



An EA For Barrick Gold: Timing Is Everything

Presented by Iain Allen



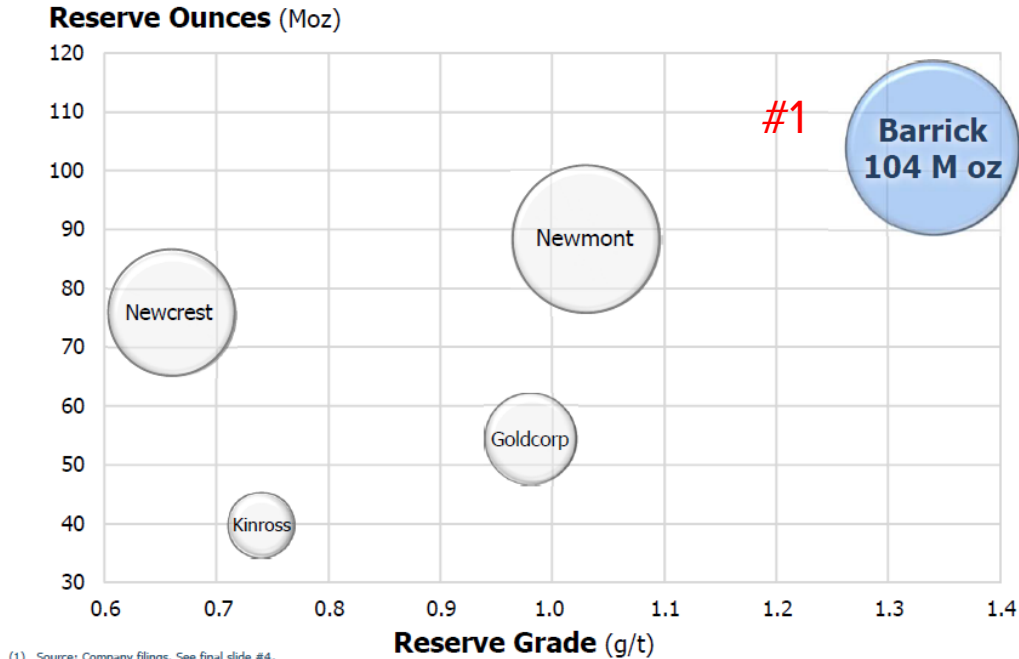
BARRICK

“Without data, you are just another person with an opinion”



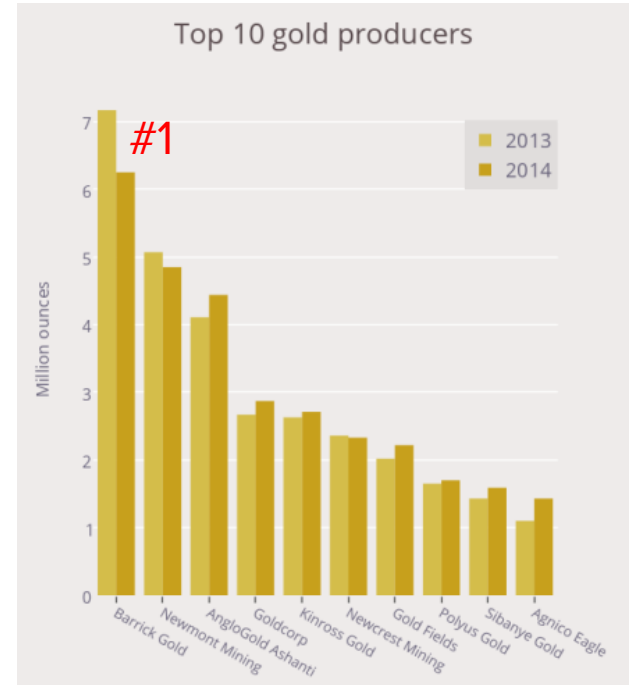
“If you don’t measure it,
you can’t manage it”

Barrick in the Gold Mining Business – The Good News

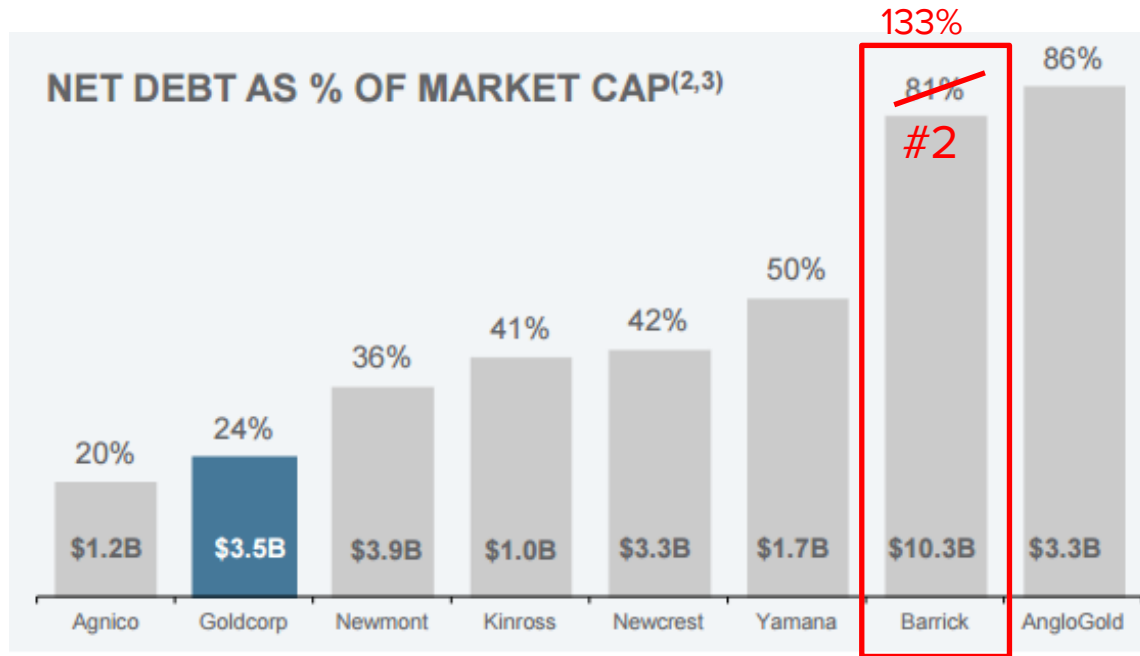


(1) Source: Company filings. See final slide #4.

