

SACHRA

July 2019

K Louw



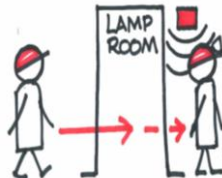
sasol



Digital showcase



Background: Project's Objectives and Goals



Attendance Dashboard

- Planned vs. Actual workforce
- Re-allocations
- Management information (Red tickets, Licenses, Skills etc.)

Electronic assignment of lamps

- Electronic shift clearance
- Lamp room barrier

Integrated systems

- Red tickets, training and induction integrated
- Auto re-allocations based on business rules

Underground Portal viewer

- Leave request
- Allowances
- Work Schedule Rule
- Overtime
- Etc.

Pilot:

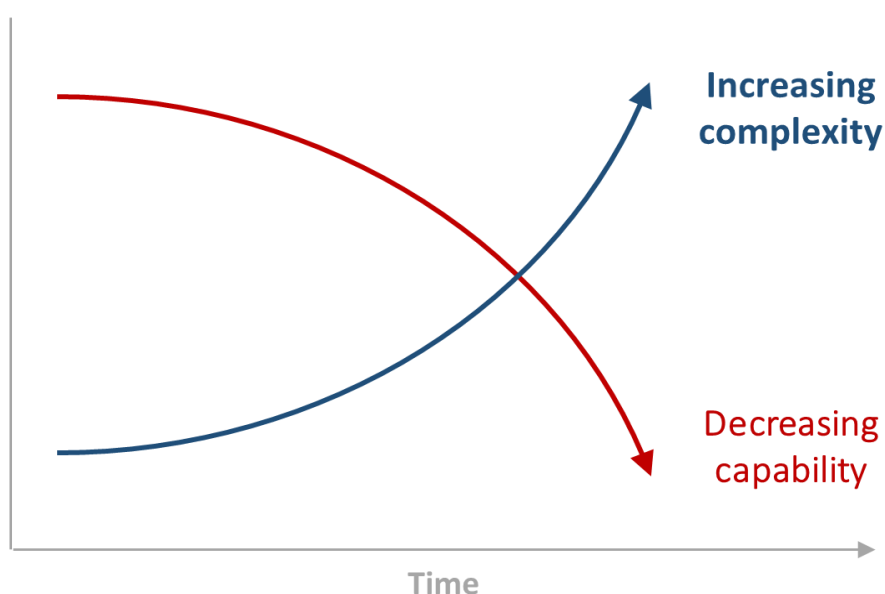
Start with having visibility on planned vs. actual workforce on a manning board and an electronic shift clearance solution. Gradually expand the project with buy-in from stakeholders to reach above deliverables

Started June 2017 @ Shondoni

The world has changed – a new approach is needed



Mining operations are substantially more complicated to manage today than 20 years ago



- Size, geography, orebody
- HSEC and compliance
- Project accountabilities
- Bureaucracy & initiatives
- More data, less clarity

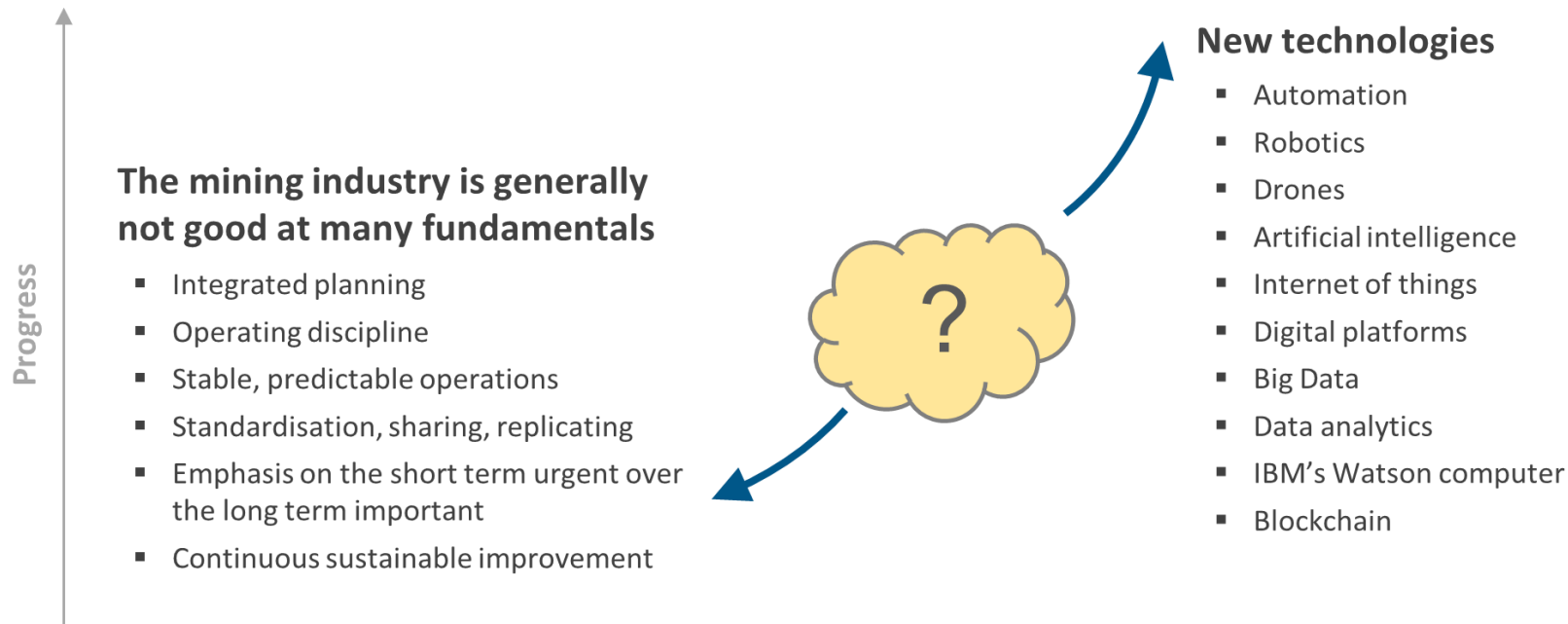
- Knowledge & experience
- Relationships & trust
- Quality of communications
- Clarity of accountability
- Emphasis on self over team

