IMMERSIVE TECHNOLOGIES

EXPECT RESULTS

Operator Performance Analytics

Asia Region

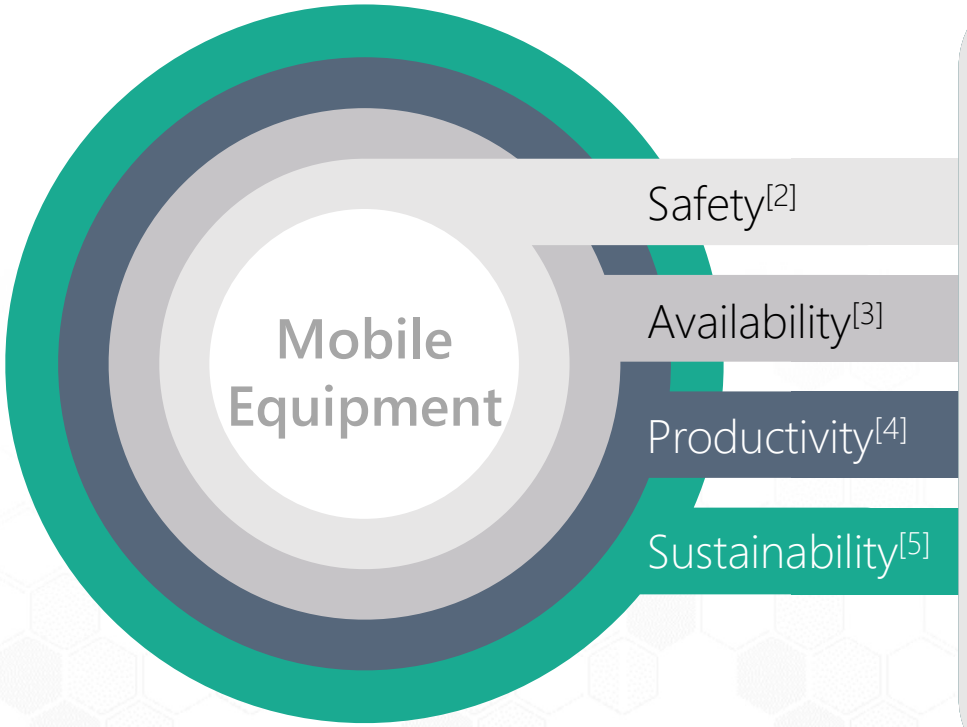
December 2023

OPERATOR PERFORMANCE ANALYTICS

30 YEARS 1993-2023

CORE PERFORMANCE CHALLENGES REMAIN

INDUSTRY PERFORMANCE CHALLENGES



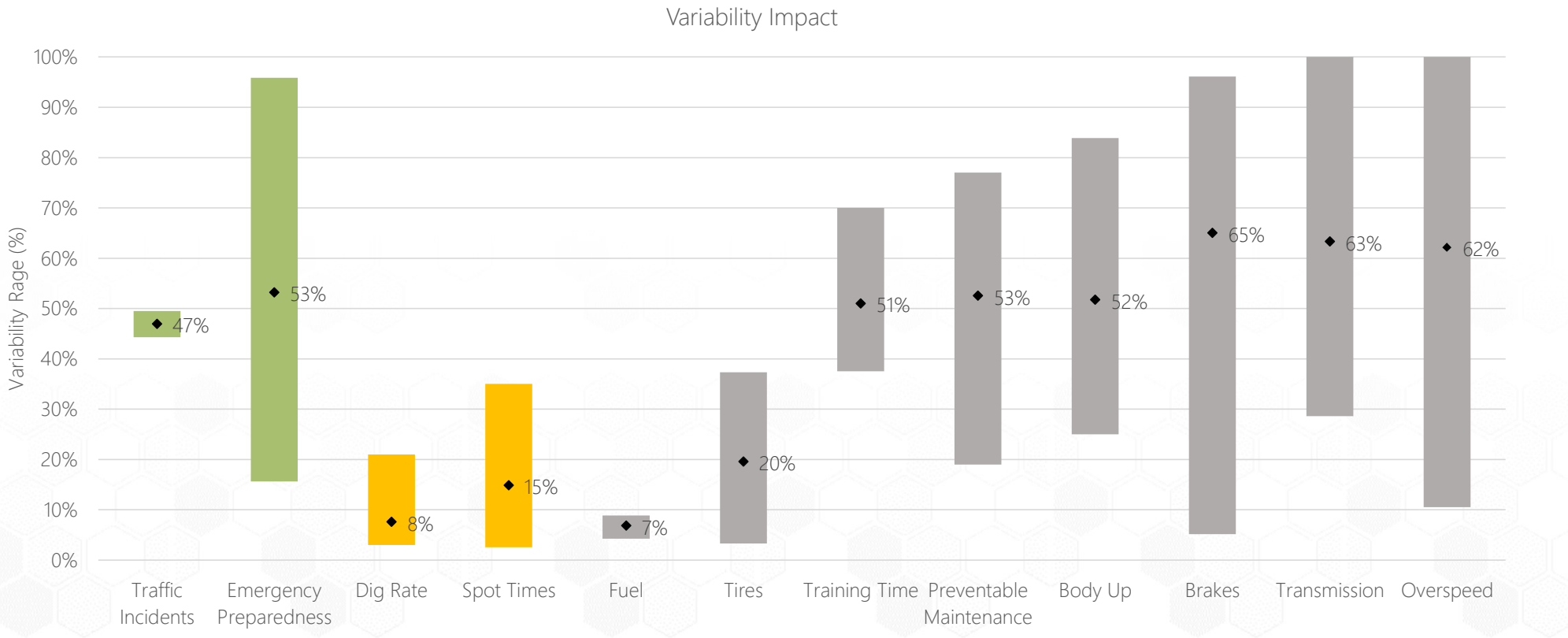
Safety[2]

