

Psychosocial Control Theory — A Unified Model for Workplace Safety and Well-being

From invisible, abstract risks to concrete, auditable controls

This paper sets out the theoretical base. A companion paper, *From Psychological Conflict to Safety Signals*, demonstrates how these concepts are operationalised into measurable workplace safety systems."

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1. Executive Summary

Psychosocial risk is best understood as **loss of control originating from goal conflict in workers**. When people cannot act to keep their key perceptions—safety, fairness, competence—aligned with how things *should* be, chronic error signals emerge as stress, fatigue, or unsafe adaptation. **Perceptual Control Theory** explains this mechanism precisely: behaviour is the process of controlling perception through feedback loops that compare what is experienced to what is intended.

PCT provides both the **mechanism** and the **measurement frame** for psychosocial risk. Its workplace application—which we have termed **Psychosocial Control Theory (PsCT)**—models psychosocial hazards as disturbances to those feedback loops. When system goals and personal references clash ("work faster" vs "work safely"), control is lost, producing measurable distress and risk.

Echo operationalises this model at scale. Through brief voice check-ins, it detects early signs of goal conflict, quantifies perceived control, and produces ISO-45003-aligned evidence of live psychosocial risk management. Echo's check-in process has the added benefit of bringing goal conflicts into focus, giving workers the opportunity to self-resolve conflict. Designed around transparency, consent, and worker agency, Echo restores control instead of removing it.

By uniting wellbeing, safety, and performance under one testable mechanism of control, Psychosocial Control Theory transforms psychosocial risk from compliance reporting into a measurable system for maintaining human stability at work.

2. Perceptual Control Theory (PCT)

At the heart of Perceptual Control Theory is a simple claim: people act to control what they perceive. Behavior is the means of bringing perceptions into line with reference values — the internal standards of “how things should be” (Powers, 1973). When the world pushes a perception away from a reference, the person acts to reduce the error.

Mansell (2005) demonstrated how this framework offers a unifying account of distress and psychopathology. When two or more control systems are in conflict — for example, when a worker’s reference for “doing a job safely” clashes with “meeting unrealistic production quotas” — neither perception can be brought into line, generating chronic error signals experienced as stress, fatigue, or anxiety.

Further, PCT is hierarchical. Lower-level systems (posture, speech) serve higher-level ones (task completion, identity at work). Distress escalates when conflict arises high in the hierarchy and cannot be resolved. Reorganisation processes — essentially trial-and-error adjustments — then search for new ways to reduce error. Mansell and colleagues (Alsawy et al., 2014) argue this provides a universal mechanism, explaining multiple forms of psychological distress through the same underlying principle of blocked control.

For workplace application, this means psychosocial hazards can be understood not as isolated risk factors but as direct or indirect disturbances to ongoing control loops. Echo’s check-ins are designed to reveal when these loops are failing before the breakdown surfaces as incident, attrition, or compensation claim.

In Brief: Perceptual Control Theory is not abstract psychology; it is the physics of behaviour. It explains psychosocial harm mechanism precisely:

1. Perception is compared to the reference. The gap is “error.”
2. Action changes the world to cut error. That is behaviour.
3. Psychosocial hazards act as disturbances. They push perceptions away from references.
4. If actions can’t cut error—because goals clash (e.g., speed vs safety) or power/constraints block change—conflict persists.
5. Persistent error drives reorganization (trial-and-error changes), stress physiology, narrowed attention, and unstable performance.
6. Harm emerges as chronic conflict: fatigue, anxiety, withdrawal, mistakes, incidents.
7. Relief comes from restoring control: change inputs (workload, timing, support) or change references (priorities, role clarity).

PCT is one of the most rigorously modelled frameworks in behavioural science. It has been validated through computer simulations (Powers, 1973; Marken, 1988, 2021), laboratory tracking tasks, and its clinical use in **Method of Levels**, which has been widely researched.

PCT provides a mathematically grounded, experimentally testable explanation of human behaviour that bridges disciplines — from neuroscience to organisational systems. For risk and safety leaders, this matters because it converts **“psychosocial factors” from abstract culture issues into measurable control dynamics**: perception, feedback, reference, and error.

2.1 Basic elements of Perceptual Control Theory

In every living system — from a single cell to a skilled machine operator — stability depends on **control**. Control means acting on the environment to keep important perceptions — temperature, balance, fairness, safety — within acceptable limits, despite disturbances.

