IMMERSIVE TECHNOLOGIES

Predicting Operational Improvements with Training Competency Data

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Industry Issues

Industry Challenges Addressed with Training

Source: Top Challenges for Global Mining Companies (Ventryx 2012)

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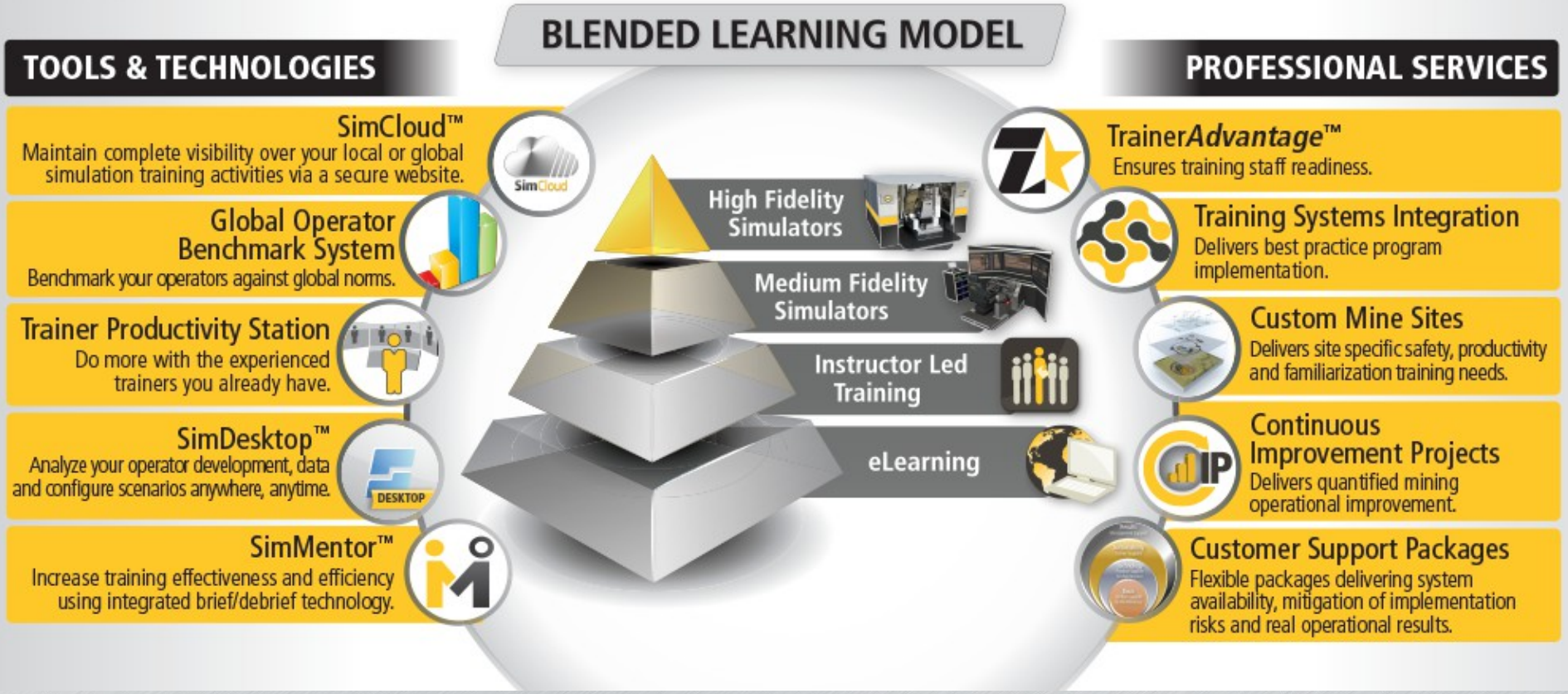
Blended Learning Model

Operator Training Best Practices

Supporting our Customers with the Mining Industry's only **Complete** and **Scalable** Solution



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OEM Relationships

ORIGINAL EQUIPMENT MANUFACTURER
EXCLUSIVE ALLIANCE
SUPPORTED & RECOMMENDED PRODUCT

CATERPILLAR

HITACHI
Hitachi Construction Machinery

KOMATSU

LIEBHERR

P&H MinePro SERVICES

- Improves correlation between simulation and real world operator performance data.
- Simulator accuracy drives skills transfer:
  - Training skills increases as the simulator accuracy increases.
  - Inaccurate simulation reinforces negative or unsafe training behaviors.
  - OEM controls and systems behave identically.
  - Simulation and dispatch use same measures.

