The augmented police officer: A design fiction study of perceptions of brain-computer interface use in law enforcement

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Abstract

Brain-computer interfaces (BCI) are advancing from therapeutic applications in controlled environments to real-world deployments. Law enforcement represents a plausible early-adoption context, as when augmented with BCI they could access databases through thought, receive real-time situational analysis, or control systems with neural signals. Before such deployment occurs, understanding how both officers and citizens perceive this concept can guide design and policy decisions. This thesis explores how different stakeholders perceive the concept of BCI-augmented law enforcement. Using design fiction methodology, the study presents speculative BCI scenarios to three participant groups: researchers engaging through a role-play session, a police officer in semi-structured interviews, and citizens responding to an online survey. The design fiction, a narrative depicting a fictional police officer experiencing a mandatory BCI system pilot in his department, provided participants with a concrete speculative scenario rooted in established identity theory and cognitive rights frameworks, giving them the possibility to articulate concerns, values, and boundaries.

Findings demonstrate design fiction's ability to effectively study a BCI technology which cannot yet be studied empirically. The design fiction narrative elicited strong engagement across all stakeholders, prompting participants to articulate concerns about technological dependency, mental privacy and professional ethics. The strongest reactions centred on mental privacy violations. A read-write threshold (reading brain activity is allowed, but writing is not) emerged from the interviews. This was something that the previous identity and mental privacy theories did not explore. All stakeholders predominantly perceived the BCI sceptically, not fully binarily but conditionally, stating that the BCI should have a turn-off feature, the possibility of individual calibration, transparency in its readings and protection against possible dehumanisation. Based on this literature study and results, this thesis contributes to understanding emerging BCI technology perception and offers guidance for designing ethical BCI products for law enforcement.

1. Introduction

Throughout history, humans have sought to transcend natural limitations through tools and technologies (Raisamo et al., 2019), a drive that increasingly challenges traditional notions of selfhood (Anderson, 2003). Brain-computer interfaces (BCI) represent the next frontier of this drive. BCIs bypass traditional input devices—keyboards, mice, touchscreens—by creating direct pathways between human thought and digital systems. The tool promises seamless cognitive integration with databases, communication networks, and decision support. Companies like Neuralink are conducting human trials; approximately 25 clinical BCI trials are currently underway (MIT Technology Review, 2025; Times of India, 2025).

While present applications focus on therapeutic contexts—restoring lost abilities to disabled users—the trajectory points toward enhancement applications for healthy individuals in mass usage. The investment patterns in this technology suggest commercial ambitions beyond therapy. In December 2022, Synchron—a BCI company developing minimally invasive brain implants—raised $75 million from investors including Gates Frontier and Bezos Expeditions, the personal investment funds of Bill Gates and Jeff Bezos, respectively. These are entrepreneurs whose previous ventures—Microsoft and Amazon—targeted mass consumer markets, not niche medical applications. Also, Elon Musk, the co-founder of PayPal, founder of Tesla and SpaceX and a partner in the BCI company Neuralink, himself approached Synchron about potential investment (Capoot, 2023; Mollman, 2022). When three of the world's most successful mass-market technology entrepreneurs simultaneously invest in brain-computer interfaces, the trajectory toward consumer deployment becomes difficult to dismiss as speculation.

Law enforcement represents a plausible early-adoption context for professional BCIs. Law enforcement and military contexts are frequently identified as early adoption environments for enhancement technologies—institutional compliance mechanisms already exist to facilitate adoption that civilian populations would

resist. Drawing from broader technology deployment patterns, a plausible BCI deployment trajectory emerges: first in clinical populations with medical necessity, then military and law enforcement contexts where institutional compliance mechanisms exist, followed by early adopters and human enhancement enthusiasts, and finally broader civilian populations. This trajectory reflects the historical progression of other enhancement technologies. Police officers could access databases through thought alone, receive real-time situational analysis, or control surveillance systems directly via neural signals. Industry discussion has begun exploring these possibilities (Police1 Staff, 2023) and the UK Police Chief Scientific Adviser's office has identified neurotechnology among emerging trends likely to impact policing in one to ten years (Police Chief Scientific Adviser, 2025). As BCIs approach professional deployment, it is time for an intriguing question: how do officers and citizens perceive brain-computer interfaces? This thesis investigates that question through design fiction methodology, examining how different stakeholders—researchers, a police officer and citizens—perceive the concept of BCI-augmented law enforcement.