Perceptual Control Theory (PCT), first formalised by engineer-psychologist William T. Powers in *Behavior: The Control of Perception* (1973), explains how this happens. Powers extended the idea of **homeostasis** from biology — the body’s regulation of internal variables such as blood sugar and temperature — to the whole of human behaviour. Just as a thermostat keeps a room temperature “just right,” people continuously act to keep their **perceptions** “just right.”

When Goldilocks stirs her porridge until it feels neither too hot nor too cold, she is controlling a perception. When a rigger adjusts sling tension by feel, or a supervisor balances “get it done” with “do it safely,” each is maintaining an internal **reference value** — a sense of “how things should be.”

PCT defines behaviour not as a reaction to stimuli, but as **the process of controlling perception**. This makes PCT a foundational model for understanding why people act, adapt, and sometimes break down under strain.

2.1.1 Components of control

At the core of PCT is a **closed feedback loop**, operating continuously, not sequentially. Each loop has four main components:

Component	Function	Workplace example
Reference signal (goal)	Desired state of a perception — how the world <i>should</i> be.	“The scaffold feels stable.”
Perceptual signal (input function)	The brain’s representation of what is actually being sensed.	Feeling a slight sway underfoot.
Comparator	Detects the error — the difference between the perception and the reference.	“This doesn’t feel stable enough.”
Output function (action)	Generates action to reduce error by changing the environment.	Tightening couplers, rechecking base plates.

Actions affect the environment, which feeds back to the senses — closing the loop.

Disturbances (wind, noise, time pressure) can push the perception away from its reference. A well-functioning control system adjusts automatically to restore balance.

In effective organisations, this same loop is mirrored at scale: goals (references) are clear, feedback is accurate, and workers can act to reduce discrepancies between “what is” and “what should be.”

In failing systems, feedback is delayed or distorted, goals conflict, or people lack authority to act — creating **chronic error**. This is experienced as frustration, stress, or unsafe improvisation.

2.1.2 Levels of perception

PCT extends this single loop into a **hierarchy**. Lower levels manage immediate sensations; higher levels manage meaning, social roles, and purpose. Each higher level sets reference values for the level below.

Level (illustrative)	Example of what's controlled	Type of perception	Example hazard when control fails
1. Intensity	Light, sound, pressure, fatigue	Sensation	Overstimulation, fatigue
2. Configuration	Shapes, patterns, body position	Configuration	Loss of dexterity, strain
3. Transition / Event	Rate of change, sequence of acts	Transition / Event	Disruption, accidents
4. Relationship	Spatial or causal relations	Relationship	Miscommunication, coordination error
5. Category / Program	Plans, routines, rules	Program	Procedural conflict, overload
6. Principle / System concept	Purpose, values, identity	Principle / Concept	Moral injury, burnout

Each level supplies reference values to the level below, and receives perceptual feedback from it.

Conflict occurs when two systems attempt to control the **same perception** to different reference values — for example, “work faster” versus “work safely.” Persistent conflict across levels produces the loss of control that manifests as **psychosocial strain**, disengagement, or unsafe adaptation.

Understanding this hierarchy allows psychosocial risk to be viewed not as an attitude problem, but as a **systemic control problem** — a misalignment between what people are expected to keep steady and what they can actually influence.

2.1.3 Reorganisation

When chronic conflict prevents control, the system adapts through **Reorganisation** — an intrinsic, feedback-driven learning process.

Powers proposed a separate **Reorganizing System (RS)** that monitors **intrinsic variables** vital to survival and wellbeing (e.g., physiological comfort, pain, threat). When intrinsic error persists — meaning those variables remain outside safe bounds — the RS alters the **Learned Perceptual Hierarchy (LPH)** until control is restored.

This process is “blind” trial-and-error: the system makes random or exploratory changes, when intrinsic error increases. Powers compared it to how the bacterium *E. coli* tumbles randomly until it senses nutrients improving, then continues in that direction. In people, this same mechanism underpins **learning, adaptation, and recovery**.

Modern therapeutic approaches — notably **Method of Levels (MOL)** — apply this insight directly. By helping individuals notice and resolve conflicts between higher-level goals (for example, “be a good worker” versus “protect my family”), these methods enable Reorganisation to occur consciously and safely. This is why PCT has been influential not only in psychology, but also in clinical therapy, human-factors research, and organisational design.

Echo's application of PCT is **not therapeutic**, but it draws from the same evidence base. By monitoring patterns that indicate loss of control — fatigue, frustration, conflicting demands — and by surfacing them early, Echo enables organisations to act before those conflicts crystallise into harm.