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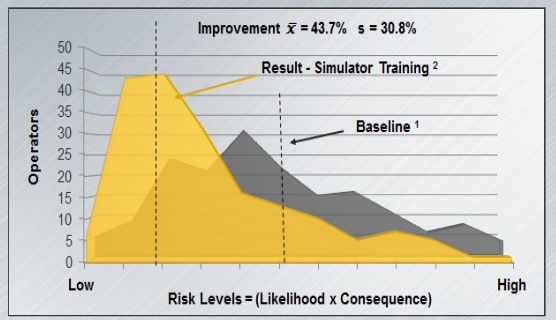
3 Key Deliverables

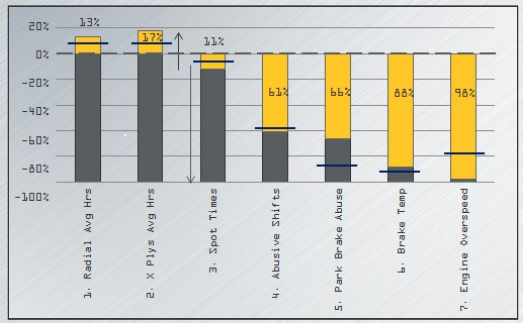
Modern Workforce Development Approach

Manage Workforce Risk



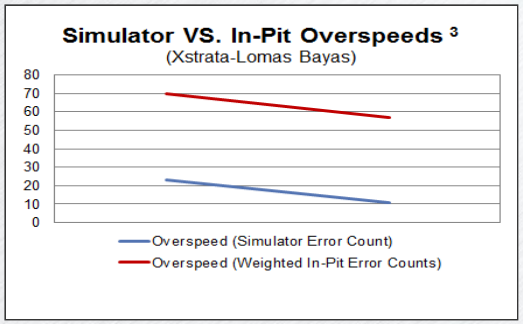
- Quantify, Assess, Remove

Minimize Operational Cost



- Reduce Operator Cost Impact
- Efficiently Shorten Time For Operator Readiness

Production Optimization



Drive Continuous Improvement

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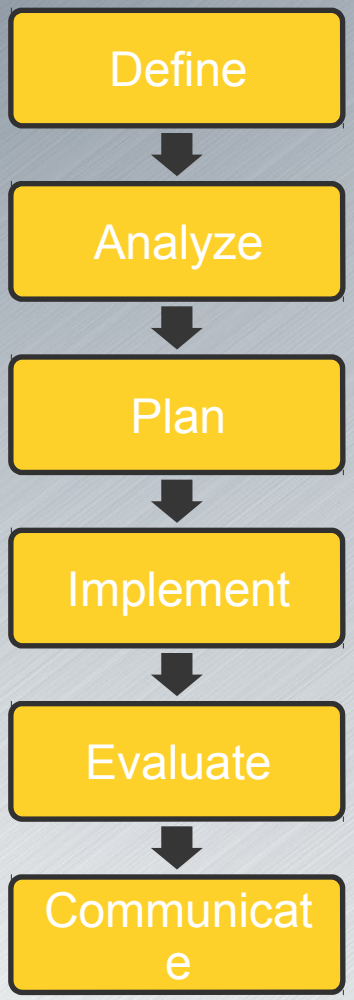
Six Sigma Approach

Continuous Improvement Project Process



Results Based

- Driven by operational performance gaps (e.g. cost, risks).

Standardization

- Consistency in standards of performance metrics & training processes.

Embedded

- Management's support ensures the results are sustainable.