- In 2020 there was a **17% increase in incidents** that resulted in a fatality – despite a 2% reduction in work hours.
- **Mobile equipment is the second highest risk to fatality**, after Fall of ground.

[1] Training and education activity in the minerals sector. VOCED (2013).
[2] Benchmarking 2020 safety data: progress of ICMM members. ICMM (2020).
[3] Has global mining productivity reversed course? McKinsey & Company (2020).
[4] Global Mining Outlook, KPMG (2022).
[5] Real Results Catalogue, Immersive Technologies (2022).

A SIGNIFICANT PROBLEM!

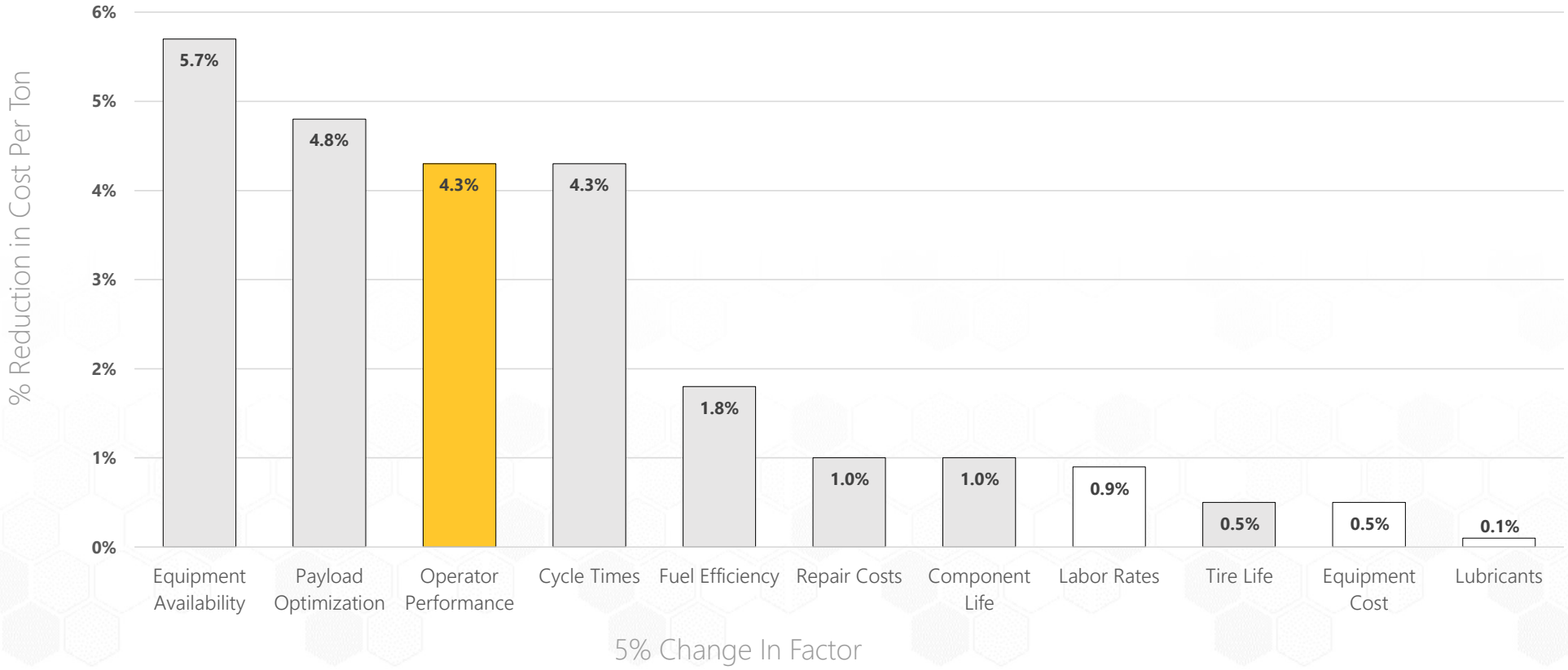
WORKFORCE VARIABILITY



IMPACTS OF OPERATOR PERFORMANCE (EFFICIENCY)

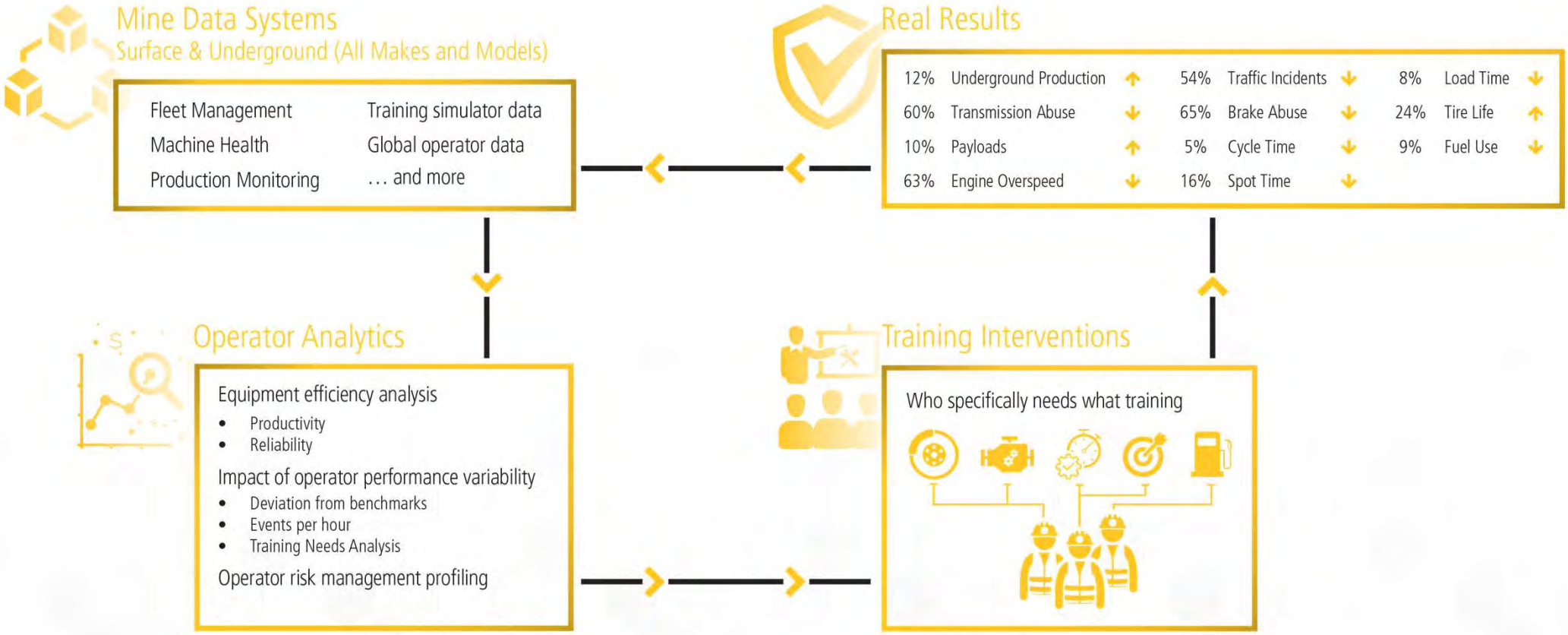
3RD BEST PERFORMANCE LEVER

Major OEM Equipment Investment Analysis Project[1]