2.2 Breadth of applicability

The principles of PCT scale seamlessly from individual behaviour to complex organisations. Each system — biological, mechanical, or social — operates to keep perception aligned with reference amid disturbance.

Domain	Controlled perception	Reference state	Typical disturbance	Action restoring control
Human physiology	Core body temperature	37 °C	Cold air, exertion	Shiver, add clothing
Operator task	Equipment stability	Level, predictable	Vibration, uneven ground	Adjust stance, re-level
Team dynamics	Trust and cooperation	Mutual respect	Conflict, unfairness	Clarify roles, restore dialogue
Organisational performance	Psychosocial risk exposure	Within tolerance	Overload, unclear priorities	Rebalance workload, improve feedback

Clinical application	Emotional balance	Calm awareness	Conflicting goals	Resolve goal conflict (therapy)
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Across every level, the principle holds:

Control is the maintenance of perception within desired limits despite disturbance.

Where control fails, distress, error, and loss of safety follow. Where it is restored, wellbeing and performance stabilise together.

3. Mapping Workplace Psychosocial Hazards to Control Systems

Psychosocial hazards in the workplace — such as excessive workload, unclear roles, bullying, or lack of support — can be reframed through the lens of Perceptual Control Theory. Each hazard represents a **disturbance** to perceptions that workers attempt to keep aligned with their internal reference values.

- **Workload too high:** Workers have a reference for “completing tasks, safely, and to standard.” Excessive demands disturb this perception, creating chronic error.
- **Role ambiguity:** Without clear expectations, workers cannot align actions with stable references, producing uncertainty and strain.
- **Bullying or harassment:** These directly disturb perceptions of dignity, safety, and belonging.
- **Lack of supervisor support:** Removes a pathway through which a worker may regain control, leaving conflict unresolved.

Mansell (2005) describes how psychological distress arises when disturbances cannot be reduced because conflicting goals block corrective action. In workplaces, this conflict often occurs between **system goals** (production targets, efficiency) and **personal references** (safety, fairness, identity at work).

Kelly, Mansell, and Wood (2015) provide empirical support: individuals experiencing greater unresolved goal conflict report lower well-being and higher distress. Goal conflict, not just individual stressors, appears to be the central predictor of poor outcomes.

For Echo, this mapping is practical. Voice check-ins surface the kinds of disturbances workers are experiencing and identify whether these are producing goal conflicts. By aggregating signals across teams, the system reveals where psychosocial hazards are generating chronic, unresolved conflict — the early warning for risk.

Echo complements call-level signals with a lightweight personality-trait backbone. Over several weeks we collect Big Five Index 2 (BFI-2) psychometric items to estimate stable dispositions. Combined with transient state and local context, Echo is able to infer a simplified goal hierarchy per worker and to determine where conflicts are likely to arise. We can then stress-test large disturbances—such as layoffs or leadership changes—against these hierarchies to forecast conflict density and plan **controls**.

3.1 Beyond ISO 45003 - Human factors at work

Life events (e.g. financial stress, bereavement, relationship issues) act as strong disturbances in a person's control system. They raise persistent error around high-level references (family, health, finances), so attention and effort are reallocated to reduce that error.

In PCT terms, unresolved conflict at these higher levels sends unstable references and variable gain to lower-level work loops. Conflicts like "being a present parent" versus "meeting deadlines" reduce control bandwidth and increase cognitive load, causing muscle tension, fatigue, and narrowed attention at work. The result is degraded control at work: narrowed attention, variable pace, hesitations, slips, near-misses, and rule deviations.

Company directors and managers are not responsible for workers' private lives, however, private disturbances can elevate risk on site. Safety risk stays elevated until control is restored by reducing disturbances or reconciling goals. Practical actions can be taken to reduce the on-site risks posed by workers experiencing these disturbances:

- Use brief MOL-style conversations to surface conflict
- Adjust inputs (roster, workload, rest, buddying)
- Increase perceived control (choice, predictability)

3.2 Trait × State × Context and Goal Hierarchies

We build each worker profile from three input streams. **Trait** uses a drip cadence of 3–5 Big Five Index 2 (BFI-2) psychometric items per week to estimate stable dispositions without survey fatigue. **State** comes from 90-second calls: brief affect ratings, fatigue, sentiment, and conflict language markers extracted from transcripts and paralinguistic analysis (tone, prosody). **Work context** adds roster, shift, supervisor, task class, and recent site events or hazards. **Personal context** records opt-in signals about home pressures, health, relationships, and finances at a coarse, non-diagnostic level.