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Barrick in the Gold Mining Business – The Bad News



Company	Market Cap (US\$Bn)
Goldcorp	10.99
Polyus	8.64
Newmont	8.57
Barrick	7.4 #4
Newcrest	6.44
Agnico	5.45
Anglogold	3.48
Eldorado	2.21
Gold Fields	2.13
Yamana	1.63

2012: 25 operating mines, ~670 million ounces of gold @ US\$864 (AISC) Reserves
Res. 1 million ounces

History of the PI System in Barrick Gold

PI System User since 1998

- 10 PI Servers
- 146K tags
- Process Plant
- Basic installations without common architecture across sites

EA Customer in 2015

- 50+ PI Servers
- 250K+ PI Tags
- PP plus Energy, Water, Maintenance
- Common architecture
 - HA installations
 - IT-OT Compliant



Why Does Barrick Need An EA?



“It is crucial to the future of the company that
Barrick become a **Data-Driven** Decision-making
Organization”

Jim Gowans, Chief Operating Officer, 2014



Why An EA? OSIsoft Resources



Center of Excellence



The Center of Excellence — Your industry expert on PI System® implementation.



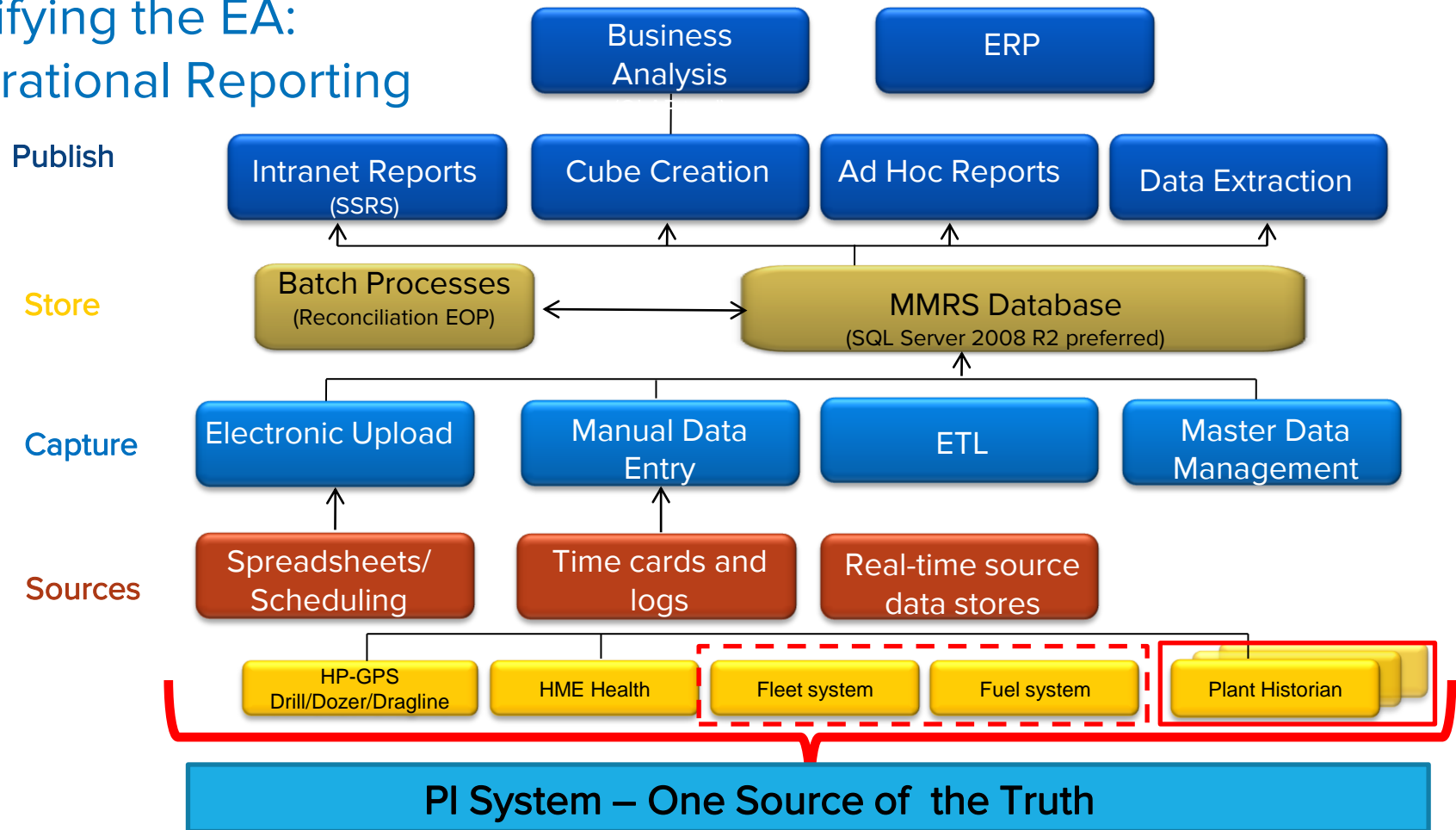


Justifying The EA

Justifying the EA: The Team



Justifying the EA: Operational Reporting





Justifying the EA: Energy Management

Data stored in the PI System was instrumental in optimizing Oxygen Plant operation, resulting in a \$1,000,000/mo energy saving.

Processing **OXYGEN PLANT**

BARRICK
PUEBLO VIEJO

- 4000 tpd plant with 99.5% O₂ purity
- T1 commissioned in July and T2 in August 2012



Justifying the EA: Water Management

“Water is a critical component in mining and it’s also an essential but scarce resource in many parts of the world. I can tell you from first-hand experience that it is a very emotional issue.”

