



Underground Operational Management System Short Interval Control



Optimizing Mine Performance Through Digital Innovation Seminar, October 18, 2017
Katherine van Nes, Consulting Lead, Smart Industries

Safety

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SADBURY
INTEGRATED NICKEL
OPERATIONS
A GLENCORE COMPANY

ONAPING DEPTH PROJECT
Reaching New Depths

You are now entering the Onaping Depth Project workplace
where safety is the first priority.

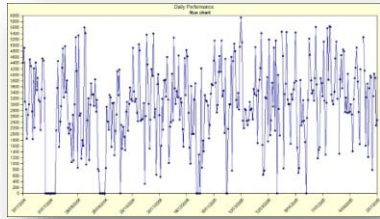
Onaping Depth Project
Single Shaft
Final Shaft

The future of Glencore's Sudbury
Operations relies on the safe
execution of this project.
Your commitment adhering to
the **LIFE SAVING BEHAVIOURS** is
required.
Together We Build the Future.

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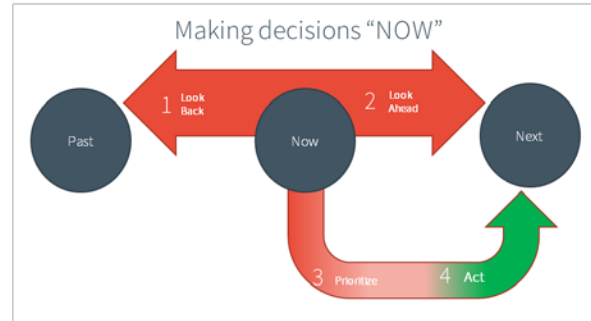
What is the problem to be solved?

Managing variation...