A simple hierarchical model fuses these streams to infer a **quasi-goal hierarchy** per worker: which goals appear active, how they are prioritised, and where conflicts sit (e.g., "do it safely" vs "hit quota"). Outputs include per-worker conflict flags with confidence, likely levers (adjust inputs vs support reference change), and cohort summaries for crews and sites. All personal inputs are voluntary, named use is consent-gated, and management sees cohort analytics by default.

3.3 Disturbance stress-tests (scenario analysis)

Echo's trait x state x context model can be deployed to stress test a workforce, site or crew with hypothetical scenarios. We treat major events as **perturbation vectors** on context variables and simulate their impact on inferred goal hierarchies. Scenarios such as layoffs, a site fatality, a new supervisor, or an overtime mandate shift reference priorities and increase expected conflict density. For each worker and crew, the model forecasts changes in conflict probability, likely safety signals (e.g., hesitation, variance in perceived control), and **time-to-control** without intervention.

We then stage **pre-emptive controls**: temporary workload rebalancing, extra rest windows, targeted supervisor briefs, and tighter check-in cadence for predicted hot spots. Results are presented as cohort heatmaps and playbooks for line leaders. Use is planning and targeted support, not surveillance: no punitive decisions, transparent rules, full exception logging, and opt-out preserved.

4. From Conflict to Risk Outcomes

When conflict persists, the consequences extend beyond individual wellbeing into safety, performance, and financial risk. PCT offers a mechanistic account of how this occurs:

1. **Chronic error signals.** When perceptions cannot be brought into line with references, the nervous system is flooded with "error signals." These are experienced subjectively as stress, fatigue, or anxiety (Mansell, 2005).
2. **Narrowing of awareness.** Conflict narrows attention to the immediate problem, reducing situational awareness and increasing the likelihood of mistakes or incidents.
3. **Maladaptive loops.** Workers may suppress awareness of conflict, leading to disengagement, presenteeism, or withdrawal. Mansell (2009) emphasizes that these responses are attempts to protect control but often create longer-term instability.
4. **Escalation into outcomes.** Over time, unresolved conflict contributes to burnout, sickness absence, attrition, or compensable claims. Evidence from Kelly, Mansell, and Wood (2015) shows that high goal conflict is a reliable predictor of poor mental health and lower performance.

This mechanism is transdiagnostic: the same loss of control explains diverse outcomes, from anxiety to depression to workplace error (Alsawy et al., 2014). That unification is crucial for safety management, which often fragments psychosocial hazards into isolated checklists.

For Echo, the implication is simple: by detecting signs of unresolved conflict early, and by giving workers micro-interventions that restore some measure of control, the system can reduce the likelihood of downstream safety events, compensation claims, and attrition.