[1] Impact of Mining Condition on Mechanized Mining Efficiency. Callow D.J. (2006)

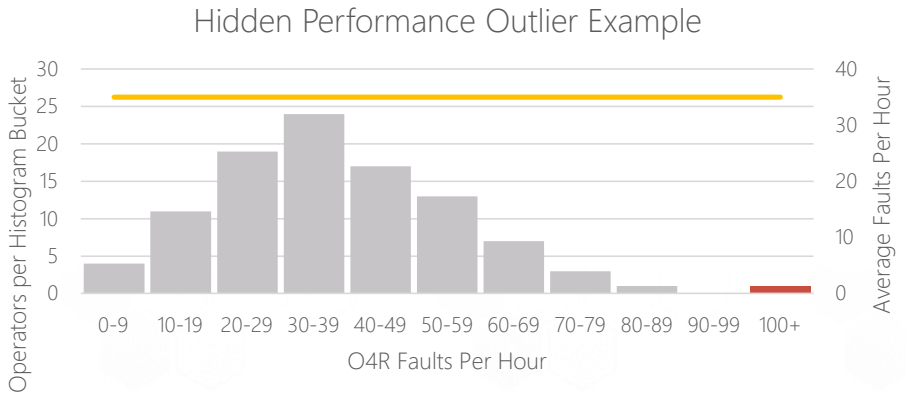
PERFORMANCE IMPROVEMENT CYCLE

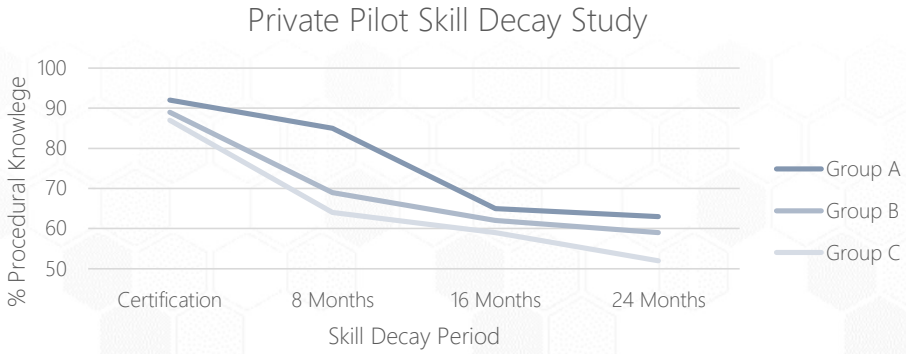


POWERFUL, BUT NOT OPTIMAL

TRADITIONAL CI CHALLENGES

- Operations typically focus on mine, or shift level performance allowing **outliers with disproportionate impact to go undetected**.
- Despite **safety being the top priority**, projects typically focus on Production and Availability because it is easier to measure ROI.
- Projects typically have a fixed scope - however individual operators have **unique skills gaps**.
- Projects are often facilitated by skilled Immersive Advisers. However, analysis expertise is not retained by the site – **limiting sustainability.**
- If not run continuously, **annualized benefits will not be realized due to skills decay.**