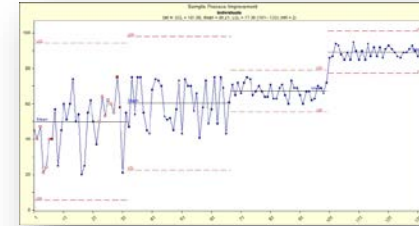


Before

Digitizing In-shift Performance



Success = Right job, right time, right people, Better way

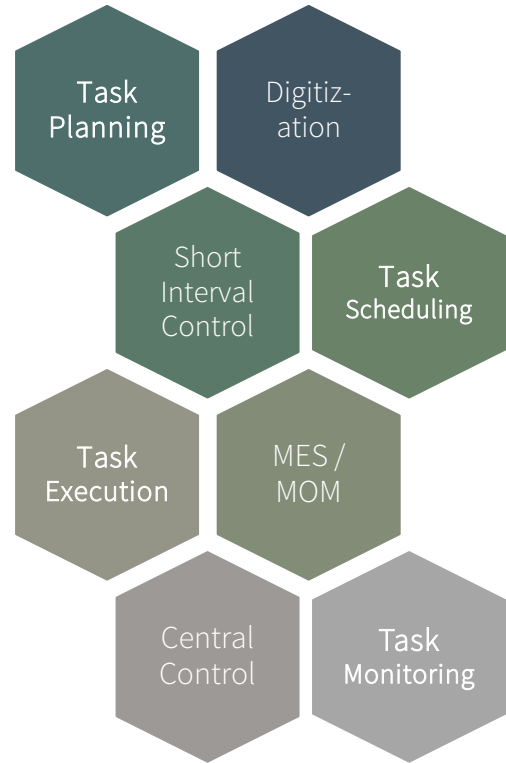


After

.... can lead to a step change in business performance

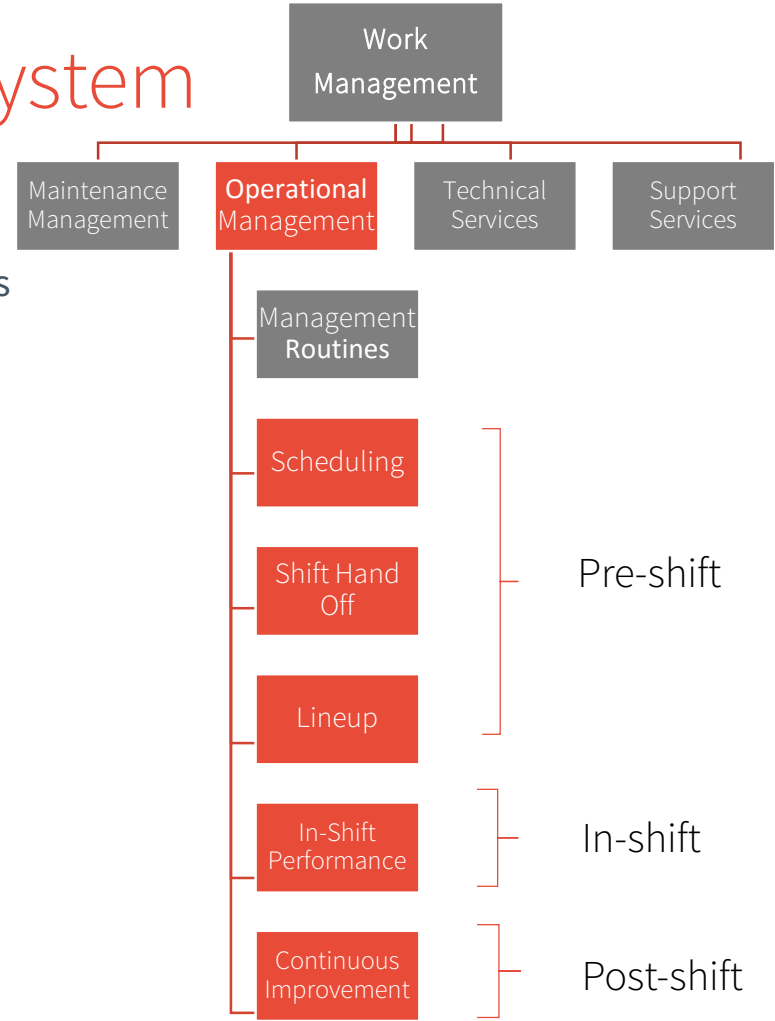
Definitions

- Digitization
 - Digitization is the process of converting information into a digital format.
- Short Interval Control (SIC)
 - A factory-floor process for driving production improvements during the shift. These improvement actions may be countermeasures to ongoing or emerging problems, or they may be actions to improve existing production.
 - A process that relies upon the functions and data within an Operational Management System
- Manufacturing Execution System (MES / MOM)
 - Computerized system used in real time documenting, controlling, and management of an entire manufacturing process that includes machines, personnel and support services. MES applications track activities and resources, and link management to the shop-floor activities



Operational Management System

- **Work Management**
 - Integrated system of routines, tools and practices covering all departments
- **Operational Management System (OMS)**
 - System that provides ability to understand, execute and report on the work with precision
 - Can be digitized.
- **In Shift Performance (SIC)**
 - Real-time schedule progress with variance reporting to ensure plan is achieved
 - Variance to plan triggers actions immediate implemented by on-shift supervisor within previously established rules of engagement
 - Visual management

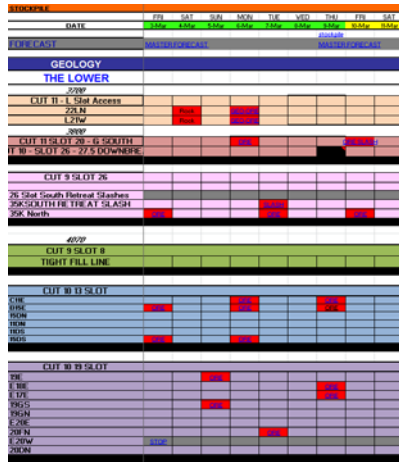


Mechanisms for Operational Management

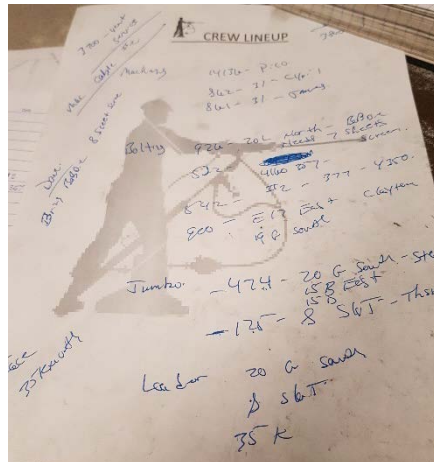
Task Planning

Task Scheduling

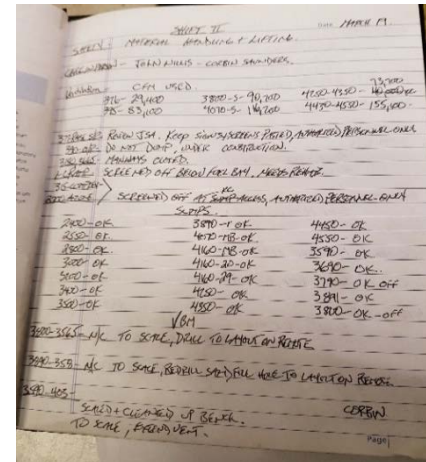
Task Execution / Monitoring



Excel Plan



Crew Line Up



Shift Log Book Entry

Variance Sources

Variance Drivers

Crew skill level /
experience

Number of active
mining locations

Fixed equipment
capacity and re-
handling

Consumables /
materials availability

Grade variance

Resource loading
(supervisors)