Dr. Mei Shelp, Barrick Hydrologist

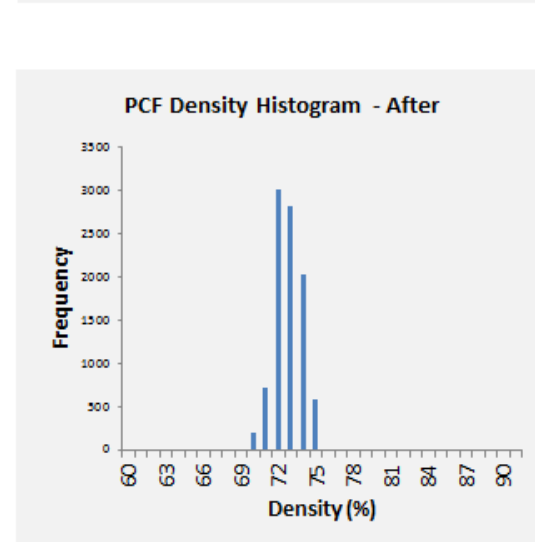
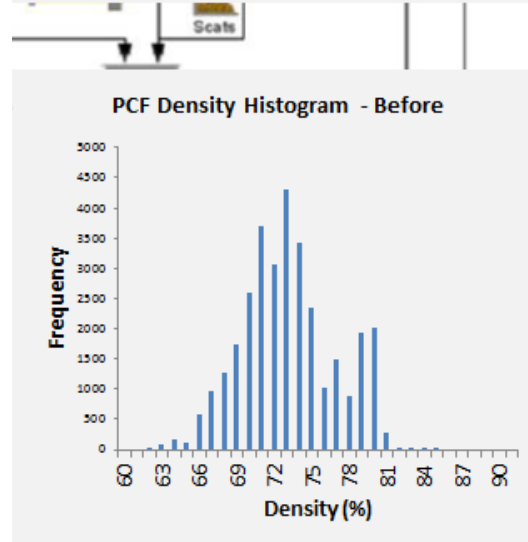
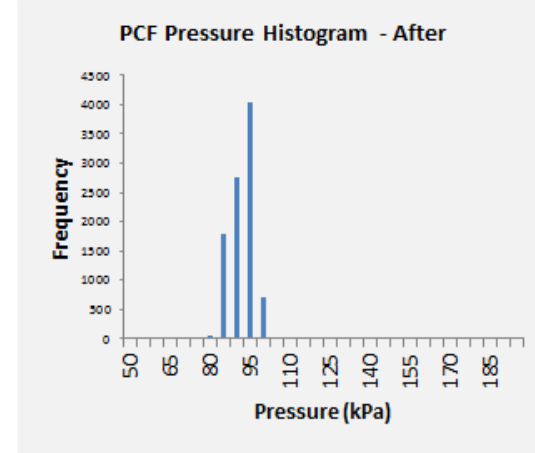
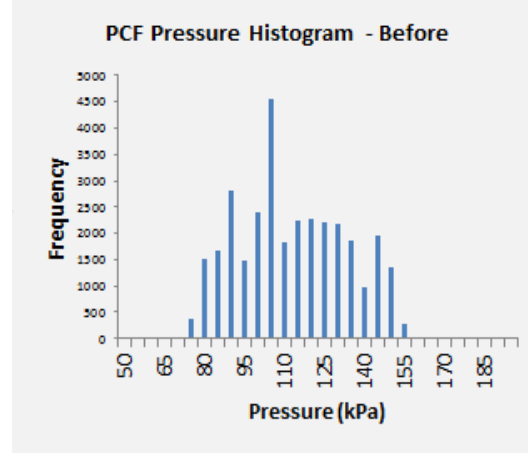


The Margajita River used to flow dark red due to acidic water discharged by the previous operator of the Pueblo Viejo mine. Barrick’s water treatment plant has led to dramatic improvements in the river, decreasing acidity levels, increasing water flow and returning the water to its natural color.

Justifying the EA: Plant Optimization

Darlot Mine example:

- Increased throughput 10%
- Reduced power consumption 1%
- Leach feed density variability reduced 80%
- Potential \$3.5 million in savings



Justifying the EA: Stakeholder Reporting

- Biodiversity
- Materials Management
- Water Management
- Air Emissions Management
- Waste Rock and Tailing Management
- Reclamation



CARBON DISCLOSURE PROJECT

Justifying the EA: Did It Work?





How Are We Using The EA?

Using the EA: Training



The links below describe our courses in detail:

- [Analyzing PI System Data](#)
- [Building PI System Assets and Analytics in PI AF](#)
- [PI Advanced Computing Engine \(PI ACE\)](#)
- [PI System Administration for IT Professionals](#)
- [PI System Architecture, Planning, and Implementation](#)
- [PI Web Parts User and Administration Class](#)
- [RtReports Administration Class](#)
- [Visualizing PI System Data \(Clients\)](#)

Courses Schedules & Registration

Client Courses

- Visualizing PI System Data (Clients)
- Analyzing PI System Data
- PI WebParts Class
- RtReports Administration Class

Server Courses

- Building PI System Assets and Analytics with PI AF
- PI System Architecture, Planning, & Implementation
- PI System Administration for IT Professionals

Small Private Online Courses

- Building Basic Displays with PI ProcessBook
- Building Advanced Displays with PI ProcessBook
- Creating Basic Reports with PI DataLink
- Developing Applications with PI AF SDK
- Configuring Calculations with PI AF
- Building Asset Hierarchies with PI AF
- Configuring a Simple PI System

VCampus Subscription

Lab Name	Manual	
PI ProcessBook: Building Displays		Launch Lab
PI ProcessBook: Element Relative Displays		Launch Lab
PI ProcessBook: Building AF Displays		Launch Lab
PI DataLink: PI and Excel Times		Launch Lab
PI DataLink: Operational Start Up		Launch Lab
PI DataLink: Create a Simple Report		Launch Lab