1.1 Research Context

Historical Background

Human enhancement has deep historical roots. Ancient warriors used armour for physical protection. Early spyglasses and eyeglasses expanded visual capabilities beyond natural limits. Craftsmen used tools to lift objects impossible to move by human power alone. Scholars used writing systems to enhance memory. Raisamo et al. (2019) document this progression, showing how enhancement has evolved from external tools to increasingly intimate technologies that blur the boundary between human and machine. Today, augmentation technologies span multiple domains. Exoskeletons enable factory workers to manipulate heavy objects with reduced fatigue. AR glasses provide visual overlays enhancing situational awareness. Wearable devices monitor physiological states and provide feedback for

self-regulation. These technologies demonstrate both operational benefits and psychological effects—Siedl and Mara (2024) found exoskeleton users reported increased feelings of machine-likeness, suggesting augmentation reshapes self-perception alongside capability. BCIs extend this trajectory into cognitive domains. From a design perspective, BCIs are systems that translate neural signals into digital commands—or digital information into neural experience—creating a bidirectional channel between mind and machine. Unlike physical tools that extend what bodies can do, BCIs interface directly with mental processes—the domain where selfhood is experienced. This makes BCI adoption qualitatively different from previous augmentation technologies.

Current Status of BCI Systems in Law Enforcement

BCI technology has progressed significantly from its first demonstration in 1973 (Vidal, as cited in Shih et al., 2012) to enabling paralysed patients to communicate and control prosthetics through thought. However, BCIs suitable for professional deployment do not yet exist. Law enforcement represents a plausible early-adoption context: police work involves time-critical decisions, information-intensive tasks, and high-stakes encounters where cognitive augmentation offers clear operational value. Departments already mandate technology adoption, like body cameras, databases, and communication systems, establishing precedent for required tool use, and military contexts sharing operational characteristics with policing are actively exploring neural enhancement (Sattler et al., 2022; Kulshrestha, 2025; Police Chief Scientific Adviser, 2025). Police also represent a population where professional identity and capability are deeply intertwined, so how identity mechanisms interact with augmentation technology remains unexplored. This gap shapes this thesis's methodological approach and justifies the use of design fiction.

The Research Gap

Most prior BCI research examines therapeutic applications for disabled users or technical performance metrics. Research on professional attitudes toward enhancement exists (Sattler et al., 2022; Safi et al., 2018) but does not address BCIs

specifically. Research on professional identity formation exists (Ibarra, 1999; Conti, 2009) but does not address augmentation technologies. Research on technology-identity relationships exists (Belk, 2013; Clark, 2007) but does not address professional contexts or BCI perception. To the best of the knowledge of the author, no research has examined different stakeholders' perceptions of the concept of BCI-augmented law enforcement, including what concerns they anticipate, what values they express, and where they draw boundaries. This thesis aims to address that gap.

1.2 Research Question

This thesis is framed by the main research question (RQ):

How do different stakeholders perceive the concept of brain-computer interface deployment in law enforcement, and what identity-related concerns do they anticipate?

This question is exploratory. This research does not test whether BCIs cause specific effects, as the technology does not currently exist in testable form. Instead, it investigates perception: how a population evaluates, imagines, and responds to BCI concepts when presented through imaginary design fiction scenarios. In the scope of this thesis, different stakeholders' perceptions are accessed through three study components engaging with design fiction: a focus group of researchers (capturing deep speculative reflection), a police officer in an interview (capturing professional insider perspective), and citizens responding to surveys (capturing public perception of police augmentation). "Identity-related concerns" are approached through a theoretical framework, connecting perception to identity mechanisms: narrative fit, possible selves projection, extended self-assessment, analogical experience from existing technology use, and professional culture filtering. The research question asks what concerns surface when these mechanisms engage with BCI concepts.