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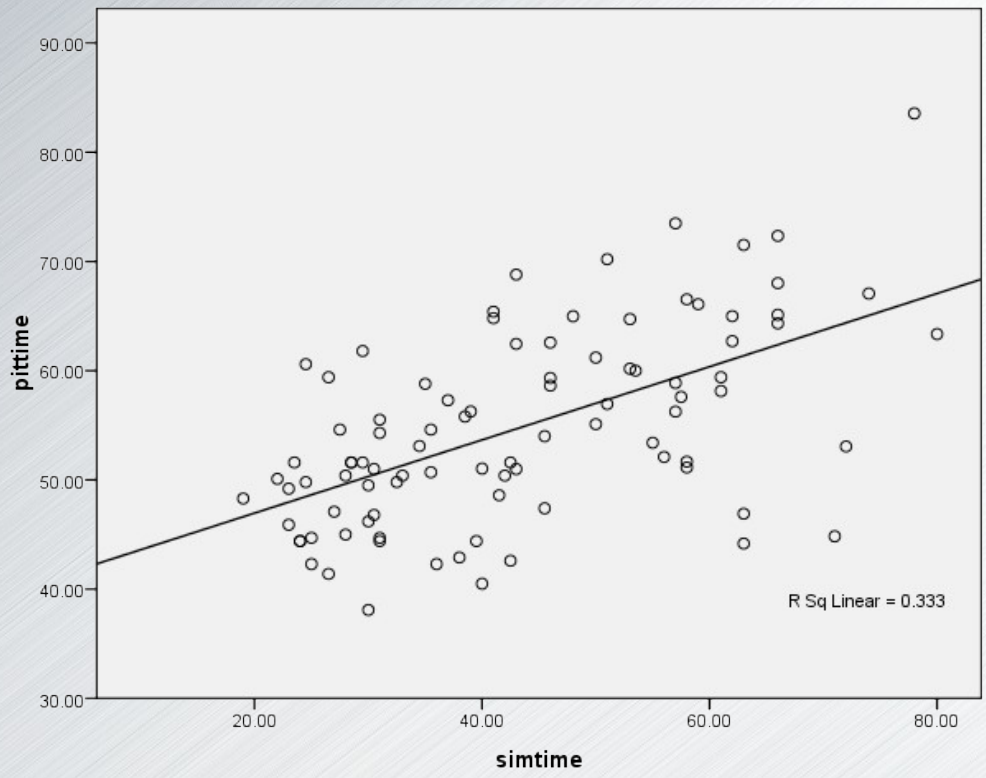
CIP

Direct Correlation

Correlation of Simulator & In-pit Spot Time

- Simulator training data used to define expected in-pit improvements.
- Correlated with the participants in-pit spot time r=.577.
- The results from simulator based training did have a significant impact on dispatch spot times



Source: A sample of 91 simulator spot time assessments correlated with the participant's in-pit spot times.