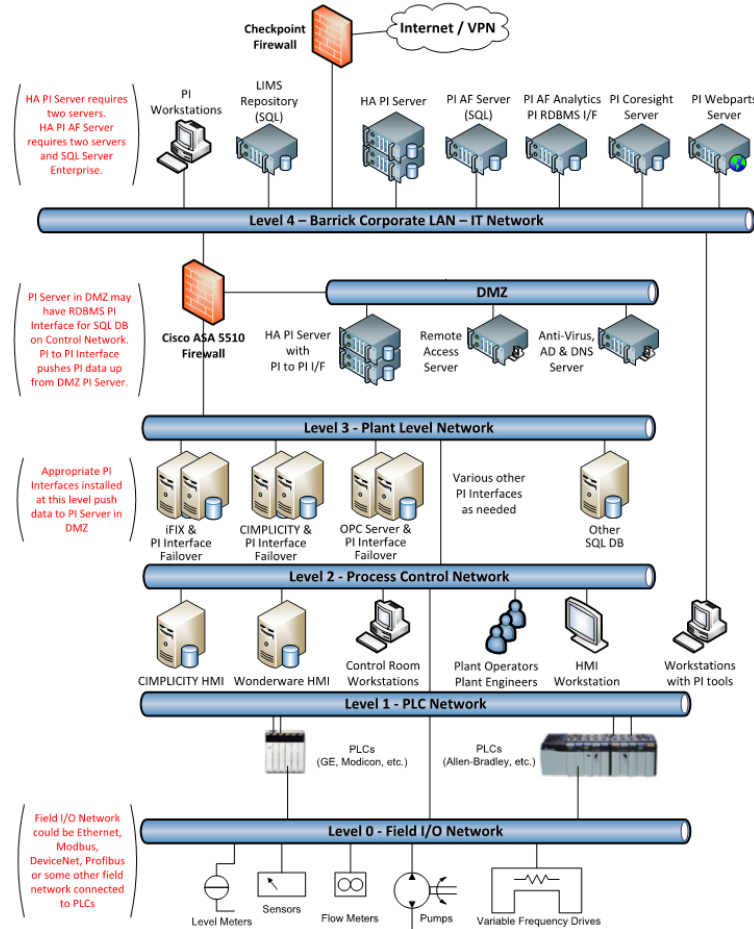
What is covered in the YouTube Channel?

The following topics are covered in the YouTube Playlists in the OSIsoft Learning Channel:

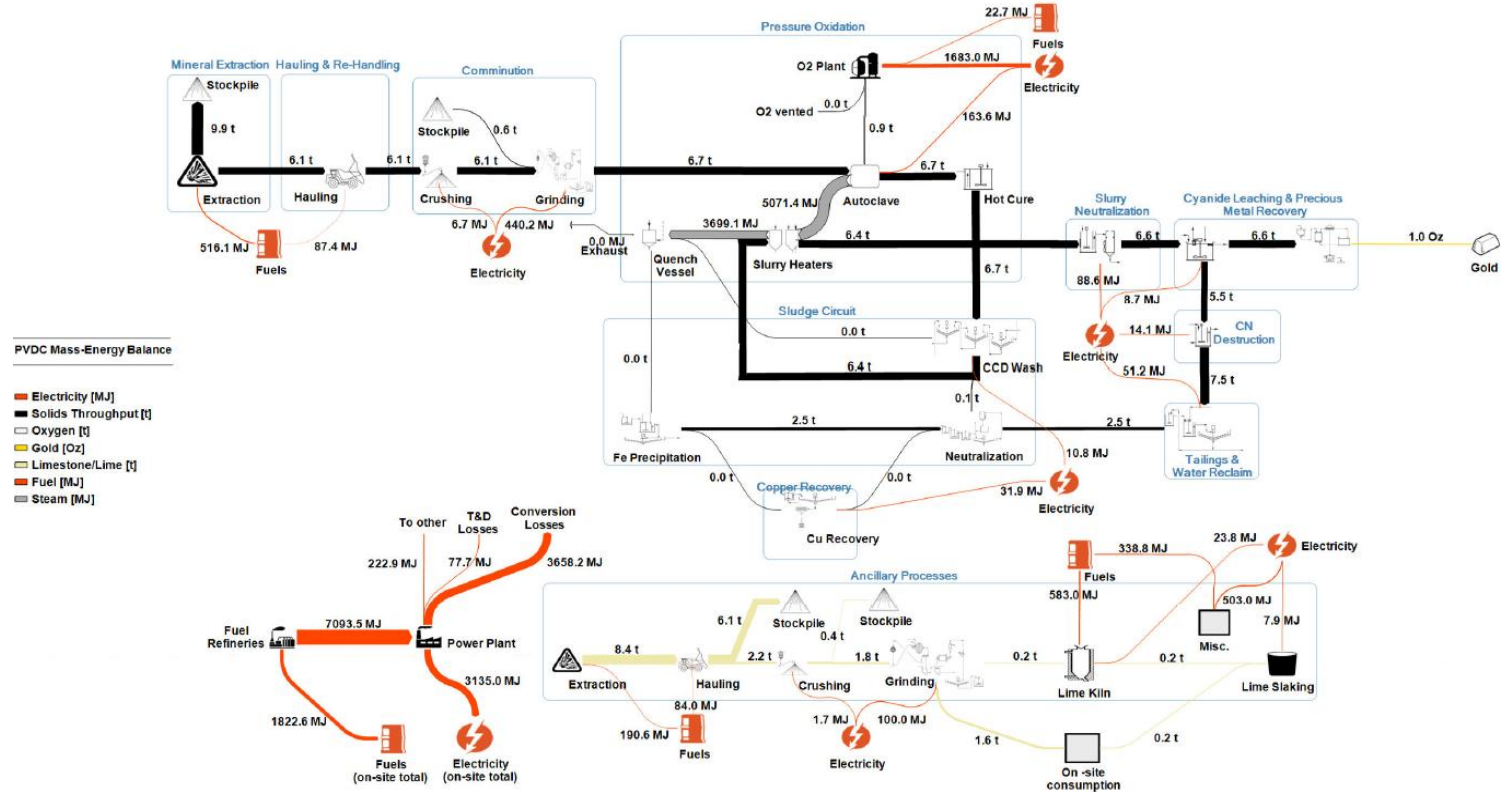
- General Introduction
- PI ProcessBook
- PI DataLink
- PI WebParts
- PI AF
- PI System Management