1.3 Significance of the Study

Theoretical Contribution

This research addresses a gap in understanding how a population perceives speculative augmentation technologies. Existing literature documents attitudes toward enhancement in military contexts (Sattler et al., 2022) and technology acceptance in medical settings (Safi et al., 2018) but does not examine BCIs in law enforcement or connect perception to identity formation mechanisms. The study synthesises previously separate literatures: professional identity research (Ibarra, 1999; Conti, 2009), technology-identity theory (Belk, 2013; Clark & Chalmers, 1998), cognitive augmentation research (Dergaa et al., 2024; Gerlich, 2025), and cognitive rights frameworks (Ienca & Andorno, 2017). This thesis contributes to the theoretical understanding of technology-identity relationships by examining how these theories might be connected to BCI perception.

Practical Contribution

BCI design decisions are being made now, during development. Findings about stakeholder concerns, boundary preferences, and acceptance conditions can inform design principles before deployment. This timing matters: ethical frameworks and design conventions are easier to establish during development than after problematic patterns become entrenched. For law enforcement contexts specifically, findings may inform departmental policies about enhancement technology adoption, training approaches, and implementation strategies. And, for BCI developers, findings identify concerns that design should address in dependency mitigation, privacy protection, and autonomy preservation. For policymakers this thesis provides material for discussion about new cognitive rights.

Methodological Contribution

The study demonstrates design fiction as a method for investigating perception of speculative technologies. By grounding fictional scenarios in established theory and

triangulating across stakeholder groups, the approach generates insights that neither pure speculation nor waiting for technology deployment can provide.

1.4 Thesis Structure

After this introductory chapter, this thesis follows the following structure:

Chapter 2 begins with a literature review establishing theoretical foundations. Then Section 2.1 situates BCIs within human augmentation. After that, Section 2.2 examines BCI technology, specifically the current state, research gap, and law enforcement applications. Section 2.3 presents identity mechanisms that shape technology perception. And, finally, Section 2.4 introduces the cognitive rights framework.

Methodology **Chapter 3** presents design fiction as a research method and describes the three-component study design: a design fiction session with researchers, an interview with a police officer, and an online survey with European citizens.

Chapter 4 has a full design fiction narrative of an augmented police officer created by the author of this thesis as stimulus material to be used across study components.

In **Chapter 5** the results report findings from each study component, organised by perception themes and stakeholder comparisons.

Chapter 6 begins the discussion, interprets findings through Chapter 2's theoretical frameworks, addresses limitations, and considers implications.

Finally, **Chapter 7** concludes and summarises contributions and offers recommendations for BCI design and policy.

2. Literature Review

This chapter establishes the theoretical foundation for investigating how stakeholders perceive the concept of BCI-augmented law enforcement. It opens in Section 2.1 by situating brain-computer interfaces within the broader landscape of human augmentation technologies, distinguishing BCIs from other enhancement approaches, before Section 2.2 narrows the focus to BCIs, specifically examining what they are, their current technical state, the research gap that prevents empirical study of professional-grade systems, and emerging applications in law enforcement contexts. Section 2.3 then presents the identity mechanisms which, in the scope of this thesis, are used to understand BCI perception, while Section 2.4 closes the chapter by introducing the cognitive rights framework—cognitive liberty, mental privacy, mental integrity, and psychological continuity—as an ethical context for understanding BCI perception as well.

