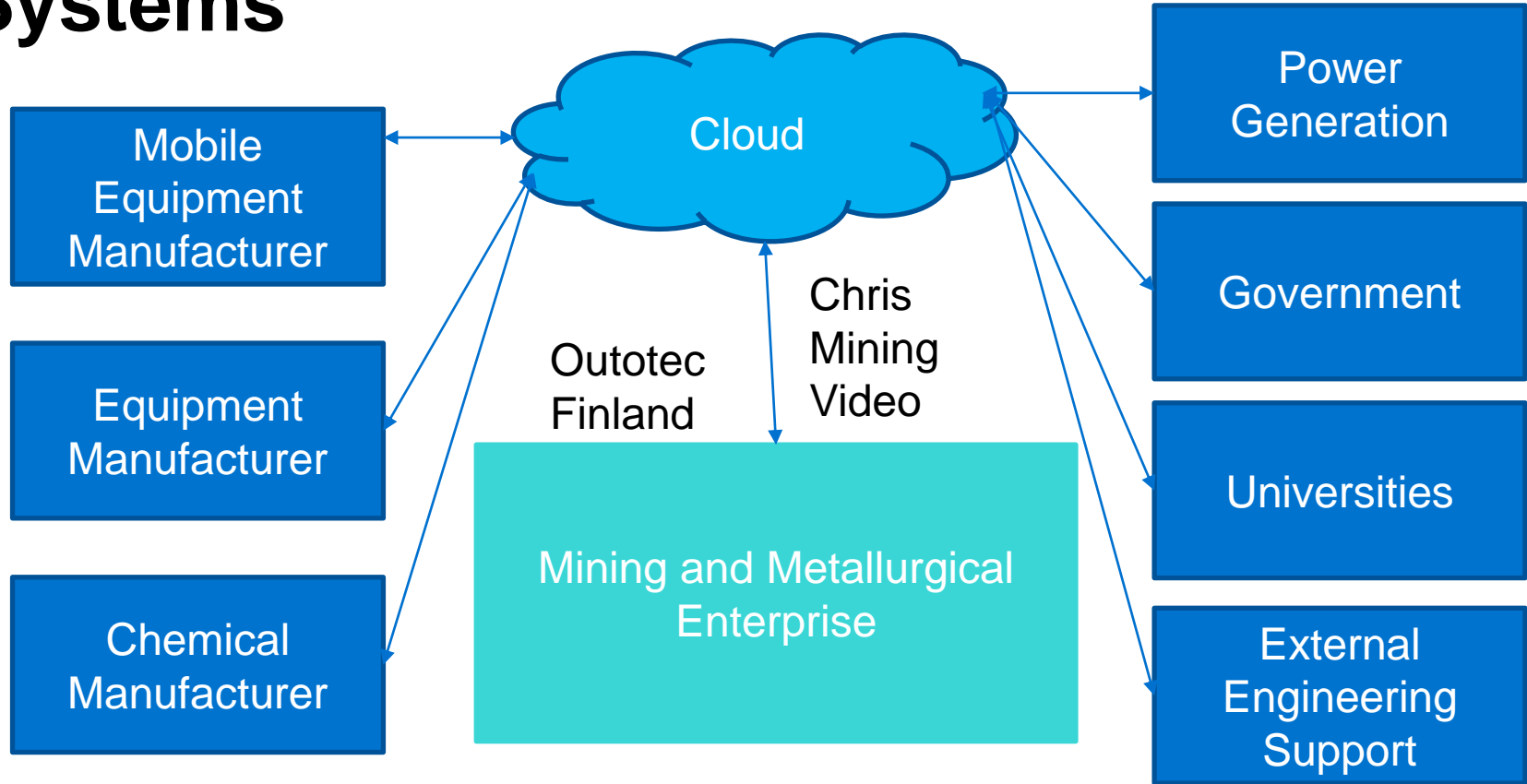
KPI (Again.. 0% 100%)

Latest Estimate

Business Plan

Forecast

Future: Moving into Interconnected Systems





Agenda



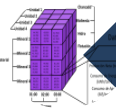
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Examples of Success



