

EMPOWER YOUR ANALYTICS WITH
OPERATIONAL DATA



Driving Value Focused Improvements in Real-Time

Kane Blay, Newmont Goldcorp

10 September 2019

Newmont Goldcorp

to create value and improve lives through sustainable and responsible mining

- World's leading gold producer
 - Geographically diverse portfolio anchored in four stable regions
 - Focused on superior operational execution - Accelerating technology based on value and viability
-

Delivering sustainable cost and efficiency improvements and world-class technical fundamentals.



* Nevada Gold Mines is a joint venture, owned 38.5% by Newmont Goldcorp and owned 61.5% and operated by Barrick*

Gold Processing

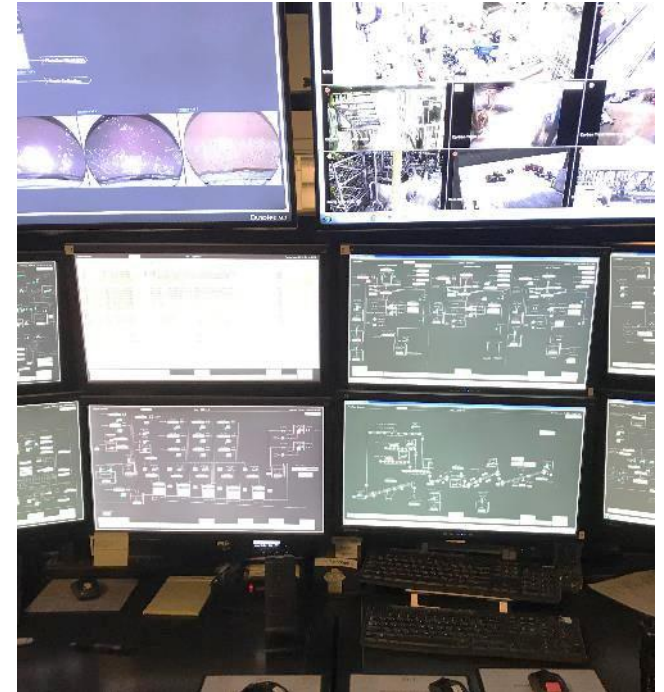
- Once mined, gold is extracted from the ore in processing facilities
- Gold produced leaves the site as dore or concentrate
- Processing plants exist wherever the deposit exists, often remote locations
- Complicated flowcharts that vary depending on the extraction method