2.1 Human Augmentation Technologies

Terminology

This thesis adopts the terminological framework established by De Boeck and Vaes (2024), who distinguish between three related but distinct fields: assistive technology, human enhancement and human augmentation. **Assistive technology** refers to rehabilitation devices that restore capabilities for individuals with impairments. **Human enhancement** encompasses a broad range of interventions, including pharmaceuticals, surgical procedures, and genetic modification, that improve human abilities through medical means. **Human augmentation** refers specifically to “device-based technologies that aim to improve human abilities as an extension or integration of the human body by replicating, supplementing, or exceeding the physical, sensory, cognitive, and social capabilities of its user.” (De Boeck & Vaes, 2024, p. 76). Because human augmentation is situated within the

context of product design and engineering, it provides the appropriate conceptual scope for this industrial design research.

General Human Augmentation Technologies

Raisamo et al. (2019) categorise human augmentation technologies into three domains: augmented senses, augmented action, and augmented cognition. The foundational goal for augmentation is to expand human capabilities in sensory perception, physical performance, and cognitive function. Examples of sensory augmentation, which expands perception beyond biological limits, are augmented reality (AR) headsets such as the Magic Leap One, Nreal, Vuzix, which overlay digital information onto the physical world (Livingston et al., 2002; Raisamo et al., 2019). In 2023, Meta released the Ray-Ban Meta smart glasses in partnership with EssilorLuxottica, priced from approximately $299, providing consumers with AR-enabled glasses nearly indistinguishable from conventional eyewear. By 2025, the product line expanded to include display-equipped versions (EssilorLuxottica, 2023; Ray-Ban Meta, 2026). Such glasses demonstrate how augmentation technology is transitioning from specialised professional tools to everyday consumer devices, offering hands-free photography, AI assistance, and real-time information access. A pattern which BCI adoption might follow. Another interesting example is exoskeletons, which augment physical performance, extending bodily strength and endurance. For example, they enable factory workers to manipulate heavy tools with reduced fatigue, with companies like Ford successfully implementing such systems in their facilities (Ford Motor Company, 2018).

The third category of augmentation, cognitive augmentation, represents the most psychologically intimate category, targeting memory, attention, decision-making, and information processing. This includes tools such as large language models, e.g., ChatGPT and Claude AI, as well as augmentations accessed through smart glasses. Making something stronger and better—augmenting—can also take away from something. Emerging research by Siedl and Mara (2024) reveals psychological effects: wearing exoskeletons decreases users' self-perceived warmth while

increasing feelings of machine-likeness, demonstrating that augmentation technologies reshape not only capability but also self-perception.

To BCI

Among cognitive augmentation technologies, BCIs represent a distinct category. Unlike external devices that enhance cognitive performance indirectly, BCIs create direct pathways between neural processes and machines, bypassing traditional input methods, such as keyboards, controllers or even speech control (Shih et al., 2012). However, BCIs suitable for healthy professional users, such as ready-to-deploy devices that officers could trust in high-stakes situations, do not yet exist in deployable form. This gap necessitates the use of the design fiction methodology (Chapter 3) employed in this thesis. But before the methodology chapter, the following section examines BCIs as a distinct technology category, establishing why they warrant specific attention in exploring professional usage and technology perception.

2.2. Brain-Computer Interfaces

What BCIs are and how they work

A BCI—sometimes called a brain-machine interface (BMI)—is a computer-based system that acquires brain signals, analyses them, and translates them into commands relayed to an output device, bypassing the brain's normal output pathways of peripheral nerves and muscles such as speech and hand movements (Shih et al., 2012). From a design standpoint, contemporary non-invasive BCIs typically manifest as lightweight headsets, headbands or headphones containing multiple electrodes that rest against the scalp (Shih et al., 2012; Emotiv, 2025; NeuroSky, 2025). Users wear these devices on their heads and interact with connected systems through focused thought patterns; for instance, concentrating on specific commands to query a database or imagining a movement to control a device, while the BCI translates these neural signals into digital actions in real time.

BCIs acquire brain signals through two main approaches: invasive methods using implanted electrodes that directly contact brain tissue and non-invasive methods using external sensors. The most common non-invasive approach is electroencephalography (EEG), where electrodes placed on the scalp detect electrical activity from the brain (Shih et al., 2012). For professional applications like law enforcement, non-invasive EEG-based systems should be most relevant—they can be worn like a headset and removed at shift's end, unlike surgical implants (Millán et al., 2010).