Using the EA: Infrastructure

Barrick Gold IT/OT (Process) Network – High Availability PI Configuration



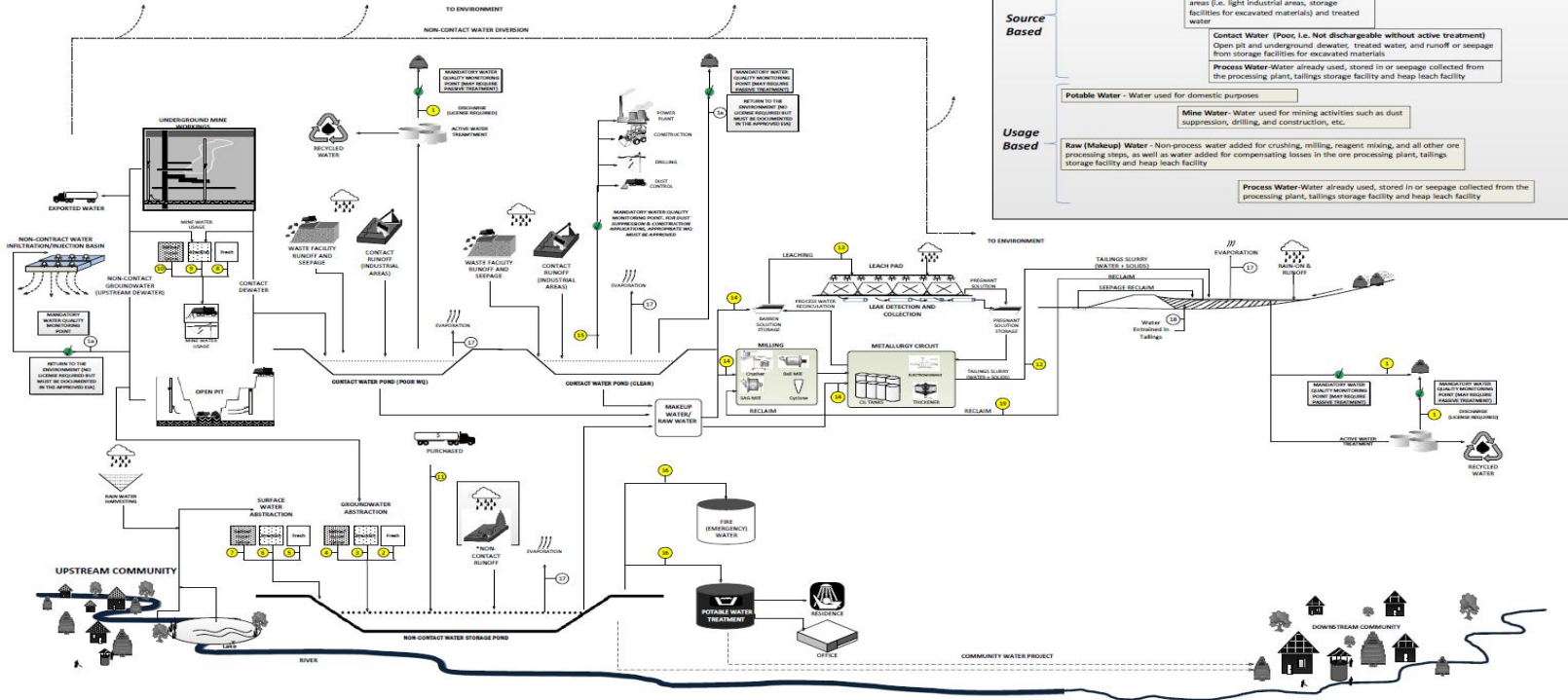
Using the EA: Energy Optimization



Using the EA: Mine Water Management



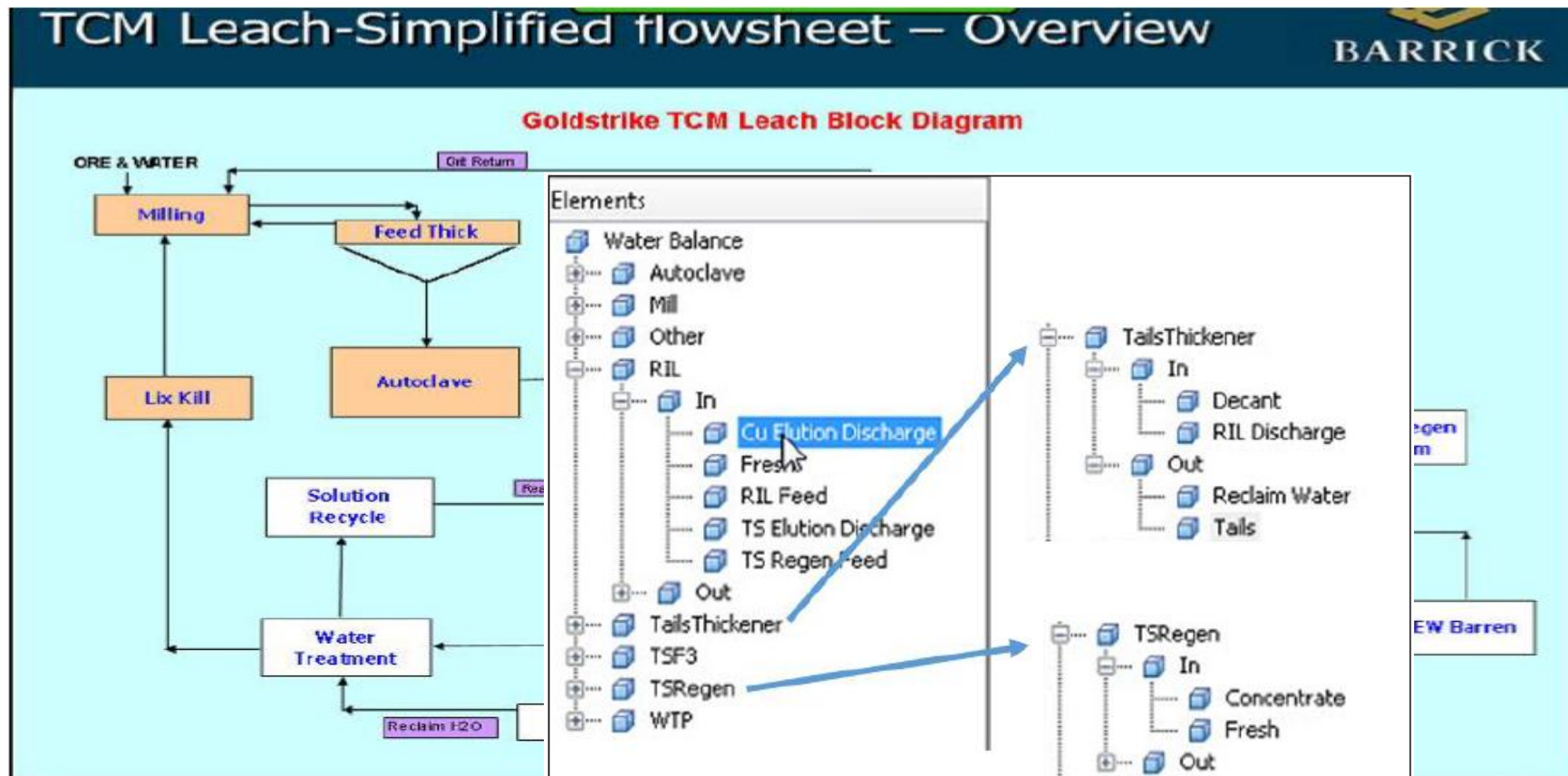
TYPICAL MINE WATER MANAGEMENT SYSTEM AND TERMINOLOGY FOR REPORTING (DRAFT FOR DISCUSSION)
OCTOBER 25, 2013