Newmont Goldcorp's Yanacocha Operation

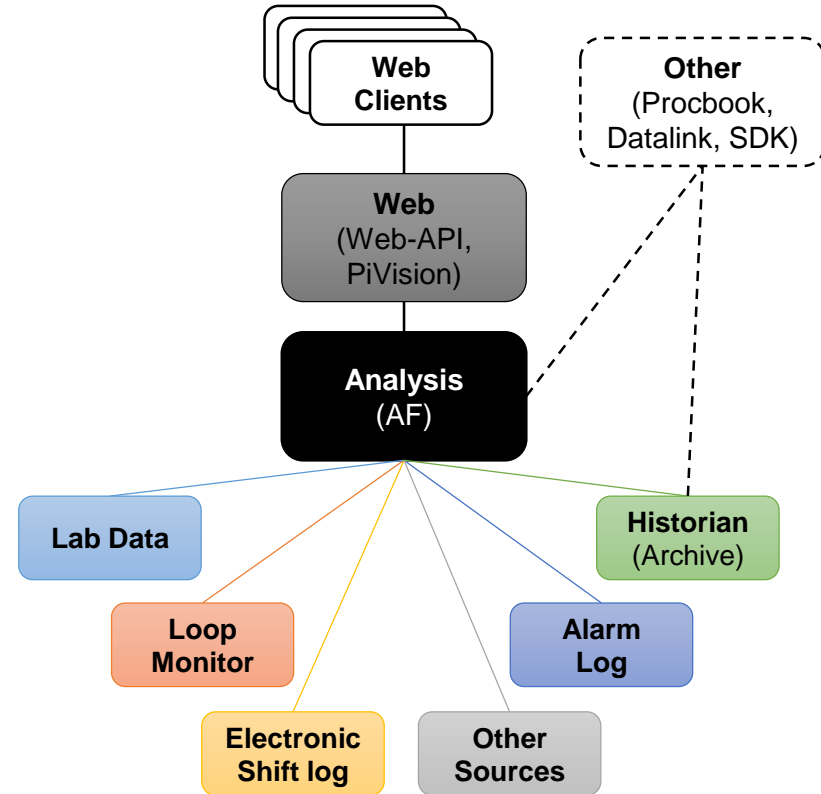
Process Control

- Recognised improvement opportunity from improving and sustaining Process Control practises
- Talented teams exist on sites and centre of excellence Operation Support Hub (OSH) established in Perth
- Already demonstrated benefit of improving data capture and analysis in our US-based Asset Health Centre
- Need tools to focus efforts and maximise impact of small process control teams



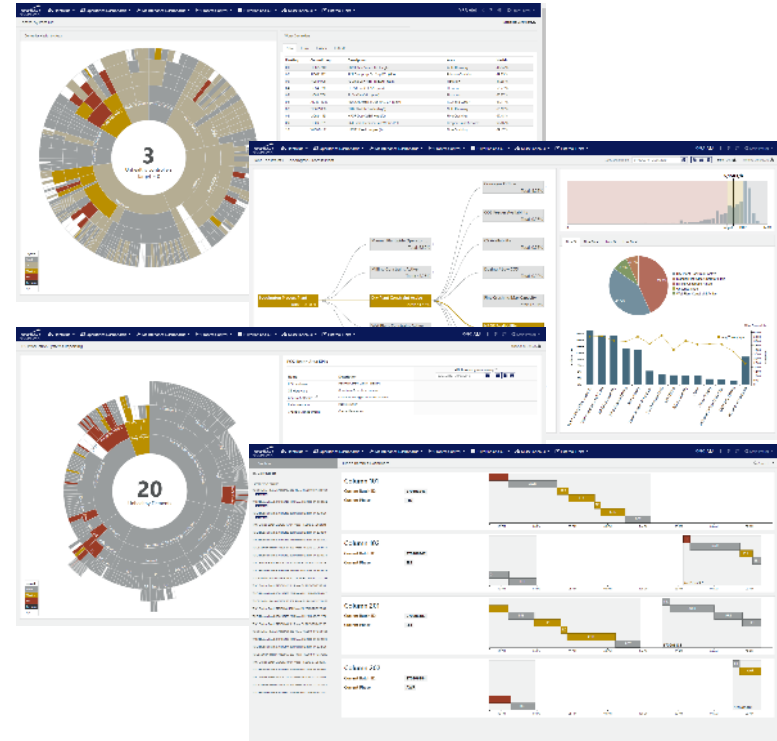
PI Server Asset Framework Analysis and Data Flow

- Tool suite to track health of control systems and process
- Using PI Server Asset Framework as primary analytics engine
- Leveraging other sub-systems for specific analyses
- Servers deployed on sites – workflows driven by dashboards and notifications on site