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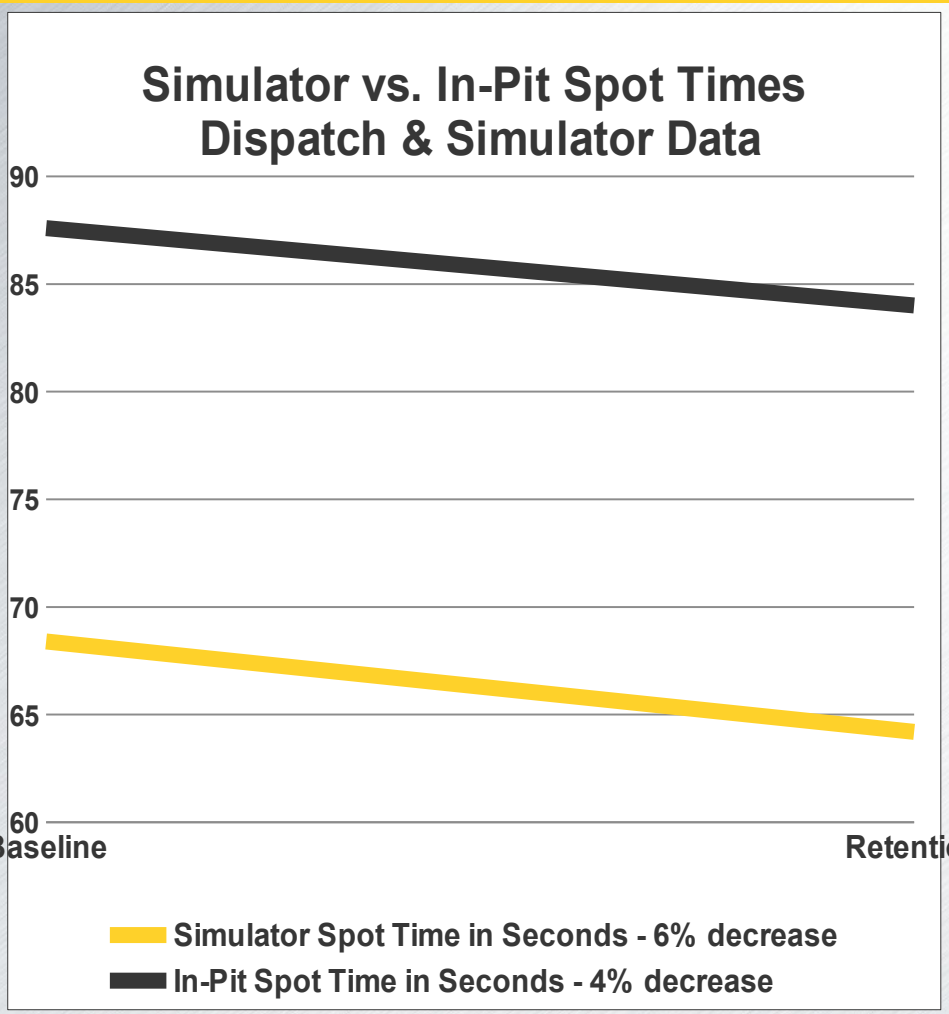
Skills Transfer to the Field

Correlation of Performance Improvement

- Results consistently reproduced at over 20 operations.
- Brings focus on behaviours impacting the bottom line.
- Assures better real world operators, not just better simulator operators.



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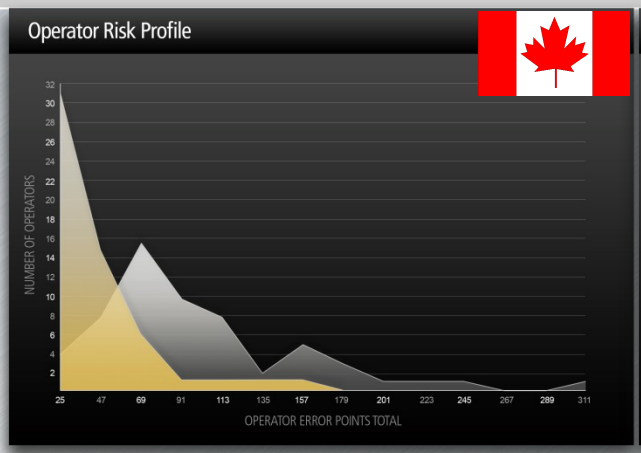
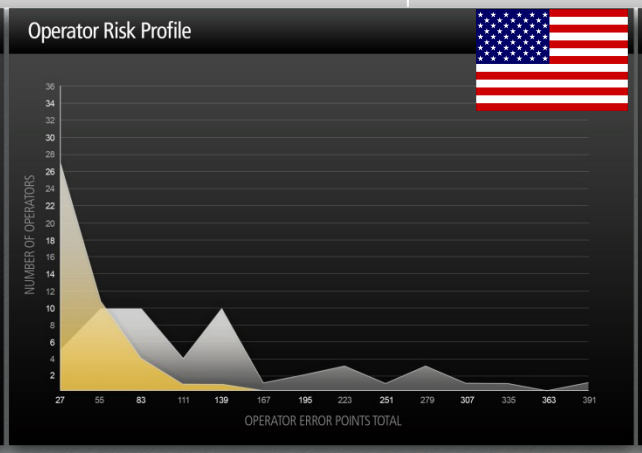
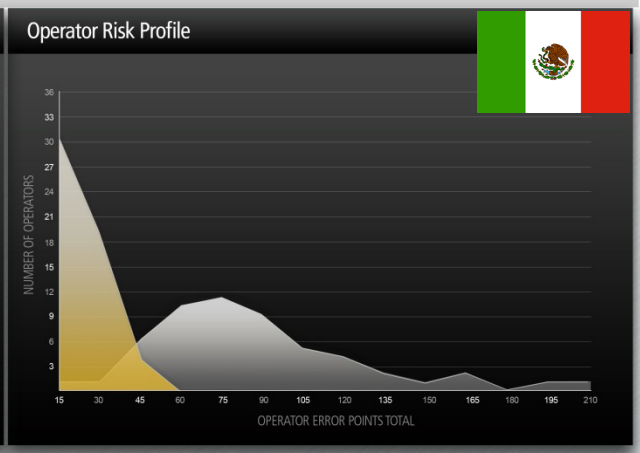
Substantial Improvements!