Defining our Journey to Operational Excellence



Conclusion and Call to Action



Towards Operational Intelligence

APPROACH

Plan, Act
& Measure

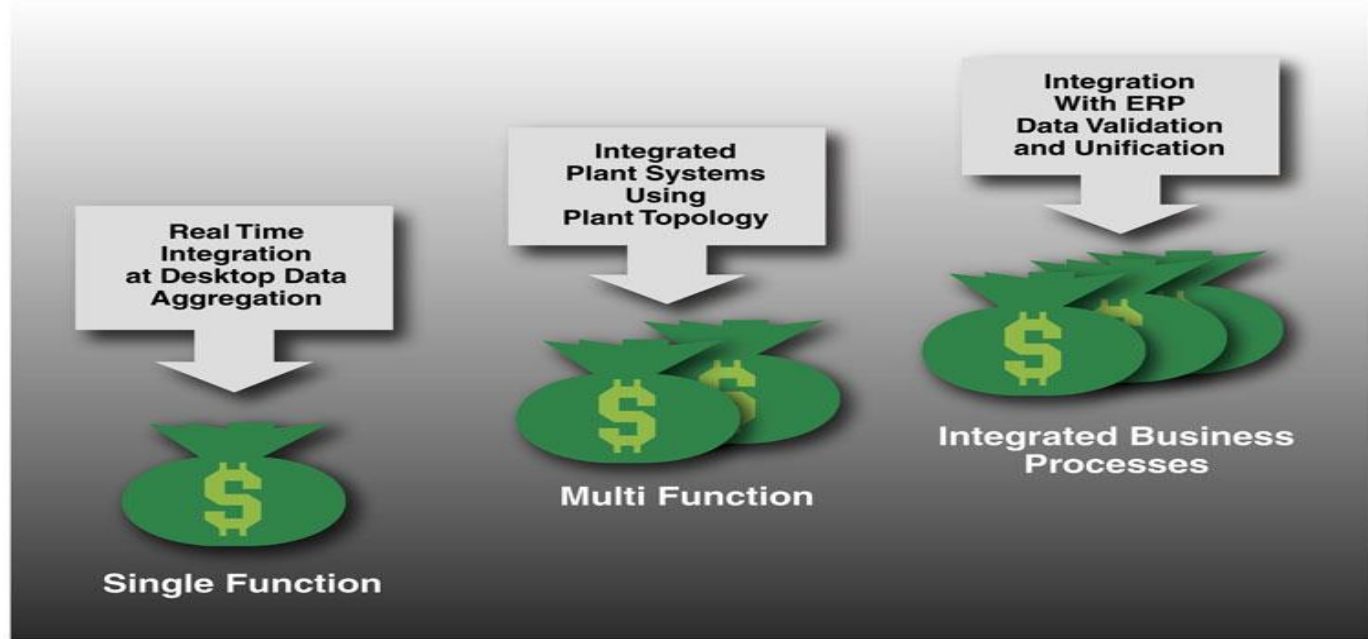
Transformation

Cause & Effect

Integration

Reporting

Stream Line



INTEGRATION LEVEL

Synchronize Business Processes With Operational Processes

7 Key areas for Operational Improvements

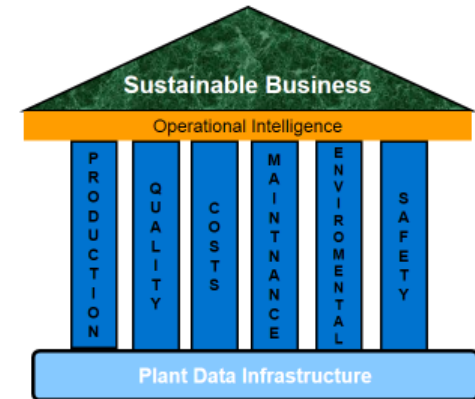
- 1. - Production Monitoring
- 2. - Quality Monitoring
- 3. - Asset Monitoring
- 4. - Energy-Water-Reagents Monitoring
- 5. - Environmental Monitoring
- 6. - Safety Monitoring
- 7. - Systems Monitoring