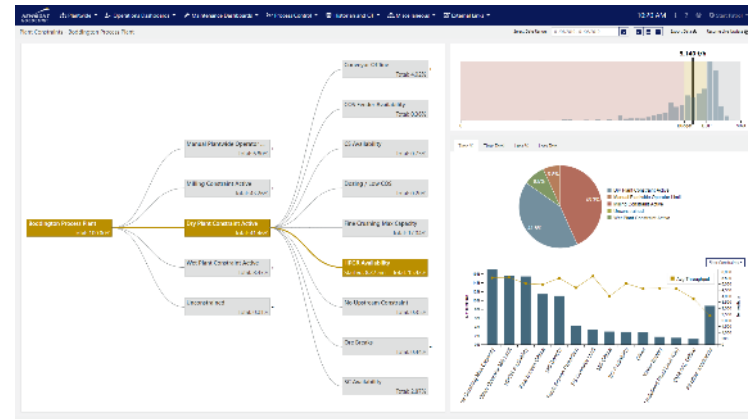
Fit-for-purpose approach to Dashboards

- Dashboards created using Custom HTML (PI Web-API) and PI Vision
- Open-source visualisations from online repositories
- Rapid prototyping and quick feedback loop led to rapid development
- Important to focus on the *value* case of the dashboards when developing
- It is easy to make something ‘cool’ – but ‘cool’ does not make us any money



Example Dashboard – Plant Constraints

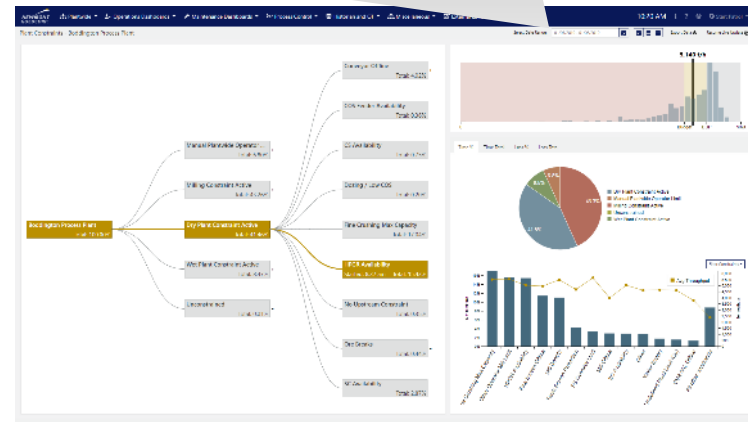
- Analytics and dashboards merely inform, they don't solve the problem
- Dashboard tools are a lens to focus the efforts of key teams
- Example case study now on the constraints dashboard