Contemporary BCI systems enable users to control computers, prosthetic devices, and environmental systems through thought alone, representing a direct interface between human cognition and digital systems that fundamentally challenges traditional boundaries between mind and machine (Millán et al., 2010; Brunner et al., 2015). Millán et al. (2010) explain that BCIs leverage neuroplasticity through co-adaptive learning, where users learn to control brain signals while systems learn to interpret them more accurately. This bidirectional adaptation enables increasingly sophisticated control (Millán et al., 2010). Beyond physical control, BCIs offer cognitive augmentation by improving memory, attention, emotional regulation, and decision-making. Berger et al. (2011) demonstrated in animal models that a hippocampal neural prosthesis could restore memory function by identifying and replicating successful neural firing patterns, suggesting that BCIs can directly intervene in cognitive processes that constitute personal identity.

Looking further ahead, BCIs may become the necessary link for humans to communicate directly through thoughts, transcending traditional boundaries between individual consciousness to potentially connect minds (Anderson, 2003; Brunner et al., 2015), a possibility also discussed by Police1 Staff (2023). This potential for mind-to-mind communication represents a fundamental shift in human interaction, though such capabilities remain speculative.

Current state and gap

The first functional brain-computer interface was demonstrated in 1973 by Jacques Vidal, who showed that direct brain signals could be translated into machine commands (Vidal, 1973, as cited in Shih et al., 2012). Today, BCIs are no longer restricted to clinical environments. Commercial BCIs began emerging in the late 2000s, with early consumer-grade EEG headsets like the Emotiv EPOC (Emotiv, 2025) and NeuroSky MindWave (NeuroSky, 2025) introducing non-invasive neural interaction to the public. This evolution from laboratory prototypes to discreet, wearable systems has opened the possibility for adoption in high-stakes professional contexts, including law enforcement, where enhanced perception, communication, and decision-making capabilities are increasingly seen as operational advantages (Police Chief Scientific Adviser, 2025). Moreover, AI breakthroughs in the capabilities and availability of large language models (LLMs), such as ChatGPT, Claude, Copilot, and DeepSeek, have possibly shifted public and professional attitudes toward augmentation and the dependency effects such technologies produce (Dergaa et al., 2024; Zhang, 2024; Gerlich, 2025; Zhang, 2025). The pace of development has introduced both exciting possibilities and profound ethical challenges. Brunner et al. (2015) anticipated professional-grade BCIs could emerge within a decade, a timeline that has proven optimistic but reflects the pace of ambition in the field.

BCIs in Law Enforcement Contexts

In military, law enforcement, and industrial contexts, EEG-based BCIs are being explored for operational applications. DARPA's Neural-Drive initiative aims to enable thought-based control of drones and unmanned systems (Kulshrestha, 2025), extending human agency through thought-driven remote operations in hazardous environments. Police officers may soon patrol with brain-computer interfaces providing real-time database access through thought alone or control surveillance robots directly with brain signals (Police1 Staff, 2023; Police Chief Scientific Adviser, 2025). When these brain-computer connections become integrated into work

practices, critical questions emerge about how law enforcement professionals perceive and anticipate such technologies before widespread adoption.

The potential for BCIs to modulate emotions raises particularly profound questions in law enforcement contexts. Bostrom (2005) discusses how enhancement technologies might refine emotional experiences and increase subjective well-being, raising questions about the implication of such modifications for personal identity and autonomy. BCIs capable of modulating emotional states, such as suppressing fear or modulating stress responses (Bostrom, 2005; Ienca & Andorno, 2017), raise profound questions about personal identity, as such interventions alter not merely performance but the psychological states through which individuals understand themselves. Such editing of emotions becomes possible with BCIs because they establish a direct link to communicate with our neural system, interpreting brain signals that represent our intentions (Millán et al., 2010; Shih et al., 2012).