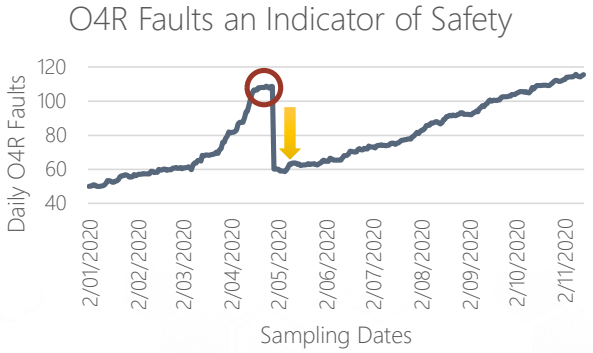


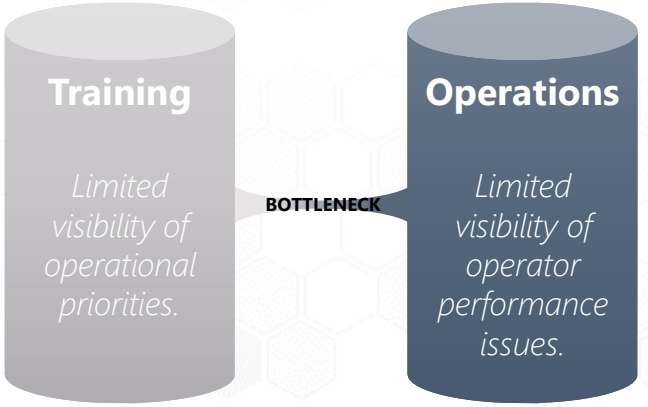
[1] Private pilot flight skill retention 8, 16, and 24 months following certification. Childs, JM, Spears, WD., & Prophet, WW. (1983).
[2] Flight-skill decay and recurrent training. *Perceptual and motor skills*. Childs, JM, & Spears, WD. (1986).

HIDDEN IN PLAIN SIGHT

SAFETY OUTLIERS

- In the months leading up to a **fatal incident**, near misses (i.e. Overspeed & O4R faults) typically accelerate in monitoring systems.
- Immediately following an incident, near misses plummet due to **interventions**, but slowly creep up again over time.
- Despite having monitoring systems and training simulators:
  - The **lack of continuous analysis** allows the indicators to go unnoticed.
  - The lack of focus on individual operators allows **outliers to not be identified**.
  - The **silos between training and operations** allow problems to go unactioned.
- The misalignment between people, process, and technology can be fatal.