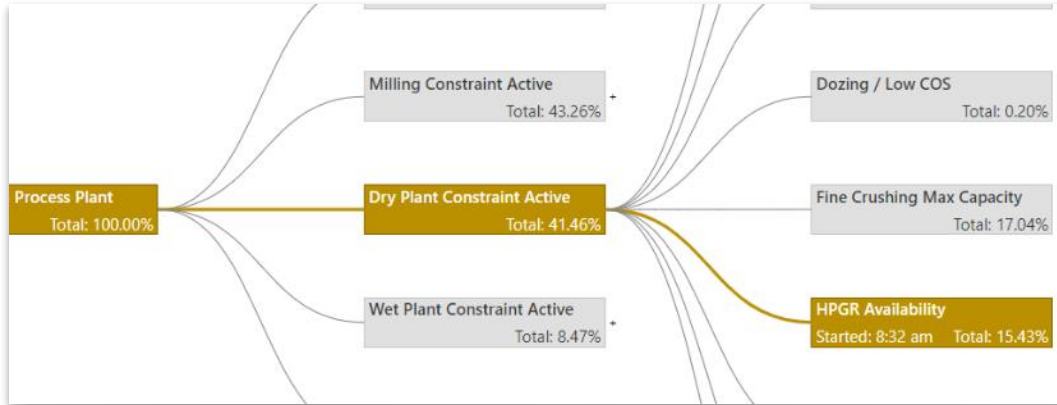
Date Selection

Select Date Range: 01/05/2019 - 01/06/2019

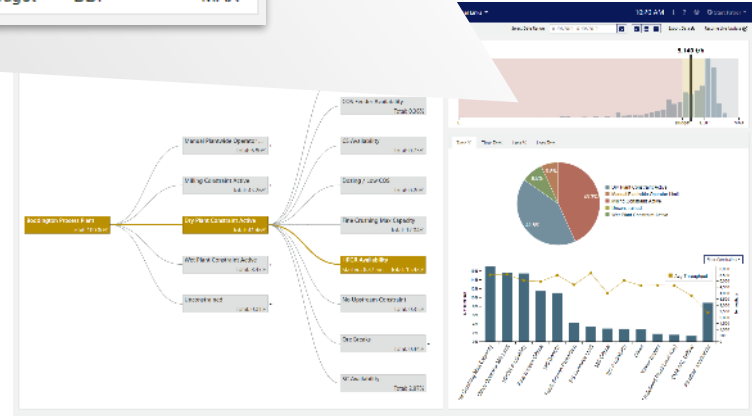
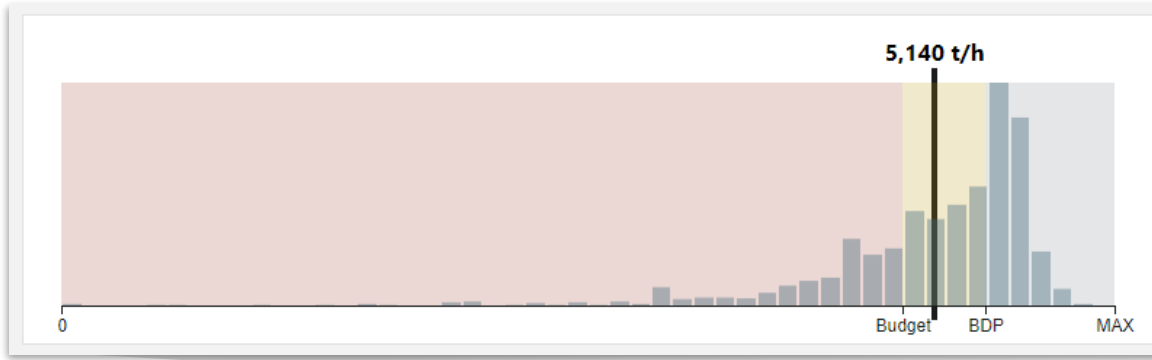
Export Data



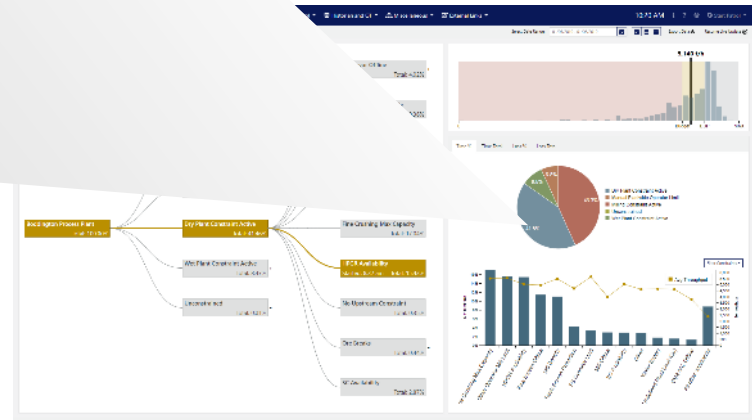
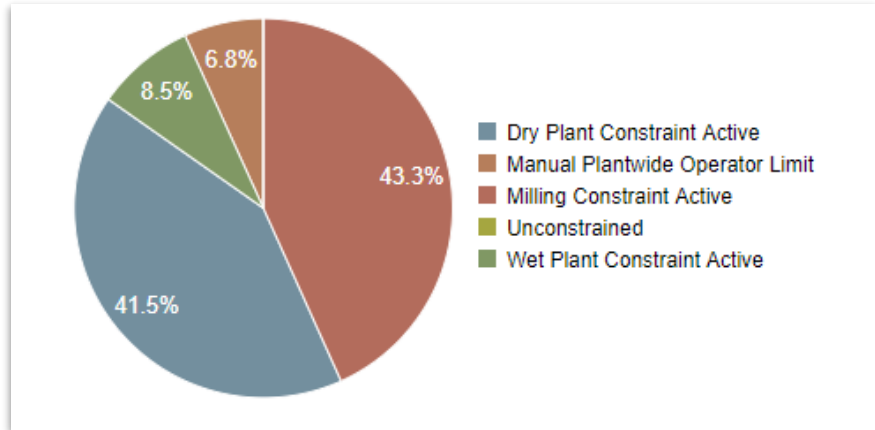
Constraint Hierarchy