Cognitive augmentation relates most directly to identity formation because cognition is where we experience selfhood. Physical tools extend what we can do; cognitive tools alter how we think, feel, and decide—the very processes through which we understand ourselves (McAdams & McLean, 2013; Clark & Chalmers, 1998). When a BCI can enhance memory, suppress fear, or accelerate decision-making, it does not merely add capability; it reshapes the mental processes that constitute personal identity (Ienca & Andorno, 2017). This thesis investigates this claim through design fiction, examining how stakeholders perceive BCI-augmented law enforcement before widespread professional deployment.

Current Limitations of BCIs

Despite promising applications, current BCI technologies remain unsuitable for the kind of professional deployment this thesis investigates. Consumer-grade BCI which measure EEG offer only rudimentary interaction capabilities. Clinical BCIs, on the other hand, are by design cumbersome and designed for therapeutic contexts (Shih et al., 2012; Hoffmann et al., 2008). These systems require extensive calibration and cannot function as ready-to-use professional tools that an officer could wear at the

shift start and trust in high-stakes situations. This is problematic. The daily BCI decoder recalibration needed to compensate for neural pattern variability is problematic and limits practical usability (Willett et al., 2021). Cybathlon competitions, where participants control devices using thought alone, demonstrate this challenge: same-day calibrated models significantly outperform pre-trained models due to session-to-session EEG variability (Robinson et al., 2021). The BCI systems envisioned for law enforcement, which would provide a seamless real-time information integration and cognitive support (Police1 Staff, 2023), simply do not yet exist in testable form. This gap shapes the methodological approach of this thesis, where design fiction is used as a bridge to investigate psychological effects before the technology reaches deployment.

Beyond technical limitations, ethical concerns about neural privacy, data ownership, and cognitive dependency grow increasingly urgent as BCIs evolve. Ienca and Andorno (2017) propose a cognitive rights framework, including mental privacy, cognitive liberty, mental integrity, and psychological continuity, to protect against unauthorised neural data access or manipulation. These cognitive rights become particularly critical in law enforcement contexts, where BCI data could reveal officers' mental states, decision-making processes, or emotional responses in ways that raise profound privacy and autonomy concerns, and not only that, but BCI will be able to infiltrate subjects' cognition. The psychological impact of BCI, which as a device promises the possibility to *edit* thinking, and how that will affect human identity adaptation remains under-researched (Grübler et al., 2014).

2.3 Identity and Technology Perception

When professionals encounter new technologies, they do not evaluate them neutrally. They filter through existing identity frameworks: imagining possible future selves (Markus & Nurius, 1986), assessing how technology changes their professional role (Ibarra, 1999; Pratt et al., 2006), and gauging reactions from colleagues and family (Conti, 2009; Safi et al., 2018). Identity is not merely what

changes through technology use; the identity shapes how a population perceives technology concepts before adoption (Belk, 2013; Sattler et al., 2022). This section establishes how identity mechanisms shape technology perception, providing theoretical grounding for interpreting how participants engage with BCI design fiction.

Theoretical Foundations

This section presents four theoretical domains that explain how identity adapts in possible technology perception. As the second part of this thesis' research question concerns identity-related concerns in BCI deployment, we must understand how identity is shaped. In later chapters the design fiction artefact is built upon these identity theories and the cognitive rights framework, which is presented in the next section, 2.4.

Theory	Source	Core Claim	Key Concept
Extended Mind	Clark & Chalmers (1998)	Reliably used tools become part of cognition	Self-technology boundary
Cognitive Offloading	Dergaa et al. (2024); Gerlich (2025)	AI dependency erodes independent problem-solving and critical thinking	Diminished confidence without augmentation
Technological Dehumanization	Siedl & Mara (2024)	Physical augmentation alters self-perception toward machine-likeness	Reduced warmth, changed social perception
Provisional Selves	Ibarra (1999)	Professionals experiment with temporary identities during role transitions	Active identity work, not passive absorption

Table 1: Theoretical foundations for identity in technology perception.