... Yet we continue to manage them in the same old way

NextGenOpX Intellectual property of NextGenOpX - Integration and digital transformation partners to Sasol Mining

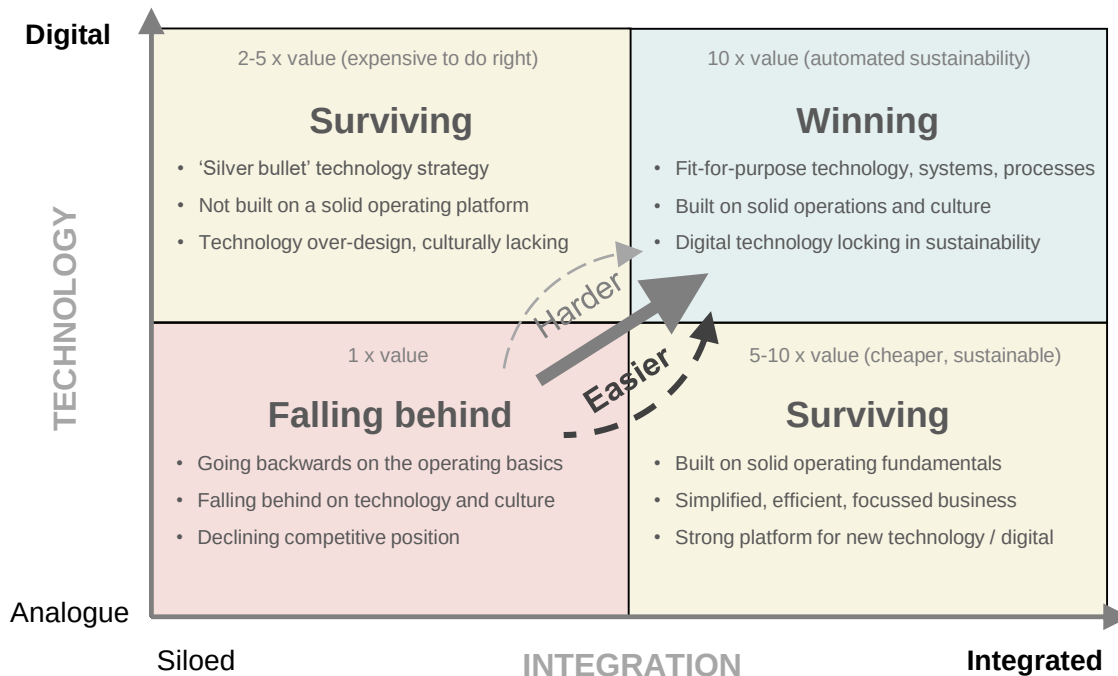
Technology is coming fast – but needs a solid platform

Advances in new technologies are currently running way ahead of our ability to adopt them