Operational Improvement Pillars

Results

Applications

Systems



THE MINING, MINERAL AND METALS INDUSTRIES



A Five Tier Framework for Business Optimization

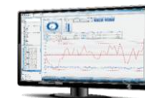
Mission, Strategy and Goals



Business Process



Visualization Tools
Presentation Layer



Knowledge Coordinator



Application Layer



Repository Manager



Data Servers



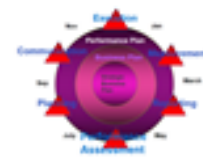
Cloud

DataBase

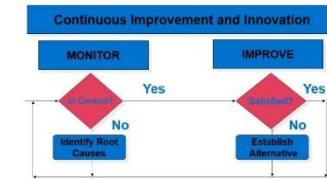
Data Services

Virtual Server

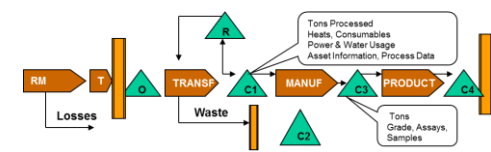
Business Integration for Performance Management



Key Performance Measures
Yields, Quality, Assets, Energy, Costs, Environment, Safety



Business Improvement Process

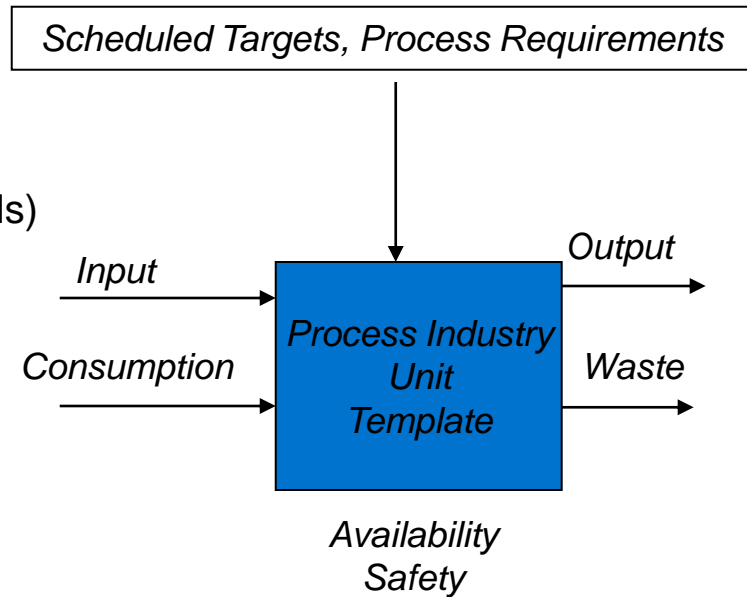


Plant Process Flow Diagram

Standardizing for common understanding the Process Industry Unit Template

- Raw Materials
- Select Major Process Areas
- Input - Output Production Streams
- Consumption (Energy, Water, Materials)
- Inventories
- Define Process and Equipment Events