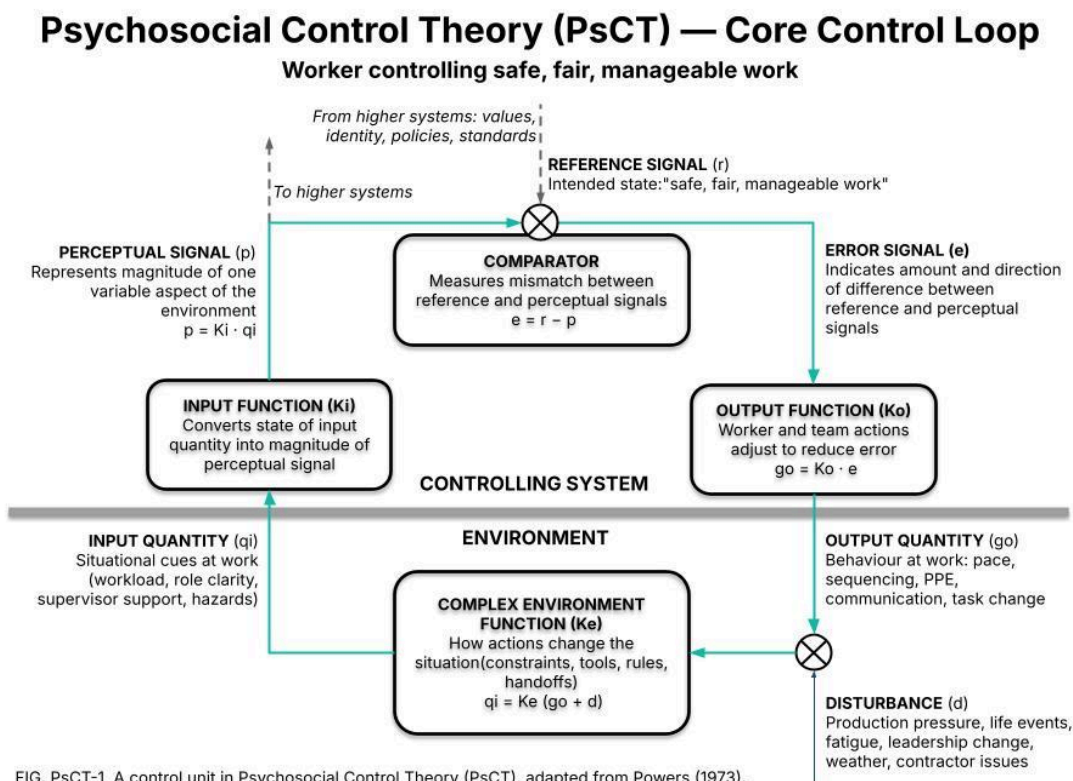
5. Intervention Levers Implied by PCT

If loss of control is the mechanism of psychosocial risk, then restoring control is the pathway to intervention. PCT highlights three main levers:

1. **Adjusting inputs.** Altering the environment so the worker's perceptions can more easily align with their references (e.g. reducing time pressure, clarifying objectives).
2. **Supporting reference change.** Helping individuals reconsider or reprioritize internal standards so that chronic conflict is eased.
3. **Facilitating awareness of conflict.** Bringing hidden goal conflicts into focus, so the person can reorganize toward resolution.

Mansell, Carey, and Tai (2012) describe the *Method of Levels* (MOL) therapy as a PCT-based conversational technique for surfacing and resolving conflict. The method involves the worker leading a conversation about a current problem, accompanied by ultra-brief, focused questions from a listener that draw attention to higher-level concerns, until the individual gains awareness of conflict and sustains their attention on the source of this conflict. That awareness then directs Reorganisation and the reduction of error to the systems required to reduce goal conflict.

For Echo, the design implication is clear: check-ins should not attempt to "solve" the worker's problems directly. Instead, they provide prompts, reflective feedback, and escalation routes that help workers notice conflicts and regain agency. This matches Mansell and Carey's (2009) call to make control itself — not symptom suppression — the link between theory, research, and practice.



6. Design Implications for Echo

PCT suggests several non-negotiables in system design:

- **Fast, feedback-driven interactions.** Short voice conversations (90 seconds) mirror the real-time adjustment of control loops. They allow rapid error detection and feedback, which surveys or annual audits cannot provide.
- **Privacy as perceived control.** Echo's "privacy dials" — adjustable settings for anonymity, escalation, and retention — give workers clarity over what information flows upward. Workers control information flow in discussion with Echo's agent (with named critical exceptions). This is not just compliance; it is psychologically necessary. As Mansell (2005) showed, when people feel their ability to control perceptions is blocked, distress follows.
- **Transparency over raw data.** Workers need to see what the system stores and why. This maintains their reference perception of fairness and dignity.
- **Escalation as continuity, not rupture.** When psychosocial risk requires intervention, escalation should feel like an extension of existing control, not an external override. Sudden, opaque escalations can intensify conflict. Echo can make the hand-off to enterprise's EAP feel seamless.

In sum, Echo is designed to *amplify workers' own control* rather than replace it. This design principle — rooted in decades of PCT research — is what differentiates Echo from surveillance tools and underpins its claim to ethical engagement at scale.

Why does a experienced worker ignore procedures and get hurt?

Craig clocked on before sunrise. The job was simple: clean a burr, swap a bracket. He grabbed the angle grinder. The face shield sat on the hook. He didn't put it on.

He was still thinking about the message from earlier in the week. His wife wanted a separation. He had decided to keep it to himself. Be steady. Get through the shift. He tightened his jaw and worked faster.

A spark jumped, then a sting. Metal in his cheek. He stepped back, hand to face, angry at himself. He knew the rule. He trains others on the rule. The supervisor walked him to first aid.

Later, the report would write "procedure not followed." That was true and not true. Craig's family identity had been shaken. He worked hard to keep it together. Now his head was running two goals at once: *finish the job* and *keep it together*. The private goal—stay stoic, tell no one—pulled attention off the routine checks that make work safe. His priorities flickered. The grinder won the moment...

...Two days earlier, a 90-second check-in could have caught the flicker. The call would have sounded ordinary. Quick state rating. A prompt like, "Anything pulling you in two directions at work this week?" Craig could have said, "Bit distracted. I'm fine." No details. Enough signal.