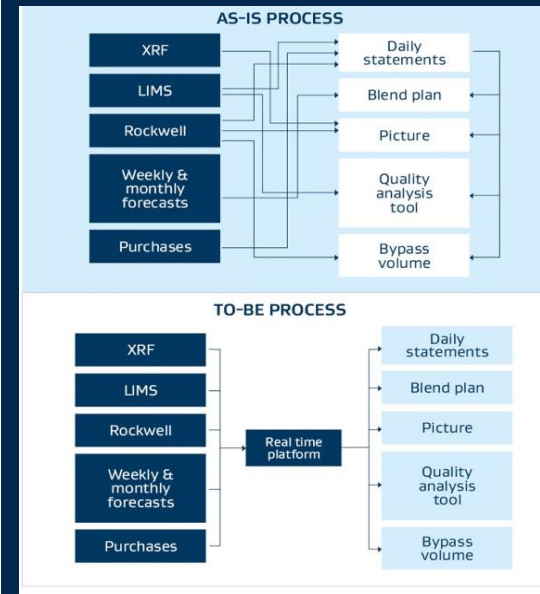
Technology is not a silver bullet that will replace the need for solid operating fundamentals

Integration as precursor to digital



EXAMPLE

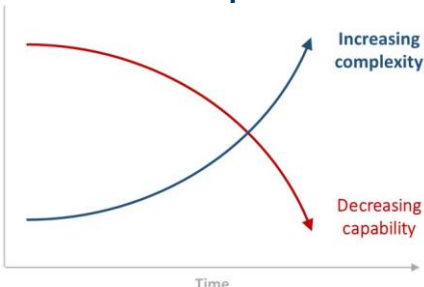
Coal value chain optimisation



Efficient reporting only possible after optimizing business processes

Sasol Mining System summarized as:

- Increasing in complexity
- Decreasing capability
- Working on the wrong levels
- Performance driven and not a balanced focus
- Poor planning only driving execution and little to no improvement



Burning Platform

Fatalities and Safety Culture

Unpredictable Production

Stone Work Constraints

Equipment Reliability

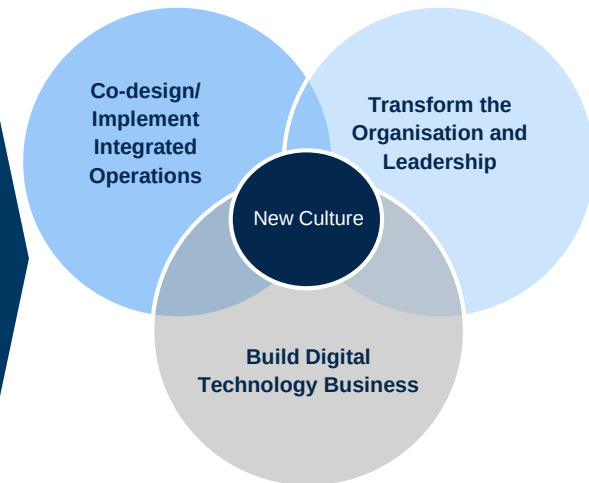
Complex and Misaligned Systems and Processes