Average CIP Results Using In-Pit Data

Training Objective	In-Pit Improvement*
Spot Time	14.2%
Abusive Shifting	69.75%
Service Brake	64%
Park Brake	61.75%
Wheel Motor Overs-speed	54.5%
Body Up Ground Speed	10.58%
Tire Replacements	25%







*Average results from over 20 CI Projects on OHT trucks

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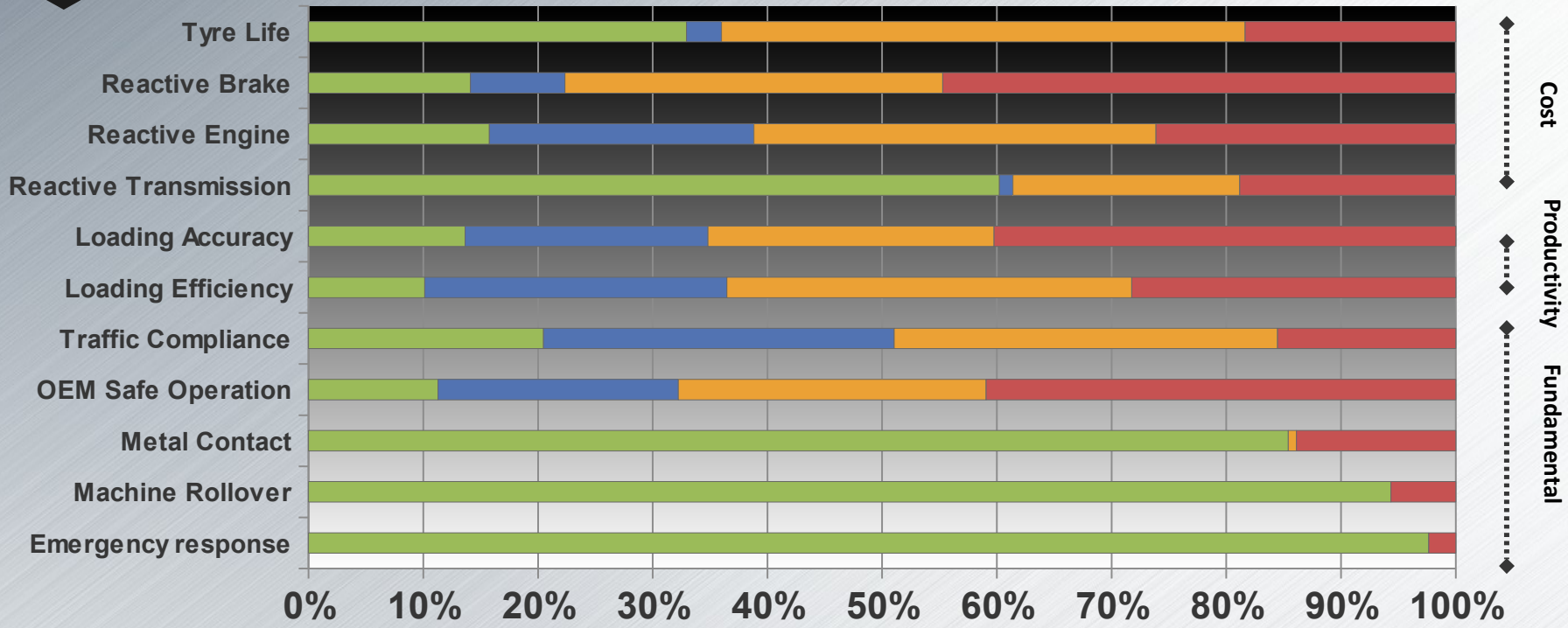
Issue Identification

Global Operator Metrics



1. Review performance by categories.
2. Managing Larger Workforces across different mines.
3. Compare performance across parent company, commodities, or regions.