Echo would have nudged a micro-plan without naming him. On that crew: buddy verify PPE at start, extra 5-minute break on the hour, swap high-risk steps later in the cycle. The supervisor would have seen a generic playbook tile: "Short pauses and buddy check for this cell today." No private data. Just a small change to inputs.

Craig would have walked to the hook, taken the shield, and felt the routine click back in. The job would have taken two minutes longer. No injury. No report.

He went home with a bandage and a warning from the nurse about face protection. He still didn't want to talk. That was his choice. Echo - short conversations, lasting impact.

7. Evidence and Assurance

PCT gives Echo a theoretical foundation. To earn adoption and regulatory confidence, the framework must be tied to measurable outcomes. We commit to measurable impact and independent verification.

What we measure.¹

- Leading indicators: conflict density, perceived control, coverage.
- Intervention performance: time-to-control, resolution rate.
- Outcomes: fatigue and distress trends, incidents, absenteeism, attrition.
- Financial impact: minor-claim frequency and premium drivers.

How we verify.

- Comparative analyses with appropriate controls.
- Independent review of methods and results.
- ISO-45003-aligned evidence pack and audit trail.
- Transparent reporting at 30/60/90 days.

Data handling.

- Cohort-level analytics to management.
- Named data only with worker consent (critical exceptions apply).
- Full exception logging and access governance.

Note 1. Certain measures rely on the client enterprise agreeing to share data with Echo. Detailed evaluation design is available on request.

Bottom Line

Validation is not just technical. It is also **regulatory assurance**: demonstrating that Echo provides auditable, ISO-45003-aligned evidence of live psychosocial risk controls, backed by a unifying psychological theory.

8. Governance and Ethics

Any system that engages workers on sensitive psychosocial risks must be built on principles that protect their agency and dignity. Perceptual Control Theory (PCT) offers a unique justification: **control over perceptions is fundamental to psychological health**. If Echo undermined that control — through opaque surveillance, one-way monitoring, or hidden escalation — it would replicate the very conditions that cause psychosocial harm.

8.1 Worker agency as non-negotiable

Mansell & Carey (2009) argued that the missing link in psychological research and practice is attention to control itself. Workers must have ongoing ability to:

- **Opt in and opt out** at any point.
- **See what the system stores** about them, in plain language.
- **Control timing** of check-ins where practical.

These align Echo's UX with PCT principles: individuals retain the ability to influence the inputs that matter to them.

8.2 Consent and exceptions

Workers opt in and can opt out anytime; managers see cohort-level analytics by default; named data requires explicit worker consent; exceptions are limited to predefined safety/legal triggers with immediate worker notice and full audit logging.

8.3 Transparency as prevention

Echo's design prevents raw voice data from reaching managers. Workers receive private interactions; supervisors see only aggregated trends. This separation preserves the worker's perception of fairness and prevents escalation from feeling like betrayal. Mansell (2005) showed that unresolved conflict is amplified when people perceive they have no fair pathway to restore control. Transparency provides that pathway.

8.4 Escalation that respects control

Certain hazards — threats of self-harm, violence, intoxication — require escalation. In PCT terms, escalation must not "seize" control from the worker abruptly. Instead, it should:

- **Signal what is happening** and why.

- **Offer choice where safe** (e.g. confirm before escalating fatigue alerts).
- **Log every exception** for audit.

This maintains continuity in the control loop, avoiding the added distress that opaque interventions create.

8.5 Independent assurance

To strengthen legitimacy, Echo commits to:

- **Privacy Impact Assessments** and external **fairness audits**.
- **ISO-aligned governance** for data retention and access.
- **Independent research partnerships** to validate methods, consistent with theory-driven, evidence-based practice (Mansell, 2005).

Bottom line

Echo's governance and ethics framework is not an add-on. It is the direct application of PCT: preserving control over perceptions prevents harm and builds trust. This makes Echo both psychologically safe and regulator-ready.

9. Conclusion

Psychosocial Control Theory (PsCT) reframes workplace wellbeing and safety as a problem of control, not compliance. When workers can act on accurate feedback to align perceptions with their goals, performance and wellbeing stabilise together. When their ability to control key perceptions—safety, fairness, competence—is blocked by conflicting demands, chronic error arises and risk escalates.

Perceptual Control Theory provides the unifying mechanism. It explains how psychosocial hazards function as disturbances to control loops, how unresolved goal conflict produces stress and unsafe behaviour, and how restoring control resolves both. Echo **operationalises this model at scale**: brief, voice-based check-ins measure conflict density, perceived control, and time-to-resolution, giving organisations a live, auditable system for psychosocial risk.