– Do not use quality measure at the object level



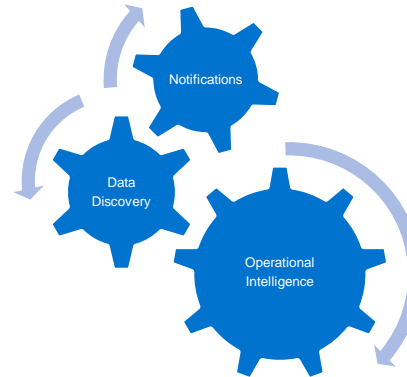
Operational Intelligence Basics



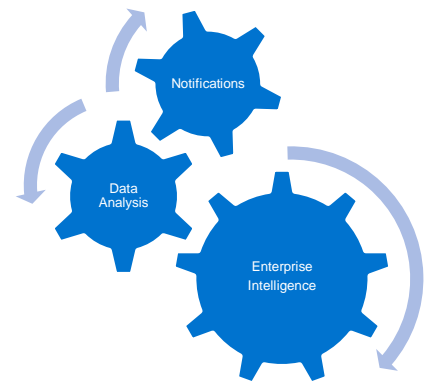
Infrastructure



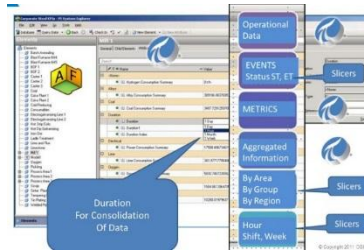
Engineering Analysis



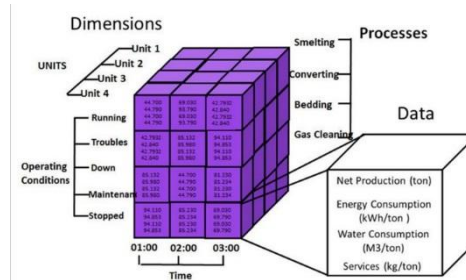
People



Data



Context + Events



Information

Insight



Actionable Information

Enabling Enterprise Operational Intelligence

- 1.- Strategic
- 2.- Support
- 3.- Real Time

Requests

Production
Quality
Equipment
Energy
Water
Costs
Environmental
Safety
Communities

Targets

Dollars

Continuous Improvement and Innovation

MONITOR

IMPROVE

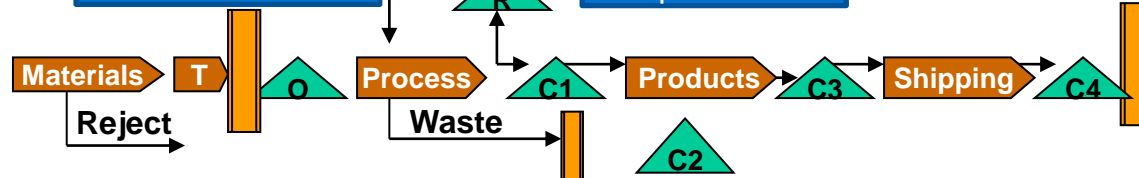


Results

Yields
Quality Products
Equipment Availability
Energy/ton
Specific/ton
Cost/ton
Losses
Waste
Emmissions
Incidents

Data and Events

Empowerment

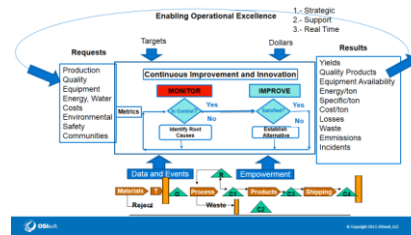
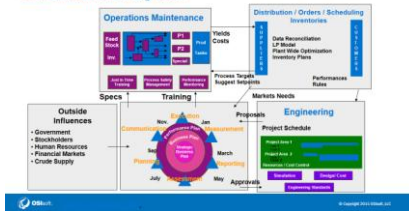