Equipment
preferences

Equipment location

Work task
organization /
execution

Back fill requirements

Equipment
availability - Mobile

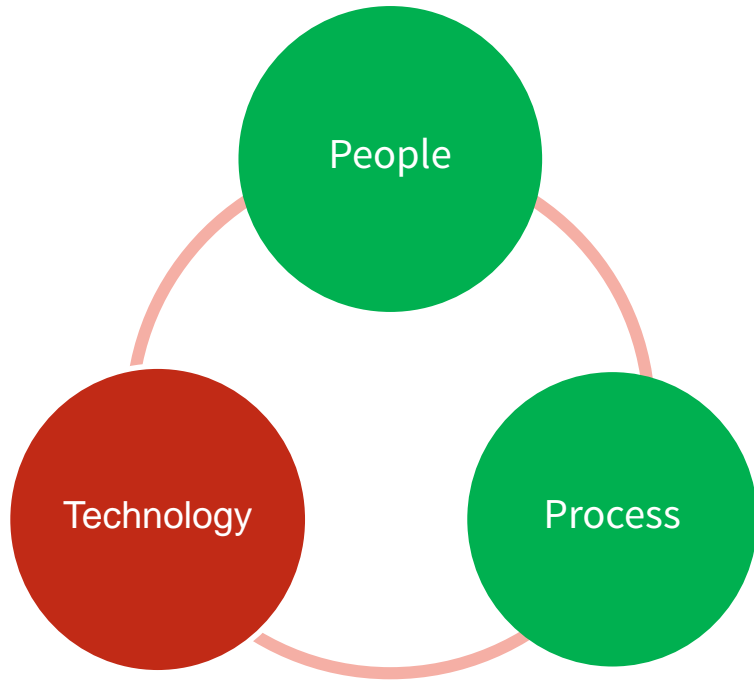
Travel time to work
location

Non-production task
management

Ground stability

Weather & impact on
resources

People, Process and Technology



1

A work organization with culture and business practices structured to support an integrated and automated approach

2

Work planning, scheduling, execution with real-time monitoring

3

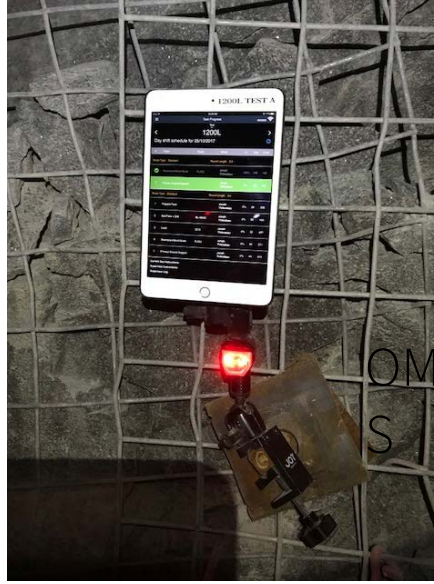
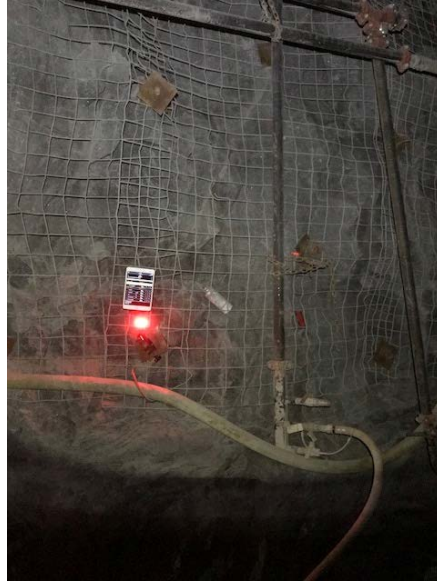
An enabling technology and software infrastructure



Case Study

Glencore, Onaping Depth

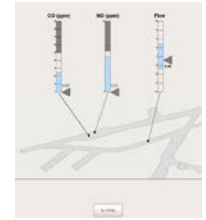
Development Mining – Project Details



Prints



Ventilation



Equipment Tracking



Additional Applications

Underground Mine Operational Management Wrap Up



Right job, right time, right way =
Consistent production at the entitlement



Objective is to reduce variance to drive productivity



People, Process, Technology approach



Every mine is different; start by understanding your mine



Thank you.

For more information,
please visit www.hatch.com
or contact Katherine.vanNes@hatch.com