Culture, Leadership and Capability

Systemic Solution

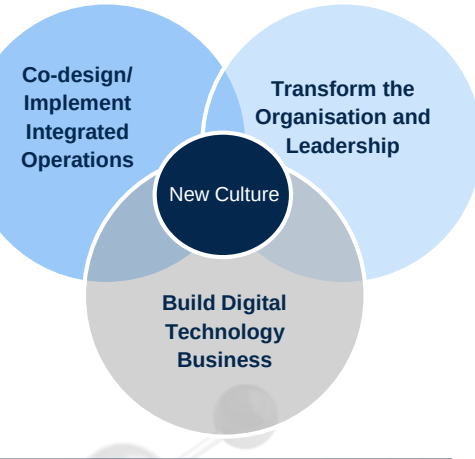
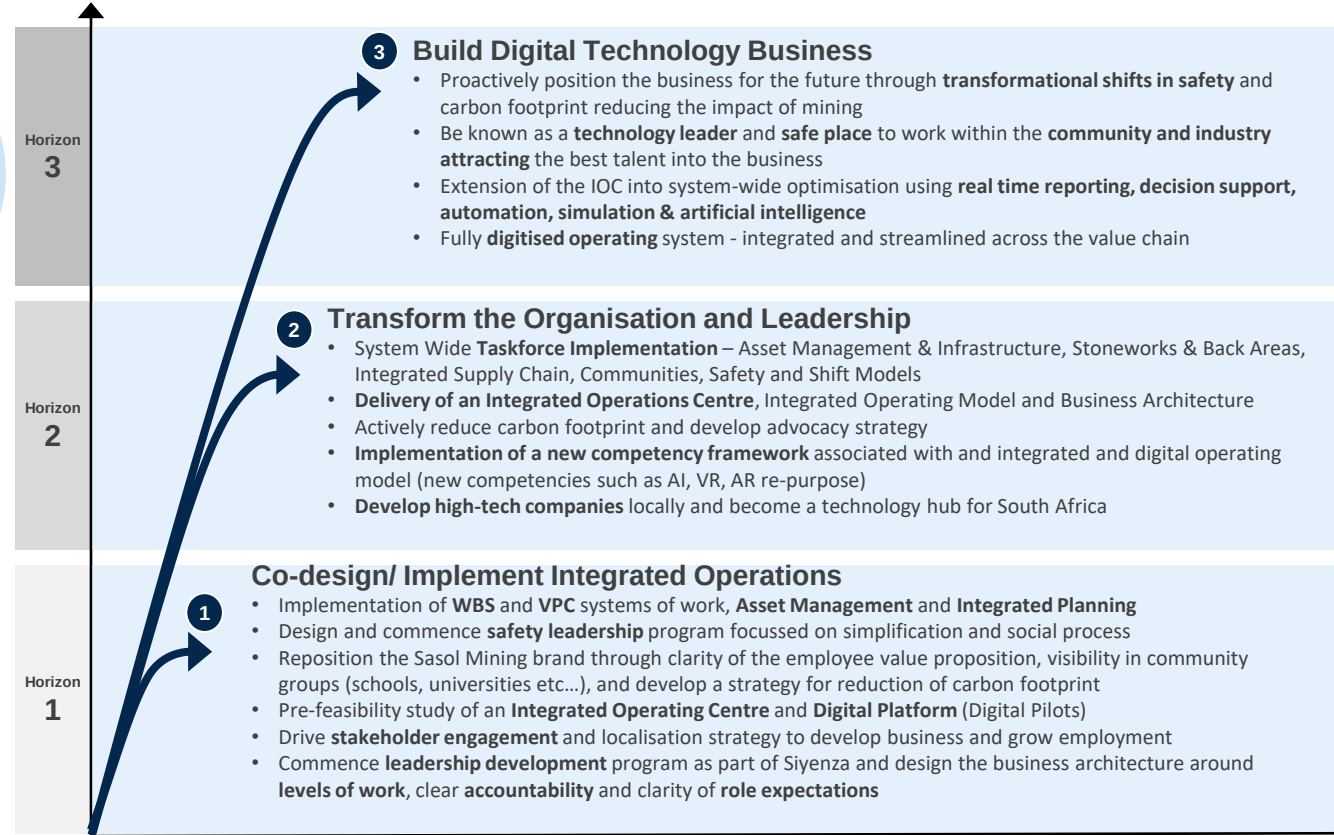
- **SAFETY BECAUSE WE CARE**
- Ownership of processes through co-design & **CONSTRUCTIVE DIALOGUE**
- Transact roles & sharpen **PERFORMANCE ACCOUNTABILITIES**
- Standardise and simplify working environment
- Integrated planning
- Disciplined execution
- Visibility of focus areas and performance
- Leadership led and owned program, playing the long game
- **HARNESS THE POWER OF DIVERSITY AND INCLUSION**