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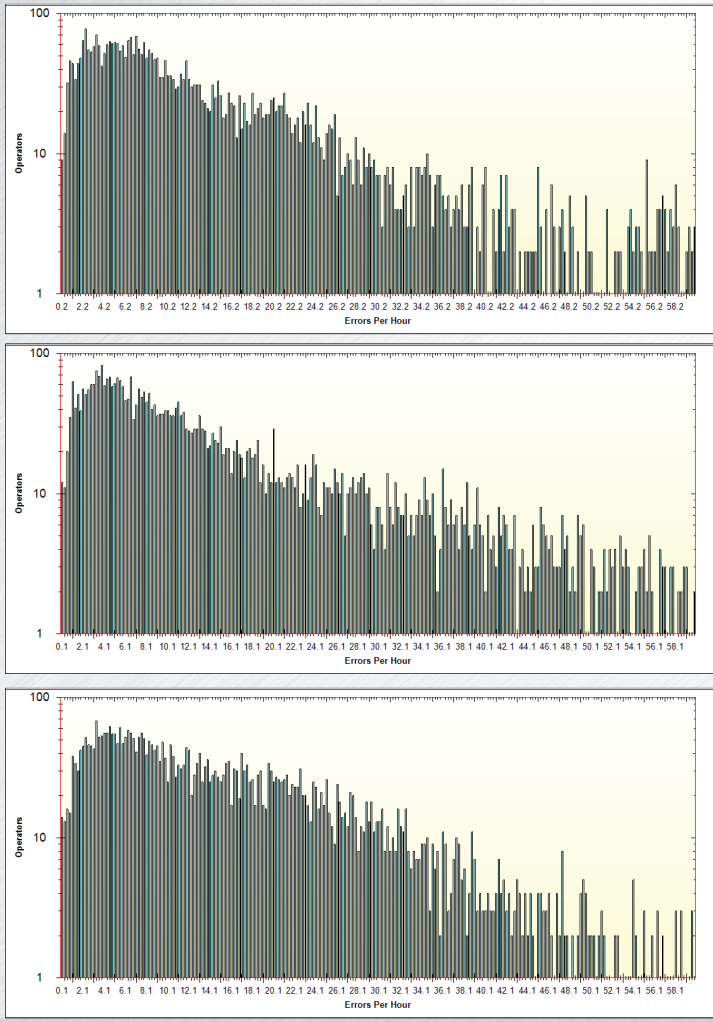
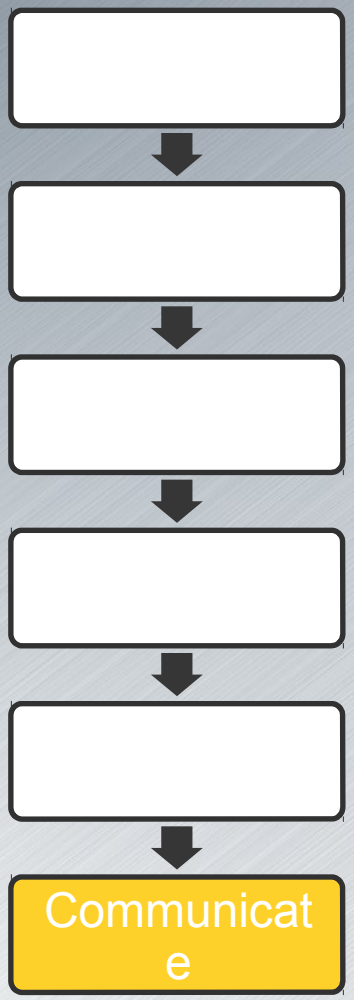
Utilizing Frequency Distribution

- Utilize additional tools to identify performance deficiencies where cost savings can be recognized.
- Determine operator competence benchmarks across defined performance categories.
- Accurately assess risk against relevant global performance measures.