Towards Integrated Business and Operational Intelligence

- Integrated Planning, Continuous Improvement and Innovation Process



Coordination and Integration

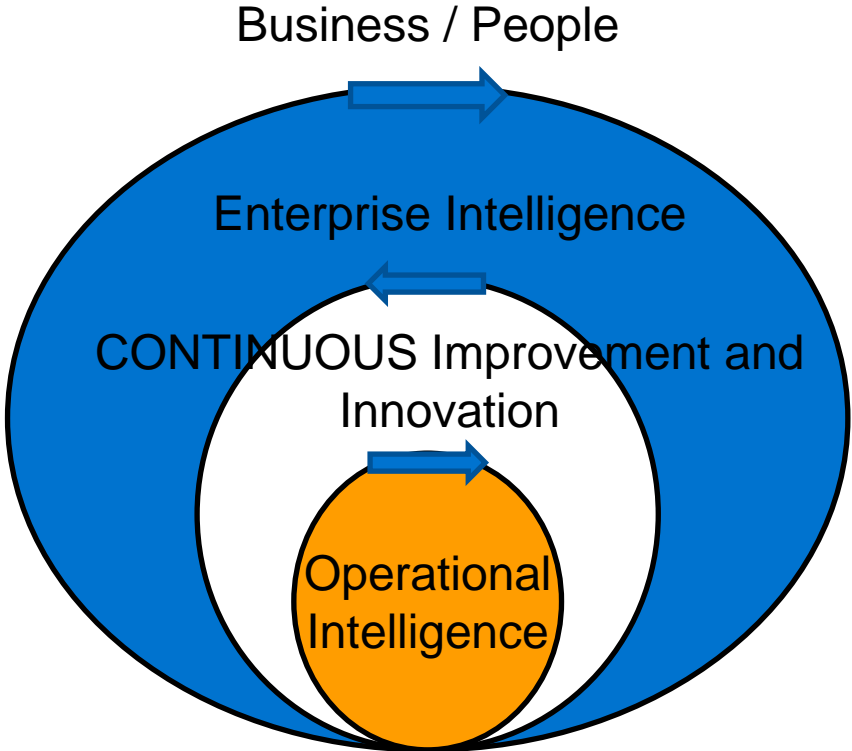


Enabling Enterprise Operational Excellence

- Content-centric
- Connected
- Portal redefined
- Scalable



→ Excellence in Sustainability Programs!



Positioned as development partner of choice with the Local Government, Communities and Value from Sustainability programs

Avoid surprise events, reduce the costs associated with stoppages.

Achieving Improvements on water and energy usage results in direct financial benefit



Agenda



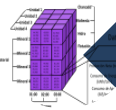
Current Industry Challenges and the Evolving Operations



Are you really using your information?