Key Platforms

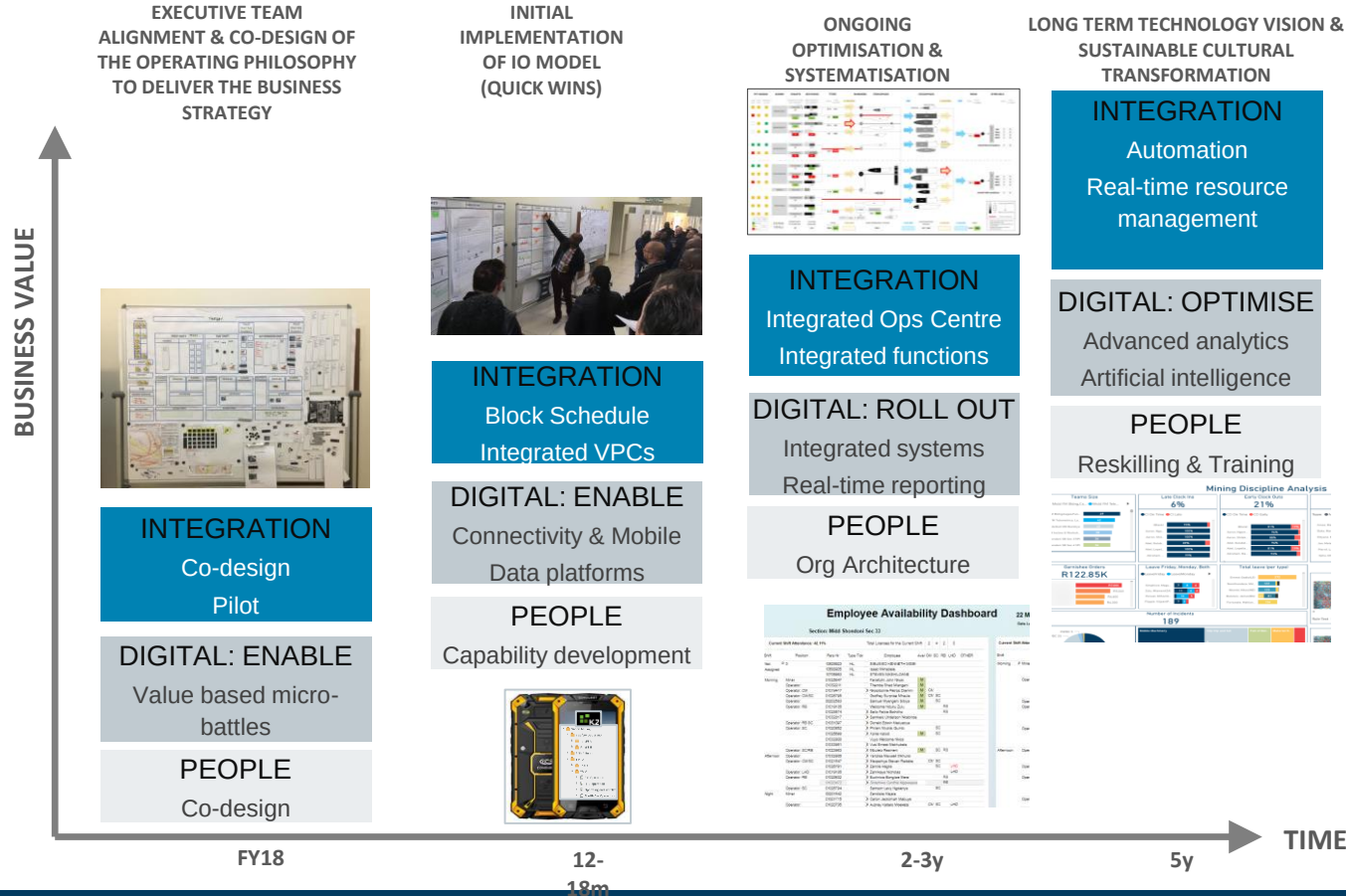


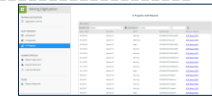
Siyenza Key Strategies by Time Horizon

"A revered mining company delivering sustainable value"

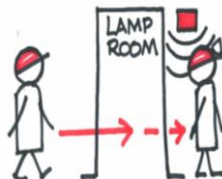


Roadmap Integration and Digital indicating broad themes



Workstream	Status	Value
1 Connected Section Conrad Koortzen	- Sect33 connected and devices enabled for miner and artisan S41 installation scheduled 23 June, S34 scheduled for July '19 - Upgraded all section caplamps at Shondoni	- Avg of 300 calls/month made +800min faster response time per month - Enabled remote reset functionality (11KV) - Removed cable between gate end box and transformer Faster Connection after belt extensions   Sect41 inside MCU Sect33 MCU
2 Digital Forms Danelle Roos	Shift report: Final parallel system run in S33 before paper is stopped - Digital Fireman's report testing in progress (S33) - Native (on device) app being evaluated for offline capabilities. Health and safety MVP completed	- Report simplification - Offline capability testing and learnings - Device SOP established - Improved data integrity   Device/Digital form Digital generated Shift reports
3 Resource Allocation Eric Sithole	Thubelisha screens installation in progress - Stonework attendance dashboard views completed - Shaft clearance in testing phase, integration actions to continue - Underground portal installed - SCS and SMCW dashboards phase 1 completed - Soft barrier design in progress - Flameproof touch screen delivered	- Equipment and people tracking enable through shaft clearance and connected section solution integration 12500 tons direct benefit through relocations - Improved red ticket status by - Reduced invalid clocks (95->99% accuracy)   Underground portal Equipment & people tracking
4 Proactive behavior management	- Delayed due the data platform reliability issues and solution specific challenges - Technical review of solution completed, solution changes required to enable drill down - Visualisation report development parked until July'19	- Integration of data sources - Testing platform feasibility - Internal upskilling  PBM power BI dashboard out of TeraData
5 Siyenza visualization Efa N and Tumelo Koko	- DMAIC report in validation phase - Productivity view in progress Exco VPC quality view completed - Production KPI views in validation phase - Overtime reporting solution in progress	- Integrating data sources - Automating reporting admin load (40hours/week) - Enable data governance process   VPC navigation page Fines out of RTP
6 Stakeholder engagement	- Various level engagement through scheduled meeting structures - Stakeholder involvement with all solution transitioning to end users Digital showcase on 6 June 2019 was very well received and attended	  