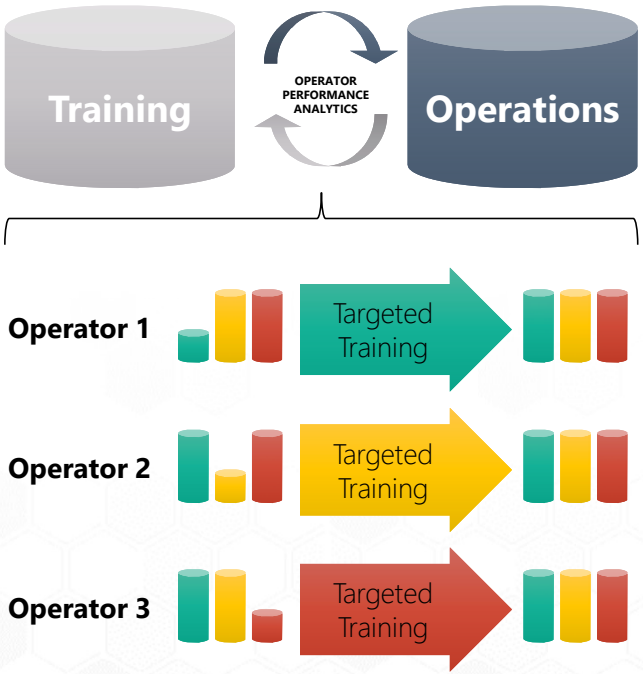




PROACTIVELY IDENTIFYING AND CORRECTING OUTLIERS

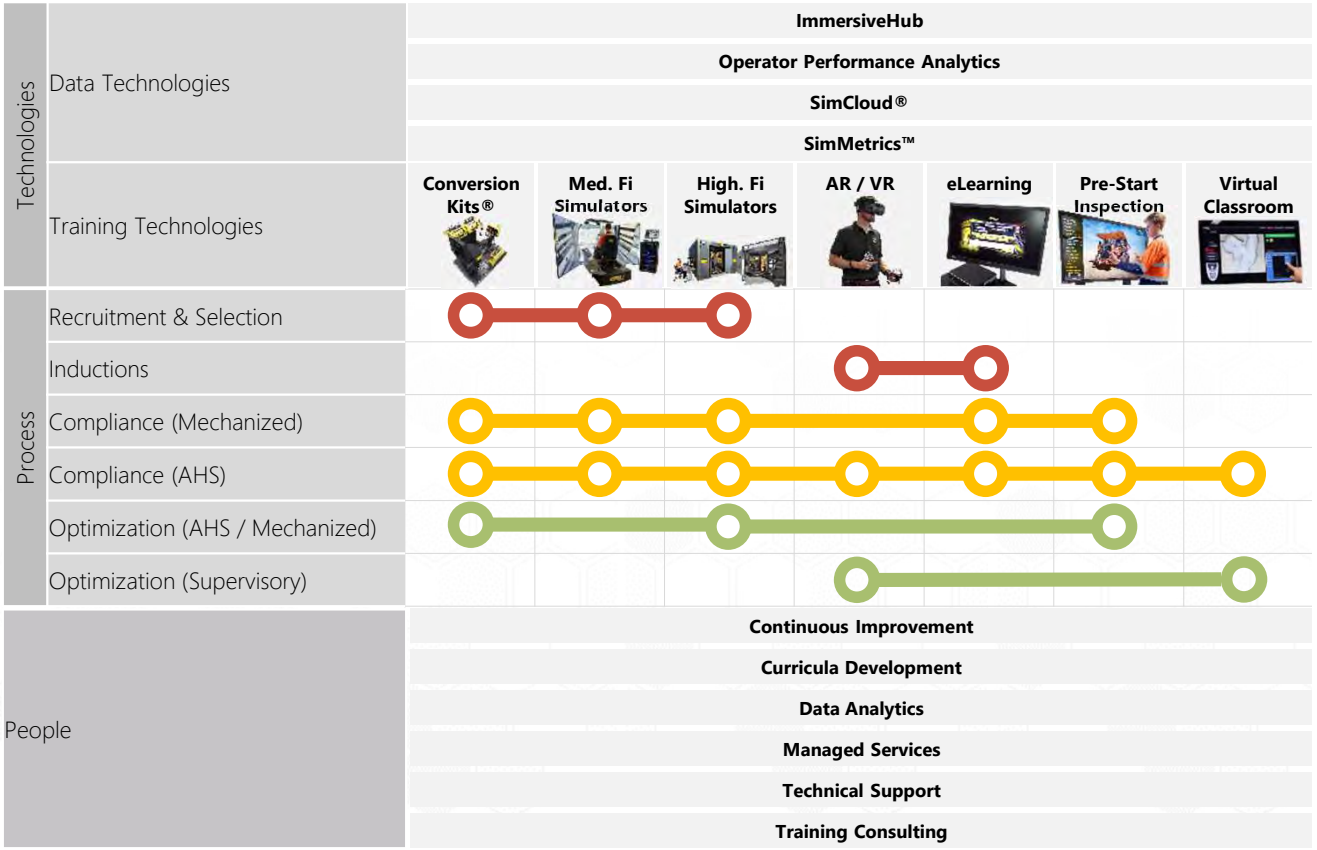
OPERATOR PERFORMANCE ANALYTICS

- Continuously analyzes FMS, EHM and Simulation data - **identifying operator risk, optimization and career development opportunities from leading indicators**.
- **Automatically identifies a prioritized list of operators for training** and recommends individual targeted projects.
- **Automatically identifies top performers** for career progression opportunities or better rewards.
- **Automatically assesses training effectiveness** following training.
- Permits detailed operator variability **analysis against KPIs**.
- **Prevents unnecessary training**, lost production, and equipment downtime.
- Reduces the effort for **onsite analysis skills, and capacity.**
- **Maximizes agility** of existing training resources.



FIT FOR PURPOSE AUTOMATED ANALYTICS SOLUTION

PEOPLE, PROCESS & TECHNOLOGIES



OPERATOR PERFORMANCE ANALYTICS

Beyond Green Operator and Refresher training, identify the **right people to train on the right things at the right time** in a **continual** manner in a **consistent** manner without manual effort from expert data analysts. This helps operators to perform at their natural best.

Measure the **effectiveness** of your training and continually improve to get better real results.