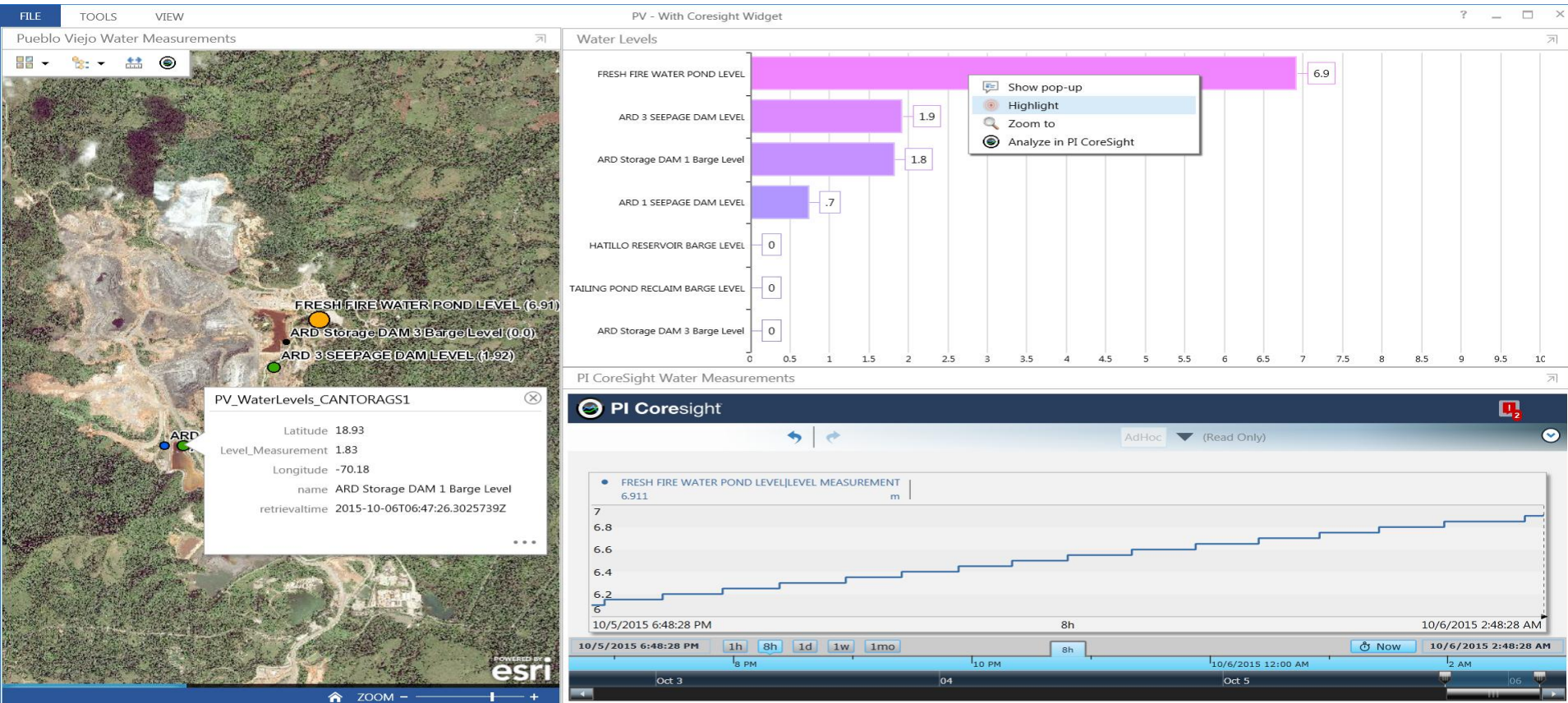
10/25/2013

Typical Mine Water Management Flow logic and terminology (draft) mls.vsd

Using the EA: Process Optimization

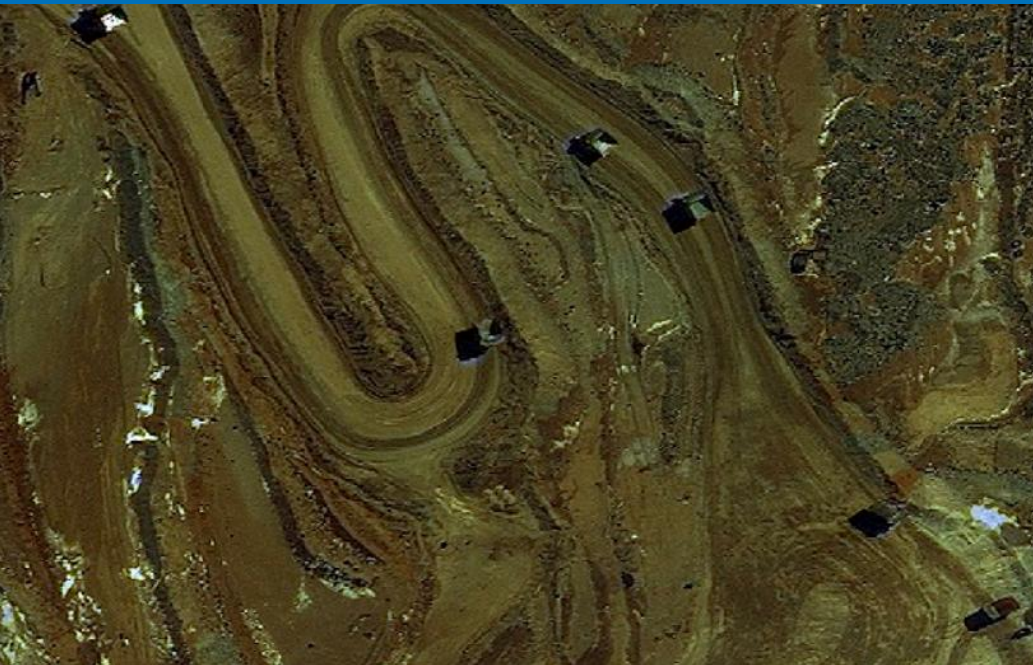


Using the EA: PI Integrator for Esri ArcGIS

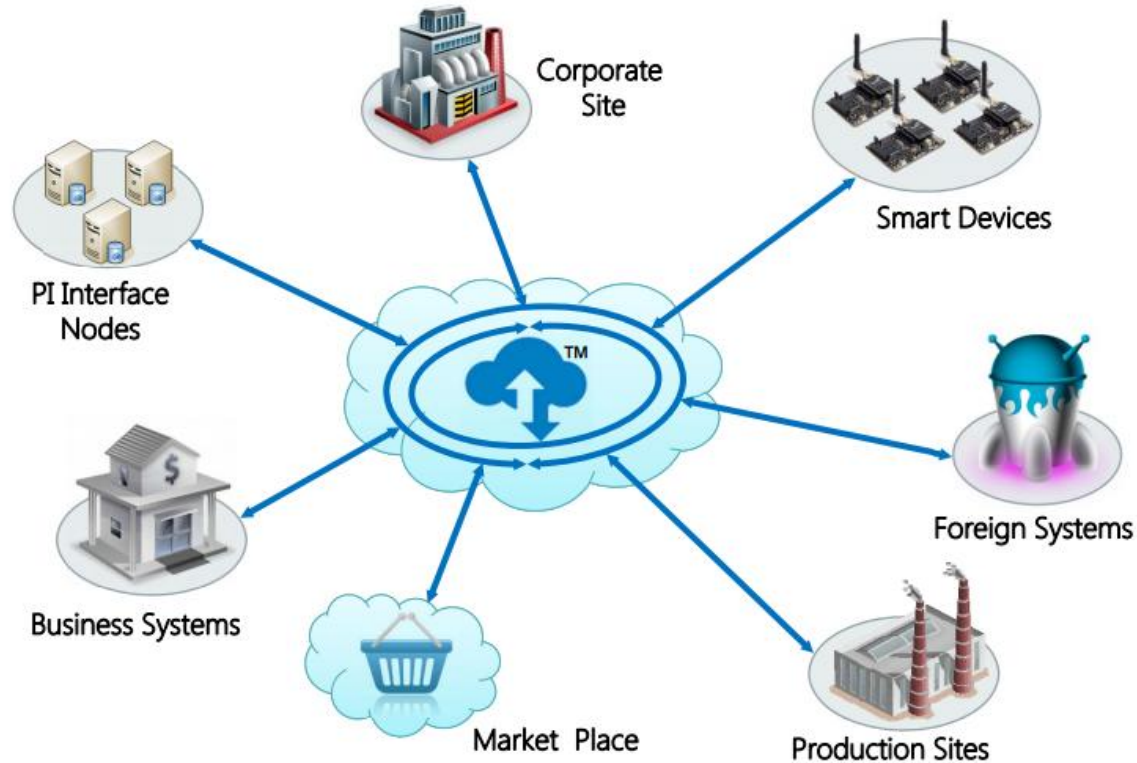


Using the EA: Haul Road Maintenance Using the PI System

Shock absorber data from haul trucks allows targeted haul road repair

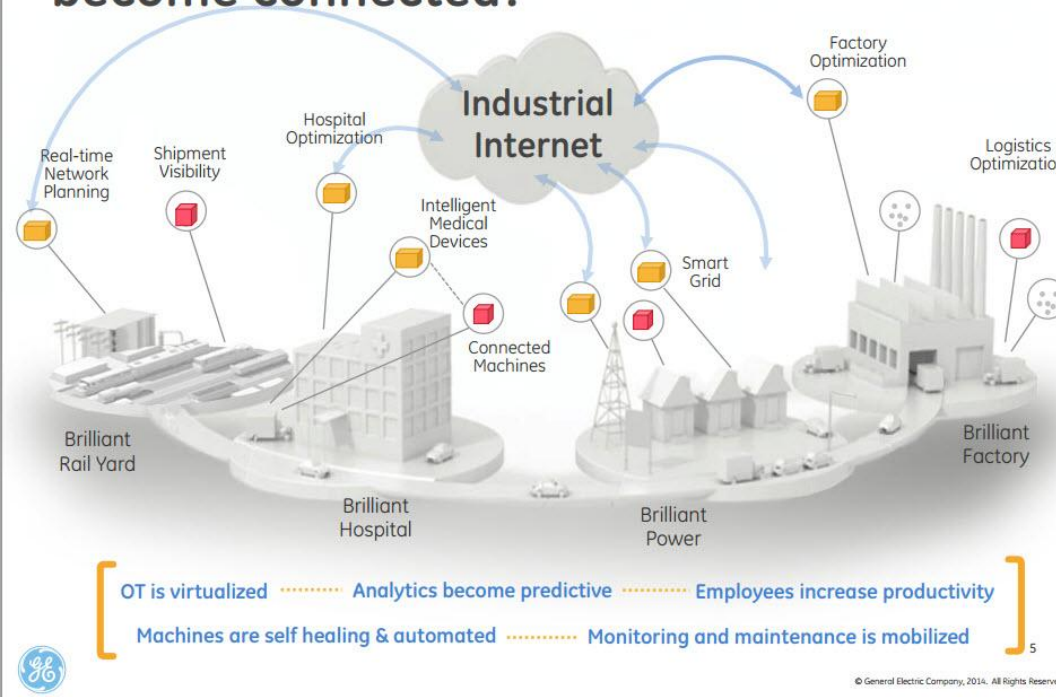


Using the EA: PI Cloud Connect



Using the EA: The Future...

What happens when **50B Machines** become connected?



- Optimization
- Increased Efficiency
- New relationships
- Cost savings