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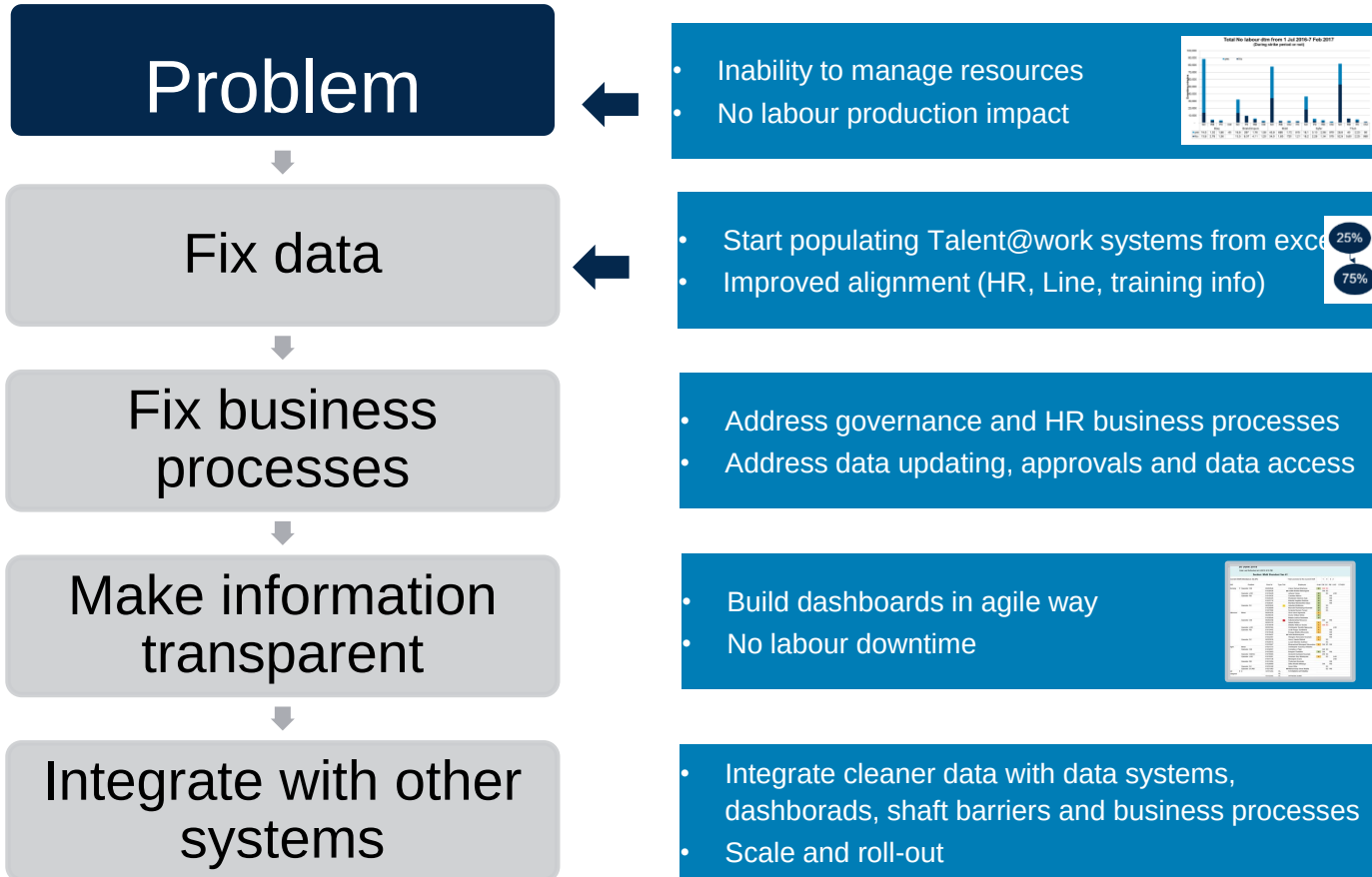
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Shaft Clearance and Attendance Dashboard Integration