Clark and Chalmers (1998) argue that if a tool is used so reliably that it functions like part of the mind, it effectively is part of the mind. Their canonical example involves a man with Alzheimer's who writes everything in a notebook; when he

needs an address, he checks the notebook. The notebook functions as external memory where a cognitive process is extended beyond brain boundaries. This extended mind theory challenges assumptions about where cognition ends and environment begins.

Dergaa et al. (2024) document that AI assistance creates dependency, affecting independent problem-solving. Users who regularly employ AI tools report diminished confidence when working without them. Gerlich (2025) extends these findings, showing that dependency effects reach critical thinking capacity itself, a pattern with implications for professional contexts where independent judgement matters.

Siedl and Mara (2024) found that exoskeleton users reported decreased self-perceived warmth and increased feelings of machine-likeness. Physical augmentation altered not only capability but also self-perception, suggesting that augmentation technologies may reshape identity in ways users do not anticipate or desire.

Ibarra (1999) introduced the concept of provisional selves. It is a temporary identity experiment that professionals try on when adapting to new roles. Rather than sudden identity transformation, professionals navigate change by experimenting with different versions of themselves, observing results, and adjusting. This framework explains how role transitions involve active identity work rather than passive absorption of new expectations.

These four research domains converge on a consistent finding: technology perception is not a neutral evaluation but identity work. When participants encounter BCI concepts, they process them through existing psychological frameworks that determine what feels acceptable, threatening, or imaginable. These frameworks operate alongside the cognitive rights concerns and are presented in Section 2.4 to form part of the theoretical foundation for this thesis.

2.4 Cognitive Rights Framework

Deployed BCIs will breach cognitive domains—thoughts, emotions, and intentions—which previously were inaccessible to external observation. To protect humans from this breach, Ienca and Andorno (2017) proposed four cognitive rights. Understanding them will also help us understand BCI perception:

- **Cognitive Liberty:** Freedom to make autonomous neurotechnology decisions, including rights to enhancement and non-enhancement. For law enforcement: tension between professional obligation and personal autonomy when departments mandate BCIs.
- **Mental Privacy:** Confidentiality of neural data and thought processes. BCIs generate intimate cognitive data revealing thoughts and psychological states individuals may not choose to share.
- **Mental Integrity:** Protection against unauthorised alteration of neural processes or mental states. Given identity research on neural interface integration, unauthorised manipulation could alter core personal identity.
- **Psychological Continuity:** Maintenance of identity over time. Neurotechnology should not disrupt narrative coherence essential for well-being.

The cognitive rights framework serves two functions here. First, it informs design fiction to facilitate the story of the imaginary police officer, including these rights in the story scenarios: mandatory adoption (cognitive liberty), emotional monitoring revealing private feelings (mental privacy), system influence on decisions (mental integrity), and enhanced/unenhanced identity questions (psychological continuity). Second, just as Grübler et al. (2014) document concerns about system hacking, unauthorised data collection, surveillance misuse, "mind reading" possibilities, and neural data use in employment monitoring or legal proceedings, the participants in the research of this thesis may anticipate similar issues when engaging with the design fiction narrative. And so participants' concerns can be mapped onto these cognitive rights to identify which protections matter to different stakeholders.

3. Methodology

This chapter presents the methodological approach for investigating how different stakeholders perceive the concept of BCI-augmented law enforcement. BCIs suitable for law enforcement—systems robust enough to trust in high-stakes encounters, reliable enough to function like trusted equipment, and ready for an officer to wear at shift start—do not yet exist in deployable form. That is why conventional empirical methods, such as user testing, observational studies, and experience sampling, cannot be applied. This limitation requires a speculative methodology capable of generating valid insights about technologies that remain inaccessible. Design fiction, combined with a three-component empirical approach, provides this methodological bridge. Section 3.1 introduces design fiction as a research method, after which Section 3.2 justifies its suitability for this study, while Section 3.3 explains how the theoretical framework developed in Chapter 2 translates into narrative form. Section 3.4 then presents the three-component study design: the design fiction session, citizen survey, and police interviews. Then Section 3.5 closes the chapter by describing the approach to data analysis.