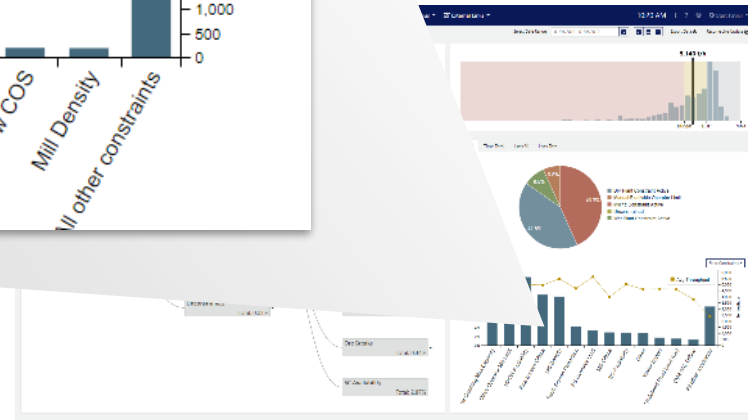
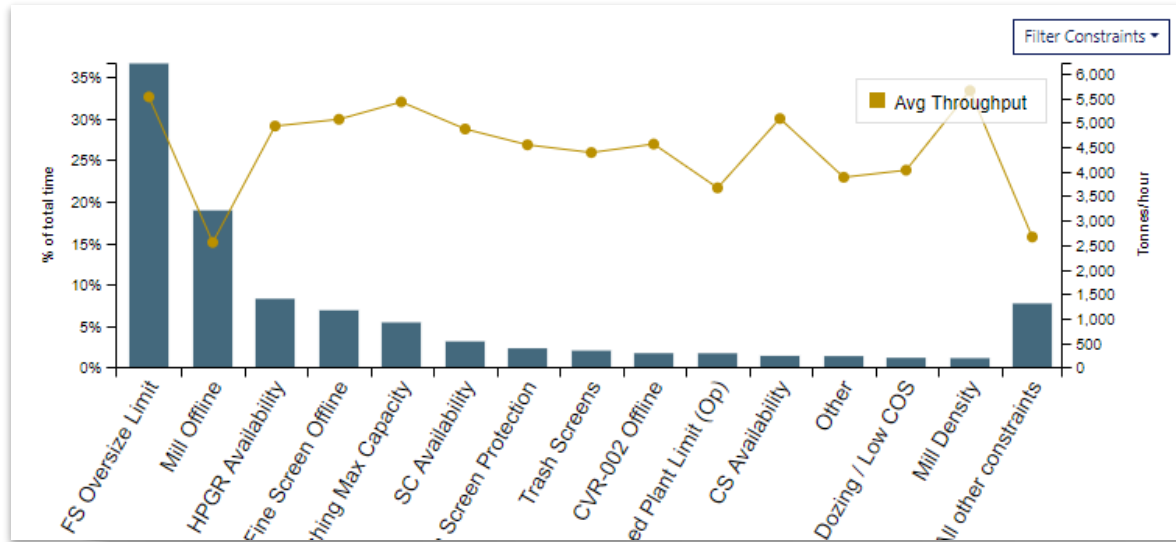
Throughput Distribution