Employee Availability Dashboard

Section: Midd Shondoni 33

Data Last Refreshed at: 4/3/19 2:16 PM

Current Shift Attendance: 80.00%

Total Licenses for the Current Shift

2

4

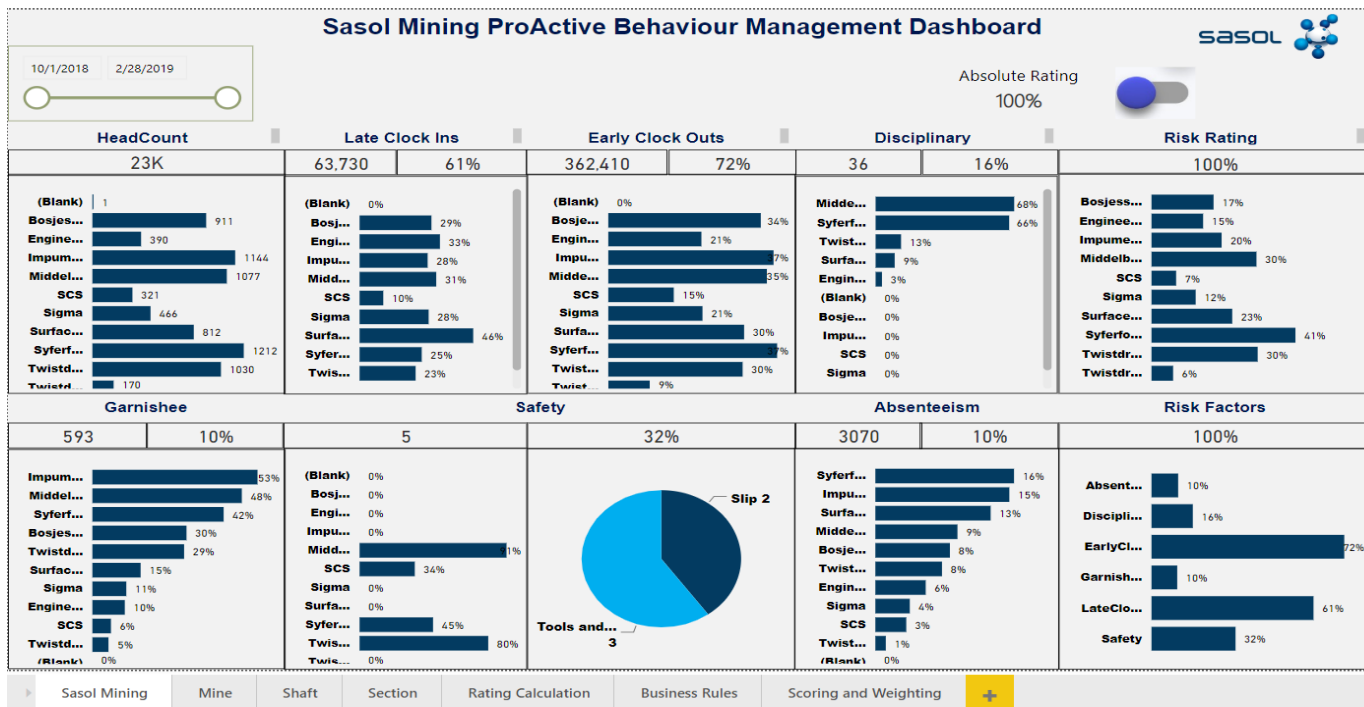
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3