Efficient training to reduce lost production time and equipment downtime (**targeted training** based on individual needs)

Training Advisor support to build curriculum based on insights gained from OPA

AUTOMATED ANALYSIS

TRAINING AND PRODUCTION DATA ANALYSIS

OPERATOR PERFORMANCE ANALYTICS

Continual Analytics of Operational and Training data

Enables Dynamic Training Approach by showing actionable intelligence to align training programs with site issues (driving effective targeted training interventions to reduce operator variance)

SimCloud®

What it is…

- ✓ **A consistent way to identify who needs training on what and gain insights on real risks, gaps and opportunities by combining the production and training data (continual improvement of operator performance)**
- ✓ **Effective use of simulator equipment by providing targeted training to operators using insights gained from OPA to get real results quickly.**
- ✓ **Measure and track ROI from training investment.**

EXPECT RESULTS

What it is not…

- × **Tracking productivity of site (tonnage)**
- × **Tracking equipment predictive maintenance**
- × **Tracking or scheduling operators' rosters**
- × **Tracking or scheduling equipment maintenance schedules**

Human Performance & Training Effectiveness

Machine Performance & Tonnage moved

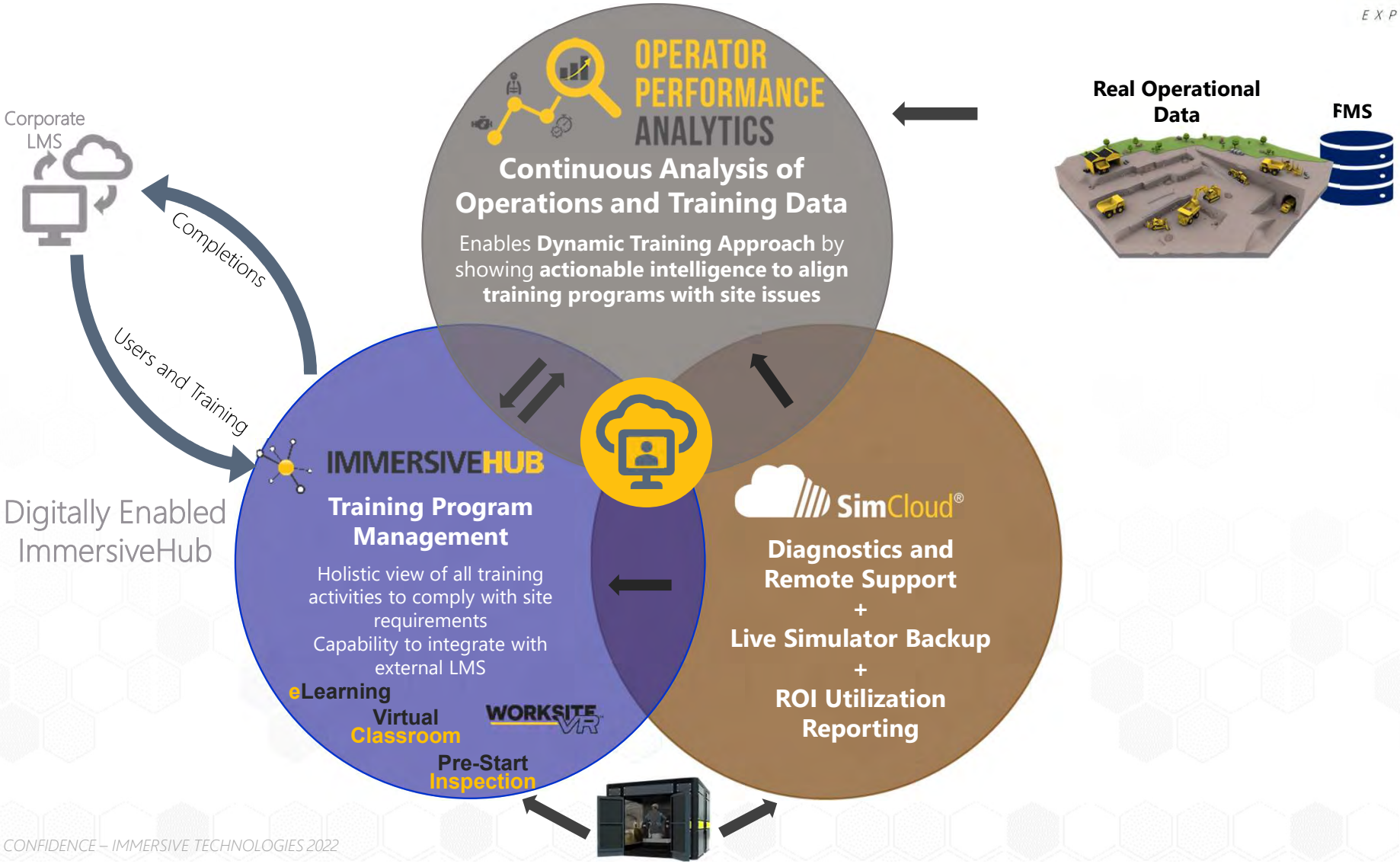
IMMERSIVE TECHNOLOGIES

LONG TERM ROADMAP

CLOUD, DATA AND ANALYTICS

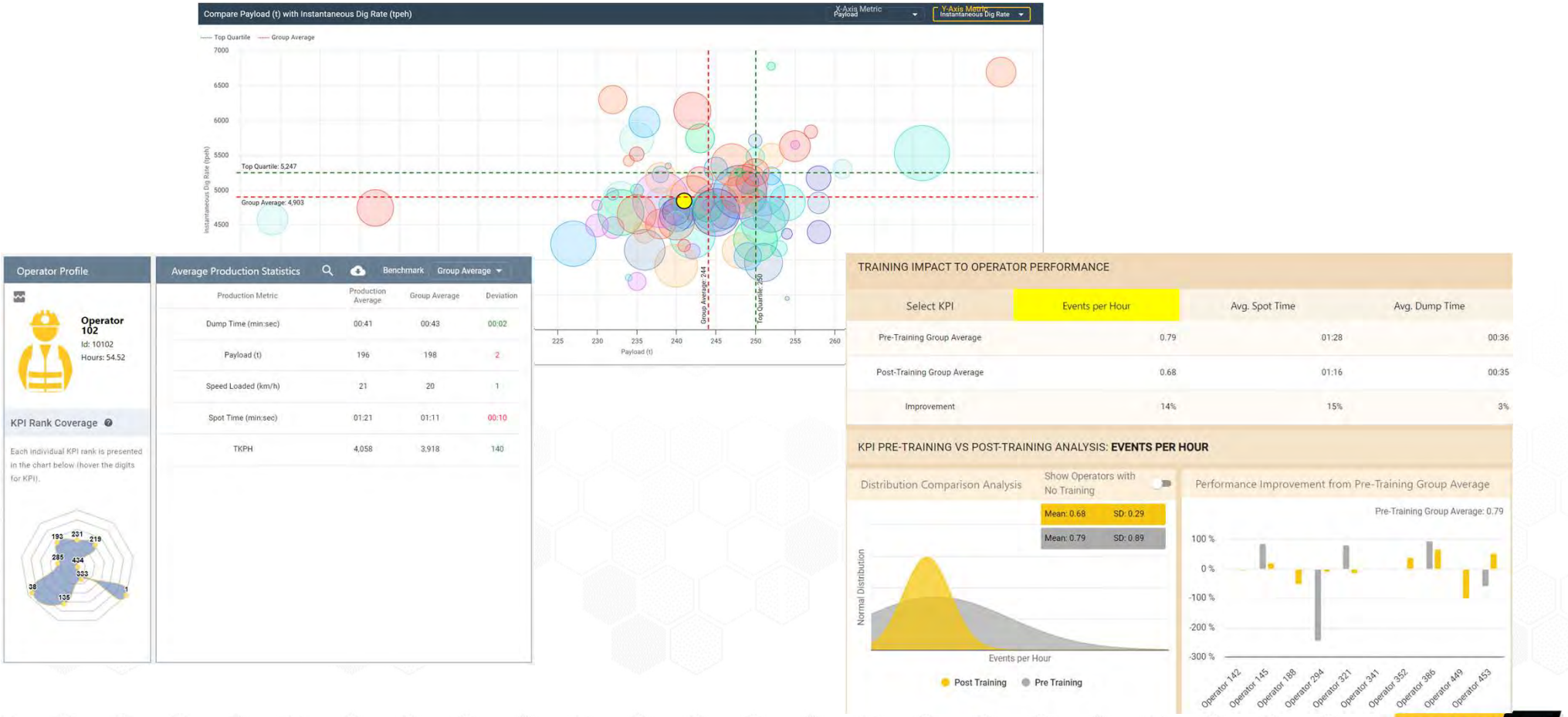
IMMERSIVE TECHNOLOGIES

EXPECT RESULTS



DEMO

OPA AT WORK



EXPECT RESULTS

IMMERSIVE TECHNOLOGIES

EXPECT RESULTS

Questions?

Please ask now or in the chat window.

30 YEARS 1993-2023

Contact Us!

Thank you

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