Breakdown by Area

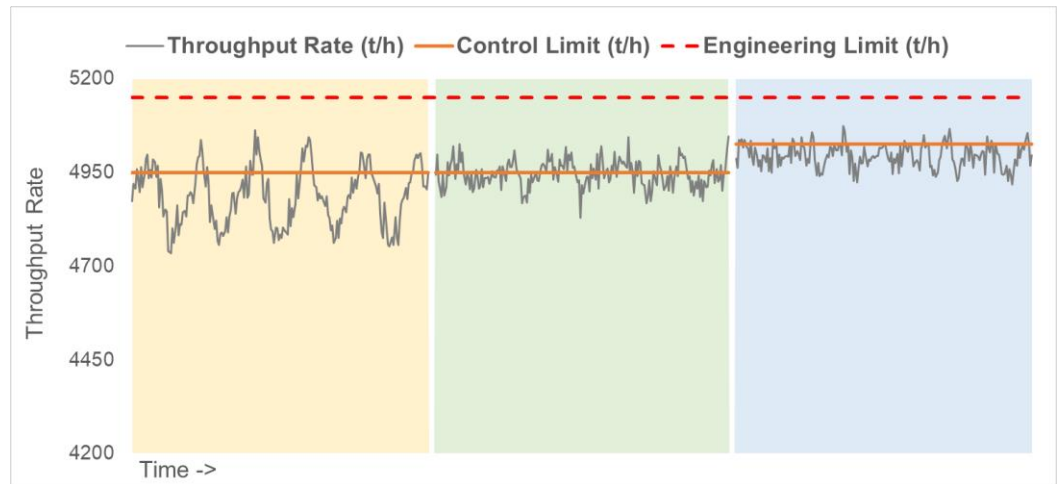


Pareto of Top Constraints



Elevating the Constraints

- Process control teams worked on improving control performance around top constraint (~9 out of 700 loops on site).
- Use of internal model control and augmented PID
- 2 Months effort to deploy
- Approx US\$2M in full potential value added for first half of 2019 from single initiative



Demonstrated Value

- Process control teams at pilot site and in Operations Support Hub working on additional initiatives
- Approximately \$US4M additional full potential value for H1 2019 at pilot site
- Quick wins replicated already at Australian and African sites
- Expanding basic tool set to cover remaining NGC sites



Conclusion and Learnings

What do we **do** to drive improvement based upon this information?



Analytics identify the opportunities but action is still required to capture them



Leveraging open source tools and rapid prototyping provides great ability to do low-cost testing



Work closely with front line leaders to understand what information they require to make their decisions



Understanding the *actions* that will result from the information will guide, and simplify the development process

Driving Value Focus

CHALLENGES

- To identify key focus areas for processing teams, including process control

SOLUTION

- Developed tools to monitor system performance, identify bottlenecks and improvement opportunities.

BENEFITS

- Approx. US\$4M of full potential value in the first half of 2019 at trial site
- Improvements being replicated



It is important to understand how tools are *used* to improve performance throughout the development process. Understanding the value use-case will guide and simplify the development process.



Kane Blay, Process Control Manager, Newmont Goldcorp

- **Kane Blay**
- Process Control Manager
- Newmont Goldcorp
- Kane.Blay@Newmont.com

Full Potential: Full Potential cost savings or improvements as used in this presentation are considered operating measures provided for illustrative purposes, and should not be considered GAAP or non-GAAP financial measures. Full Potential amounts are estimates utilized by Newmont Goldcorp management that represent estimated cumulative incremental value realized as a result of Full Potential projects implemented and are based upon both cost savings and efficiencies that have been monetized for purposes of the estimation. Because Full Potential savings/improvements estimates reflect differences between certain actual costs incurred and management estimates of costs that would have been incurred in the absence of the Full Potential program, such estimates are necessarily imprecise and are based on numerous judgments and assumptions.

Questions?

Please wait for the **microphone**

State your **name & company**



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ありがとうございました

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