Examples of Success



Defining our Journey to Operational Excellence



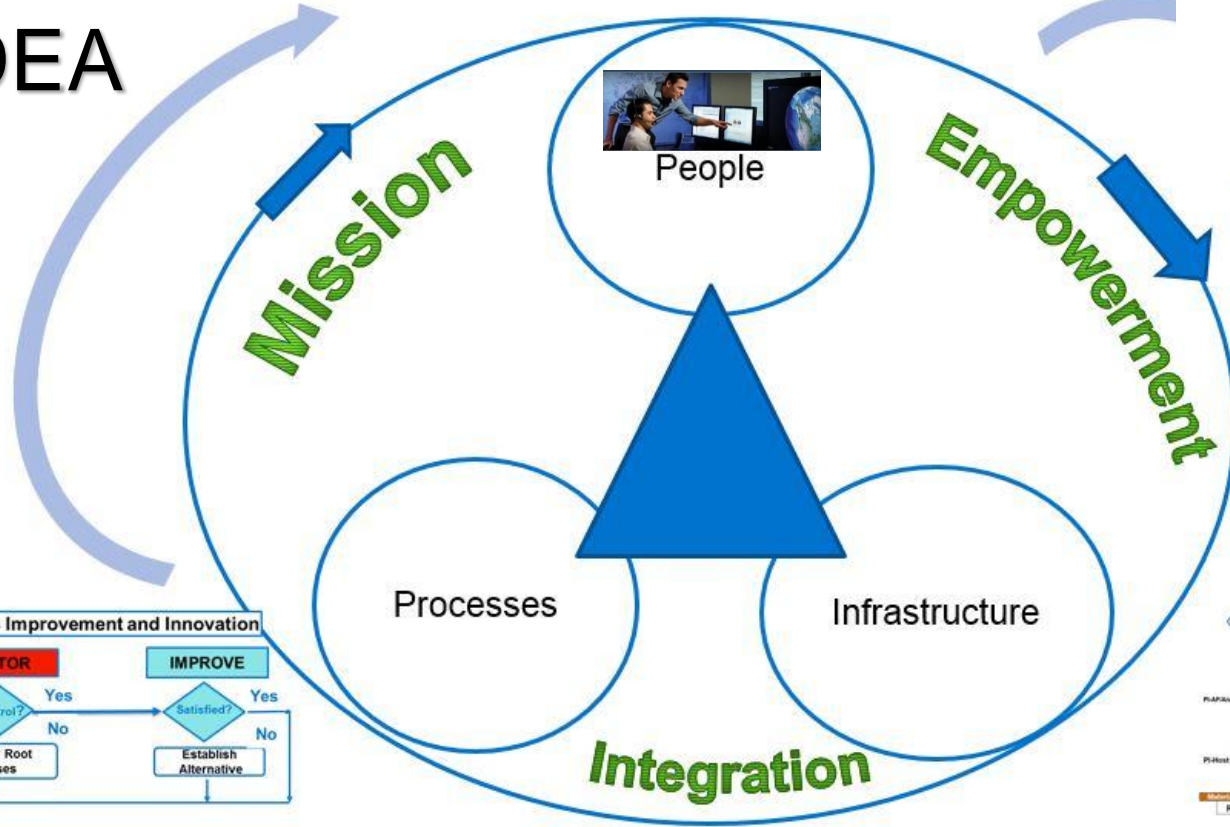
Conclusion and Call to Action

Things to think about

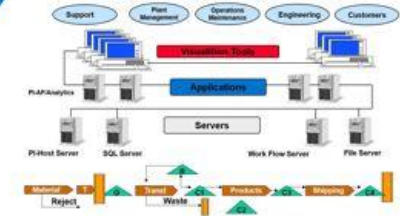
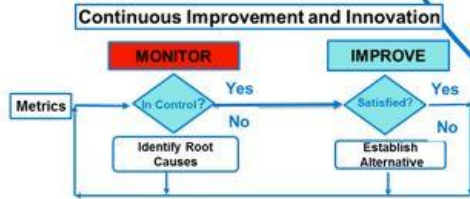
- Embrace the use of data and analytics to anticipate disruption and analyze responsive scenarios.
- Consider how to provide infrastructure and investment for incubating and scaling growth, new ideas and innovation.
- Business processes through the entire value chain of industrial process shift to digital-driven and human enabled model.

Infrastructure Data Engineering Analysis

IDEA



- Content-centric
- Connected
- Portal redefined
- Scalable



THANK
YOU

Osvaldo Bascur
osvaldo@osisoft.com
IP and OSIPress Initiative
OSIsoft, LLC

Questions

Please wait for the
microphone before asking
your questions

State your
name & company



Summary: Operational Intelligence Foundation



Real Time Data Capture
Real Time Event Capture
Real Time Data Classification
Real Time Data Aggregation
Real Time Data Notification

Presentation and Consumption

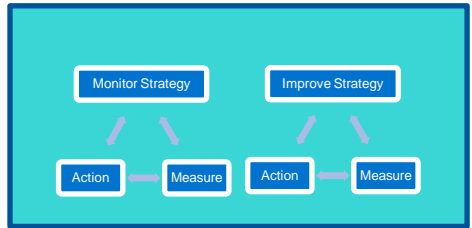
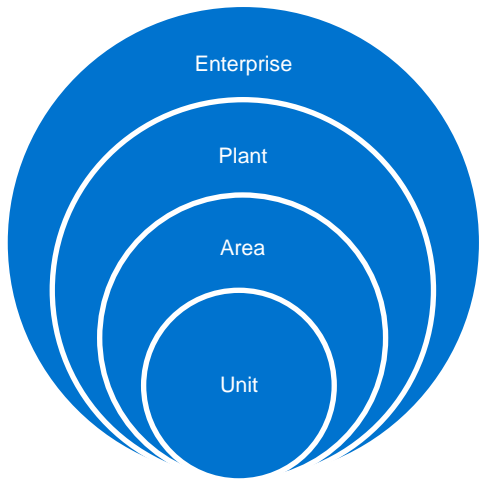
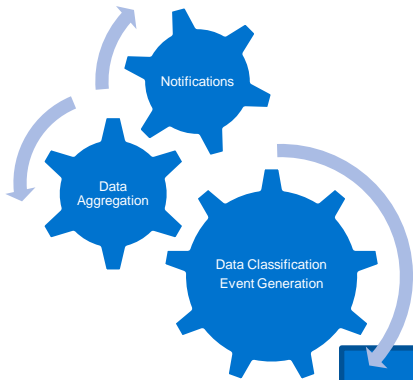
Business Views
Data Analysis,
Cubes, Modelling

Models, Real Time
Predictive Analytics,
Views, Aggregation at
Detail

Data Classification

Data Events Capture
and Storage

Interfaces



Root Cause

Improvement and Innovation