In doing so, Echo turns abstract “culture” into measurable control dynamics. It protects dignity through transparency, preserves agency through consent, and links psychological theory to operational safety. This represents a new standard for psychosocial risk management—one grounded in science, built for assurance, and centred on human control.

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Appendix 1: ISO 45003 Psychosocial hazards mapped to PCT concepts

Hazards Related to Control and Clarity

These hazards inhibit the individual's core ability to maintain desired perceptions of autonomy and competence:

ISO 45003 Hazard	PCT Description
Lack of control of the work and working methods	In PCT, behavior is the control of perception . If the work environment removes a person's ability to choose their methods (their actions), it severely limits their means of control over their desired, higher-level perceptions (e.g., perceiving oneself as competent, efficient, or responsible). The environment functions as a massive, uncontrollable disturbance preventing the intended perception from matching the desired internal reference signal.
Workload too high or too low	An inappropriate workload generates unrelenting error signals . If the workload is too high , the person experiences chronic failure to control multiple mid-level perceptions (e.g., maintaining a perception of "work completed on time" or "personal energy level intact"). This leads to overwhelming and continuous distress . If the workload is too low , the person fails to control high-level perceptions related to Principle or System Concepts (e.g., maintaining perceptions of "purpose," "usefulness," or "professional contribution").
Lack of job clarity	This is a fundamental failure to define the internal reference signal or goal. If a person cannot establish a clear perception of "what the job should look like" (reference value), their control system cannot effectively generate the necessary actions (behaviour) to minimize the resulting error signal . This persistent confusion creates a chronic, unresolvable error state and subsequent psychological distress.

Hazards Related to Social and Organisational Factors

These hazards act as persistent disturbances or conflicts targeting the person's identity and social goals, which are controlled at the highest levels of the perceptual hierarchy (Principles and System Concepts):

ISO 45003 Hazard	PCT Description
Bullying and Harassment	These are highly damaging, chronic disturbances that directly attack high-level perceptions, particularly the System Concept level of Self-Image . The victim is trying to control the perception of "being treated with respect" (a Principle level perception) or "being safe" (a core survival goal), but the behaviour of the aggressor constantly disturbs these desired perceptions. This creates an intense and chronic internal conflict between the desire to control the perception of self-worth and the constant failure to control the perception of safety/respect in the immediate social environment.
Poor organisational support	A lack of support prevents the control system from accessing external means necessary to counter everyday disturbances . This leads to unmanaged error signals and subsequent conflict, such as conflicting goals between "maintaining professional standards" (Principle) and "preserving personal resources" (lower level goal).
Social exclusion / Remote or isolated work	These conditions prevent the control of desired Relationship or Category perceptions (Levels 6 and 7 in the hierarchy). The inability to maintain a perception of "belonging," "community," or desired social interaction due to the lack of necessary input from the environment results in chronic, unwanted perceptions.

Hazard Related to Acute and Chronic Disturbances

ISO 45003 Hazard	PCT Description
Violent or traumatic events	These are overwhelming, high-gain disturbances that instantaneously threaten the control of multiple crucial perceptions across the hierarchy. If the person fails to control these highly threatening perceptions, the resulting internal turmoil (chronic high error signals) can lead to psychological dysfunction. The system may attempt to resolve this by dissociating the unwanted perceptions from the main control hierarchy to maintain a coherent System Concept (Identity/Worldview). Psychotherapy, like the Method of Levels (MOL), is often used to integrate these unwanted perceptions into a coherent system concept level .

Appendix 2: PCT vs familiar approaches

Perceptual Control Theory ties together what HSE leaders already use. It supplies the missing mechanism behind culture, bias, behaviour change, leadership, HFE, ISO systems, BBS, HOP, HRO, bowties and RCA. It models goals at multiple levels and at the individual. It personalises fixes via trait, state and context. It formalises conflict so you can adjust inputs or references and then measure time-to-control and resolution rate.

