Safety Technology Assessment

Part 1 of 2 · Define the problem before the product

Operation / site: _____ Assessed by: _____

Position: _____ Date: _____

Technology under review: _____ Vendor: _____

1. THE PROBLEM, STATED WITHOUT NAMING A PRODUCT

Hazard or exposure this is intended to address:

Incidents, near misses or precursors that evidence it:

What we have already tried, and why it was not enough:

If you cannot fill this in without naming the product, stop. Technology bought because it impressed at a trade show and then fitted to a hazard afterwards is the most common way these projects fail.

2. HAVE YOU EXHAUSTED THE HIGHER CONTROLS FIRST?

REQUIREMENT	WHAT GOOD LOOKS LIKE	Y / N / N-A	EVIDENCE OR GAP
Elimination considered	Can the exposure be removed — remote operation, changed sequence, task removed entirely?		
Substitution considered	A less hazardous method, material or equipment.		
Engineering control considered	Physical separation, barriers, interlocks, ventilation.		
Why technology is the right layer	Recorded reasoning for adding detection or monitoring rather than removing the hazard.		

Most safety technology sits at the detection and warning layer, which is administrative in effect — it tells a person to act. That is a legitimate layer, but it is not a substitute for a control that works whether or not anyone reacts.

3. TECHNOLOGY CATEGORIES AND WHAT EACH IS ACTUALLY GOOD AT

CATEGORY	ADDRESSES	WATCH FOR
Proximity detection / collision avoidance	Vehicle-to-pedestrian and vehicle-to-vehicle interaction underground and on surface.	Alarm fatigue from false positives; operators disabling or ignoring it.
Fatigue and distraction monitoring	Operator alertness on haul and long-cycle equipment.	Worker acceptance; how the data is used in performance management.
Environmental and gas monitoring	Atmosphere, ventilation, ground movement, seismic.	Calibration discipline; who is watching the dashboard at 3am.
Automation and tele-remote	Removing people from the exposure entirely — the only category that eliminates.	New hazards at the human-machine boundary; capital and skills.
Wearables and tracking	Location for emergency response, exposure monitoring, lone worker.	Privacy, consent, and scope creep into productivity monitoring.
Data platforms and analytics	Aggregating leading indicators across systems.	Dashboards nobody acts on; integration cost underestimated.

4. WORKER CONSULTATION AND PRIVACY — DECIDE THIS BEFORE THE PILOT

REQUIREMENT	WHAT GOOD LOOKS LIKE	Y / N / N-A	EVIDENCE OR GAP
Workers consulted early	JHSC and affected workers involved before selection, not informed after.		
Purpose limited and written	Exactly what the system monitors, and what it will never be used for.		
Performance management boundary	Written commitment on whether safety data can be used in discipline.		
Data ownership and retention	Who holds the data, where it lives, how long it is kept, who can access it.		
Privacy obligations reviewed	Applicable privacy legislation and any collective agreement provisions checked.		
Union engagement	Where applicable, engagement completed before deployment.		
Off-shift and personal use	Whether wearables track outside working hours, and the answer communicated.		

> **The fastest way to kill a safety technology programme is to use its data for discipline.** One instance is enough to teach the workforce that the system is surveillance, and adoption will not recover.

Scoring and Pilot Plan

Part 2 of 2 · Compare candidates on the same criteria

Operation / site: _____ Candidates compared: _____

Assessed by: _____ Date: _____

5. WEIGHTED SCORING MATRIX

Score each candidate 1–5 against every criterion, multiply by the weight, and total. Agree the weights before you see the scores.

CRITERION	WEIGHT	OPTION A	OPTION B	OPTION C
Risk reduction for the stated hazard	5			
Evidence it works in comparable operations	4			
Worker acceptance and usability	4			
False alarm rate and alarm management	4			
Reliability in this environment (dust, water, temperature, vibration)	4			
Integration with existing systems	3			
Maintenance and calibration burden	3			
Vendor support and Canadian presence	3			
Total cost of ownership over five years	3			
Regulatory alignment in our jurisdiction	3			
Privacy and data governance	3			
Training required and skills available	2			
Scalability across the operation	2			
Weighted total				

6. QUESTIONS TO PUT TO THE VENDOR IN WRITING

- [ ] What is the measured false positive rate in an operation like ours, and how was it measured?
- [ ] Name three Canadian operations running this at scale, and let us speak to them unaccompanied.
- [ ] What happens to the system when connectivity drops underground?
- [ ] What is the calibration and maintenance schedule, and who performs it?
- [ ] Who owns the data, where is it hosted, and can we export it if we leave?
- [ ] What is the total five-year cost including licensing, support, spares and replacement?
- [ ] What is the failure mode — does it fail safe, fail silent, or fail open?
- [ ] What proportion of your customers who piloted this went on to full deployment?

7. PILOT PLAN

REQUIREMENT	WHAT GOOD LOOKS LIKE	Y / N / N-A	EVIDENCE OR GAP
Defined scope	One area, one crew, one shift pattern — not the whole site.		
Baseline measured first	Pre-pilot data captured so improvement can be demonstrated.		
Success criteria agreed in advance	Written and signed before the pilot starts, including what would make you reject it.		
False alarm tracking	Every alarm logged and classified true or false.		
Worker feedback captured	Structured feedback from the crew using it, not just from supervisors.		
Defined pilot duration	Long enough to cover seasonal and shift variation.		
Go / no-go decision point	A date and a named decision-maker.		

SUCCESS CRITERION	BASELINE	TARGET	ACTUAL AT END OF PILOT

> Write down in advance what result would make you walk away. A pilot with no defined failure condition always succeeds, and that is how sites end up with systems nobody uses.

ASSESSED BY

DATE

DECISION APPROVED BY

DATE