Communicate Results

Project Results are Delivered



Formal reports delivered to entire mine site & corporate sponsor:

- Business process improvements recognized.
- Efficiencies introduced via project efforts.
- Operational improvements & risk reduction.
- Performance gap analysis for next project initiative.

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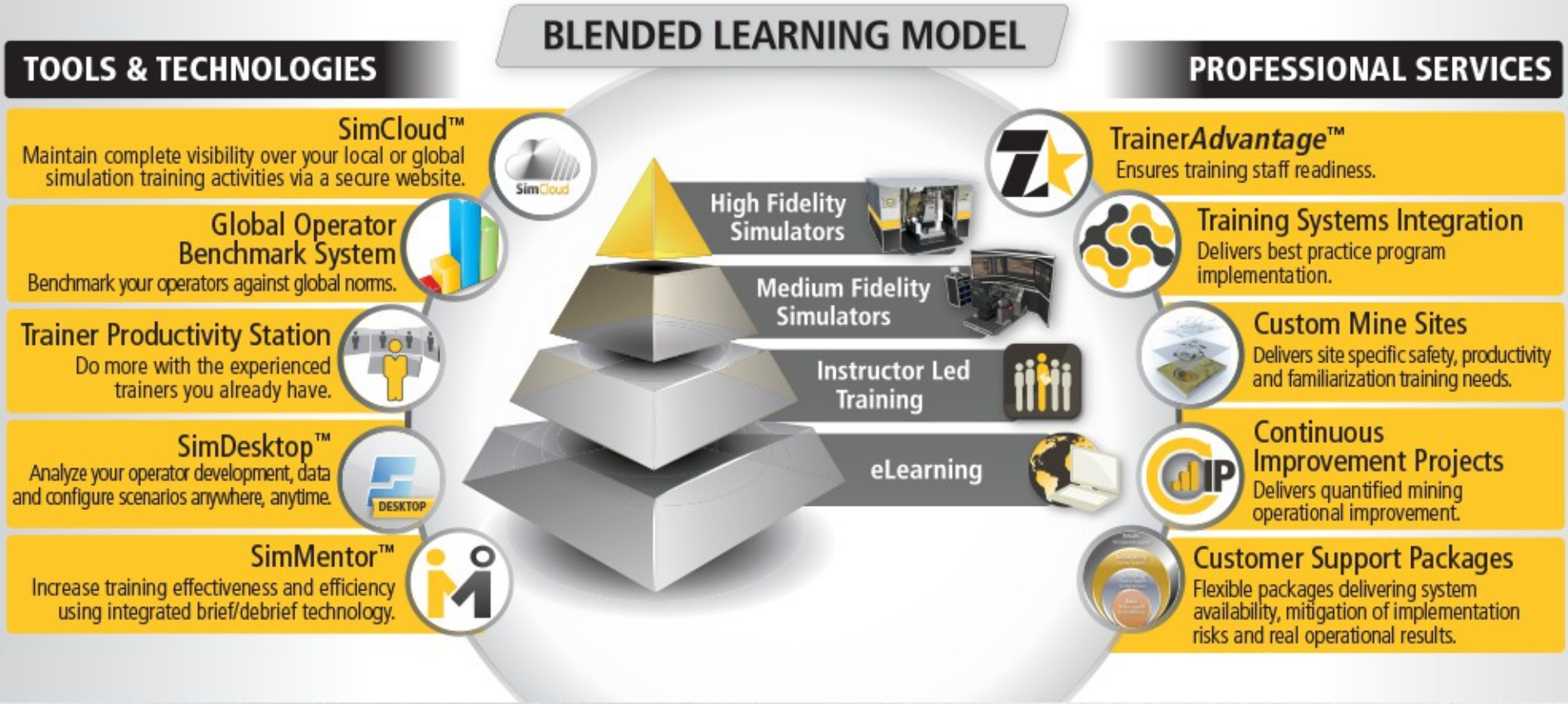
Questions?



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