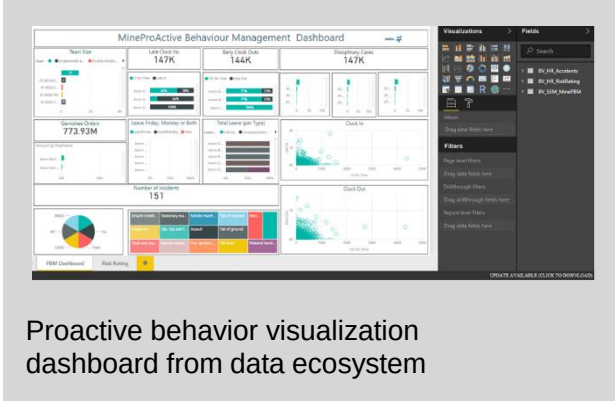
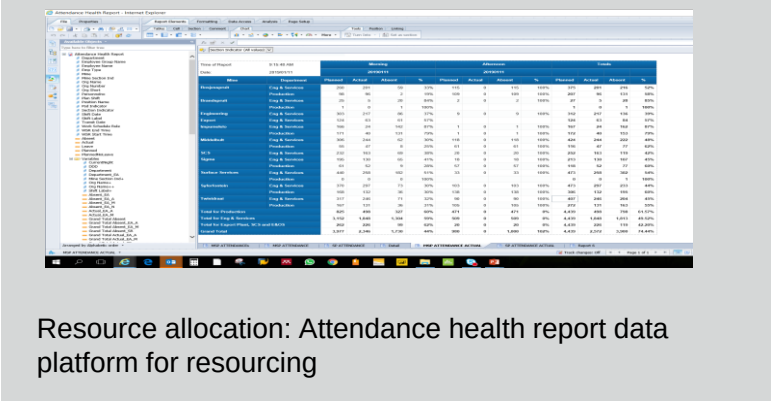
Shift Name	Position	Pers Nr	Type	Tick	Employee	Avail	CM	SC	RB	LHD	OTHER
#	P 0	10533604	HL		Ayanda Rasmeni						
		10625923	HL		SIBUSISO KENNETH MSIBI						
		10688905	HL		Isaac Mkhabele						
		10706963	HL		STEVEN MASHILOANE						
		10739678	HL		SIBUSISO MBILI						
Morning	Miner	01025847			Fanafuthi John Nkosi						
	Operator: CM	01019417			Nkosibonile Petros Dlamini		CM				
	Operator: CM/SC	01026795			Godfrey Surprise Mhaule		CM	SC			RR102 12.00 4/3
	Operator: LHD	01032211			Themba Shad Mlangeni	M		SC		LHD	SB 7:00 4/4
	Operator: RB	01019136			Welcome Nduku Zulu	M			RB		37 8.50 4/3
		01028574			Sello Feikie Bothitho	M			RB		
		01032817			Samkelo Underson Nkabinde				RB		33 9:00 4/3
	Operator: RB/SC	01023983			Mbulelo Rasmeni	M		SC	RB		
	Operator: SC	00202583			Samuel Myengeni Sibiya	M		SC			
		01020852			Philani Mxolisi Gumbi			SC			
		01025698			Xolile Kalodi	M					
		01032908			Vuyo Welcome Nkosi	M	CM				
		01033951			Vusi Ernest Makhubela		CM				
		01037137			Malesela Phillip Lebelo			SC			
	Operator: SC/RB	01031097			Donald Edwin Macuacua	M	CM	SC	RB		
	Miner	01017996			Michael Shabangu	M					
	Operator: CM/SC	01026791			Zamile Hagile		CM	SC			
	Operator: LHD	01019186			Zamikaya Nicholas	M				LHD	



- Equipment and people tracking enable through shaft clearance and connected section solution integration
- 12500 tons direct benefit through relocations
- Improved red ticket status by 4% at pilot site
- Reduced invalid clocks (95->99% accuracy) reduce admin load on error message clearances
- Real time data enabling better decision making, reporting and alignment
- Improved employee payment alignment (underpayment of multi-skilled workers and overpaying general workers)



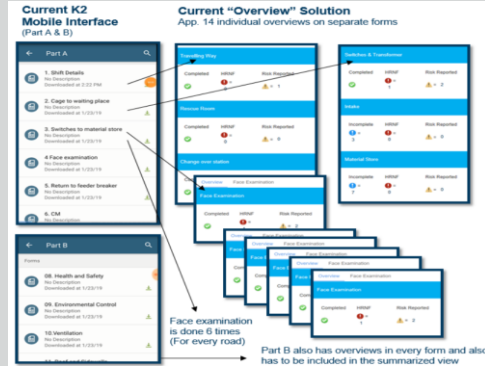
Micro battles: artefacts



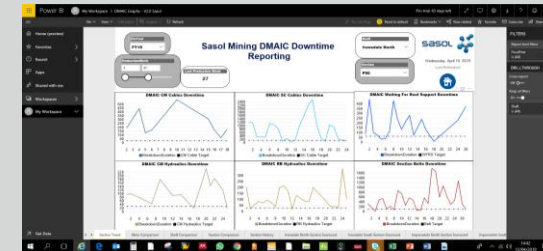
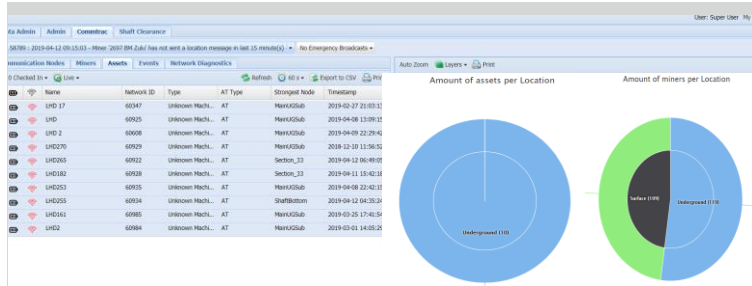
Micro battles: artefacts



Digital forms:
Digital health and safety declaration with multiple input forms that guide the business process



Underground portal being tested in section (Portal enables integrated system view, equipment status, leave capturing, pay slip viewing, attendance visibility)



Siyenza visibility: DMAIC graphs being automated out of Teradata platform to reduce admin load

Underground Portal Cont.