- Increased market cap
- A “brilliant” mining company

Summary

“With Data, You Are **NOT** Just Another Person With An Opinion.”

“If You **Do** Measure It,
You **Can** Manage It.”



BUSINESS CHALLENGES

- A. Request a significant capital expenditure for an EA in a time of strict fiscal austerity
- B. Meet the challenge of Operational Excellence.
- C. Need to develop Asset Framework templates for Energy, Water, and Plant operations.

SOLUTION

- A. Justify the EA convincingly.
- B. Concentrate initial efforts where the payoff is greatest – Energy and Water.
- C. Maximize Training and the use of CoE and OSIsoft Mining Industry Experts.

RESULTS AND BENEFITS

- A. An EA for Barrick.
- B. Significant savings in Energy costs, better water management and reporting.
- C. Consistent approach to Energy and Water management.



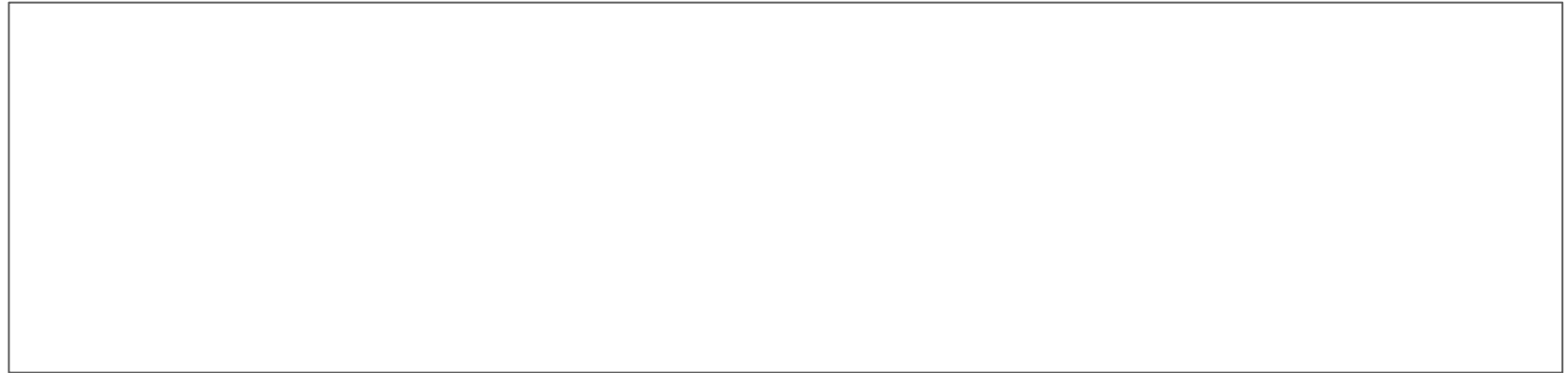
Contact Information

Iain Allen

iallen@barrick.com

Senior Manager

Barrick Gold



Questions

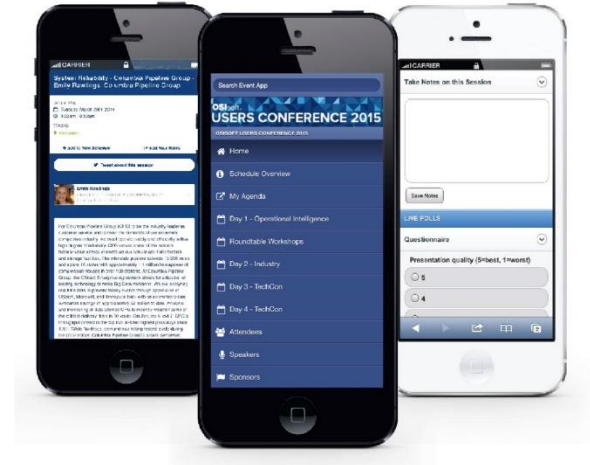
Please wait for the **microphone** before asking your questions



State your
name & company

Please don't forget to...

Complete the Online Survey
for this session



<http://eventmobi.com/emeauc15>



감사합니다

谢谢

Danke

Merci

Gracias

Thank You

ありがとう

Спасибо

Obrigado

With Data, You Are NOT Just Another Person With An Opinion!