Approach	How it's used	Common gap	How PCT integrates and extends
Safety culture / Just Culture	Set norms, accountability, learning climate	Vague mechanism. Hard to localise fixes	Treats culture as distributions of reference values across levels. Finds where goals clash and shows which lever to move
Human error and bias	Explain judgment errors and train awareness	Describes symptoms. Weak repair loop	Frames bias as control loss under conflict and noise. Targets the conflict that produces the error pattern
Behaviour change and nudging	Roll out scripts, defaults, reminders	One size. Effect decays with context shifts	Personalises inputs to each worker's control map.
Psychosocial risk and wellbeing (incl. ISO-45003)	Identify stressors and monitor wellbeing	Lists hazards without a unifying mechanism	Models stressors as disturbances to controlled perceptions. Measures conflict density and perceived control
Safety leadership	Train leaders to influence and clarify	Impact varies. Hard to measure effect	Defines good leadership as error reduction in control loops. Tracks time-to-control and resolution rate
Human factors and ergonomics (HFE)	Fit tasks, tools, and environments	Focus on design. Less on inner goals	Aligns design with worker reference values. Reduces disturbances that drive conflict

ISO 45001 management systems	Governance, audits, control registers	Paper compliance. Weak live mechanism	Supplies the operational mechanism for “operational control”. Produces auditable, leading evidence
Behaviour-Based Safety (BBS)	Observe and count safe acts	Counts outcomes, not causes	Explains behaviours via goal conflict. Moves fixes upstream to remove disturbances or reconcile goals
HOP, Safety-II, Resilience Engineering	Learn from work as done and build capacity	Limited micro-mechanism for strain	Shows how people adapt to keep control. Detects rising conflict before failure and supports adaptive moves
High-Reliability Organizations (HRO)	Set attention disciplines at scale	Abstract principles. Localisation gap	Connects vigilance to conflict signals. Helps leaders direct attention where control is degrading
Barrier and Bowtie risk management	Map threats, controls, assurance	Static view. Human side under-specified	Identifies where conflicting references erode barrier integrity. Routes targeted interventions
Incident causation and RCA (Swiss Cheese, HFACS/ICAM, TapRoot)	Post-event analysis and learning	Human error becomes a label	Reframes error as unresolved conflict and control loss. Reveals system levers that would have restored control

Appendix 3: PCT vs “Pop Psychology”

You know the bestsellers. Here’s what they mean in control terms. PCT translates slogans into mechanisms, levers, and risks.

Idea	Core claim	PCT causal view	Levers	Risks
Grit	Persist toward valued goals	Stable high-level reference sustains error correction over time	Clarify top references; remove blocking disturbances; protect time/energy	Entrenches unsafe goal conflict (production vs safety)
Growth Mindset	Ability can grow	Flexible references enable reorganization when chronic error persists	Frame errors as information; adjustable sub-goals; rapid feedback	Fails if context blocks control (tools/time)
Emotional Intelligence	Perceive and regulate emotion	Meta-control of gain and attention stabilizes loops under load	Notice rising error; practice regulation routines; rehearse high-gain moments	Cannot offset structural disturbances
Nudge / Choice Architecture	Small input tweaks shift behavior	Input tweaks align perceptions with references with less effort	Defaults; salience; timing; layout at point of action	Collapses when higher-level goals conflict; effect decay
Habit Loops / Atomic Habits	Automate desired routines	Compile lower-level programs to keep error near zero with low attention	Stable cues; frictionless actions; immediate feedback; protect context	Wrong habit if higher-level reference misaligned; brittle to shifts
Flow	Deep focus at optimal challenge	Demand $\approx$ capability keeps error small and stable	Match task to skill; remove interruptions; clarify references	Chronic overload collapses control; fatigue raises noise

Start With Why	Lead with purpose	Make top-level references explicit to align lower loops	Cascade why→what→how; test local clashes	Slogans without local levers keep error high
Drive (Autonomy, Mastery, Purpose)	Motivate via autonomy, mastery, purpose	Autonomy = output control; mastery = efficient error reduction; purpose = reference clarity	Choice within guardrails; clear standards; practice with feedback	Autonomy without constraints increases variance
Radical Candor	Direct, caring feedback	Fast error information while preserving relationship references	Brief, specific, worker-controlled conversations; confirm shared references	Blunt delivery threatens dignity; raises error
Five Dysfunctions	Trust→Conflict→Commitment→Accountability→Results	Trust permits surfacing conflicts; aligned references enable coordinated control	Make goals/roles explicit; test reference clashes; close loops fast	Rituals without alignment change little
Crucial Conversations	Skill for high-stakes dialogue	Raise awareness to higher-level concerns (MOL-like) to enable reorganization	Surface goal clashes; choose lever: change inputs or support reference change	Skills fail where power blocks control
Good to Great	Disciplined focus and feedback drive step-change	Stable references with consistent error correction compound control	Few non-negotiables; tight feedback; prune noisy initiatives	Survivorship bias; misfit under new disturbances