3.1 Introduction to Design Fiction

Design fiction uses narrative and speculative scenarios to explore possible technological futures. Bleecker (2022) defines design fiction as "a conflation of design, science fact, and science fiction" that materialises "ideas and speculations without the pragmatic curtailing that often happens when dead weights are fastened to the imagination". Unlike science fiction, which primarily entertains, design fiction aims to provoke critical reflection about emerging technologies through designed artefacts that function as "props or conversation pieces that help speculate, reflect and imagine, even without words". These artefacts "become real before themselves, because they could never exist outside of an imagined use context", making abstract technological futures tangible enough for meaningful engagement. Design fiction creates scenarios designed to generate conversation

about how technologies might reshape human experience before those technologies exist (Lindley & Coulton, 2015).

Lindley and Coulton (2015) position design fiction within critical and speculative design traditions. Design fiction does not predict futures; it explores possibility spaces. The goal is not accuracy but productive engagement: helping participants articulate values, concerns, and boundaries they might not surface through abstract discussion. Design fiction takes various forms: films, short stories, fictional product manuals, physical prototypes, and enacted scenarios. For this research, design fiction manifests as a narrative scenario: the story of a police officer in the near future using BCI. The design fiction developed for this research grounds abstract BCI concepts in professional contexts, human relationships, and psychological tension, enabling participants to project themselves into the scenario and respond from lived experience through the design fiction character.

The strength of design fiction lies in making speculation discussable. Participants cannot evaluate BCIs they have never used. But they can evaluate a story about someone using BCIs, recognise patterns from their own technology experiences, and articulate how they would feel in similar situations. This imaginative engagement produces data about perception—values, concerns, boundaries—that abstract questioning cannot access (Lindley & Coulton, 2015).

3.2 Why Design Fiction for This Research

The central methodological challenge is straightforward: the BCI technology under investigation does not exist in usable form. In the context of this thesis, this challenge is called *a gap*.

BCI research has progressed significantly in therapeutic contexts in restoring communication for paralysed patients, enabling wheelchair control, and supporting motor recovery (Shih et al., 2012; Brunner et al., 2015). By 2025, approximately 25 clinical trials are underway (MIT Technology Review, 2025). However, this progress

remains concentrated in medical applications for disabled users. This thesis envisions and examines BCI systems which would provide law enforcement personnel with real-time cognitive augmentation, database integration, and situational awareness enhancement—do not exist in testable form. Consumer-grade BCI devices offer only rudimentary capabilities. Also, clinically used BCIs require extensive calibration and are designed for therapeutic, not enhancement, contexts (Robinson et al., 2021). The gap is that no officer can currently strap on a BCI at shift start and use it as a trusted professional tool.

Waiting for deployable BCIs would mean studying perception after adoption patterns have already formed, which is too late to inform design decisions or policy frameworks. The value of speculative research lies in generating insights during development, when findings can still shape outcomes. This study therefore explores how stakeholders perceive the BCI concept rather than proving what effects BCIs will have: what concerns do participants anticipate, what values do they express, and where do they draw boundaries? These questions are empirically accessible now, even without functional BCIs, through design fiction engagement.

3.3 From Theory to Narrative: The Design Fiction Product

The design fiction developed for this study (the story of an augmented police officer) translates Chapters 2.3 and 2.4's theoretical constructs into narrative form. Each narrative element corresponds to documented psychological mechanisms or ethical concerns, ensuring participant responses connect to established research.

The narrative serves as a discussion prompt, with participants responding to specific situations from their personal perspective. The full augmented police officer narrative product appears in Chapter 4.

Table 2 maps each narrative episode to its theoretical source and the construct it was designed to probe.

Narrative Element	Theoretical Source	What It Probes
The department mandates BCI adoption **Episode 1a**	Ienca & Andorno (2017)—cognitive liberty	Professional obligation vs. personal autonomy
Cognitive liberty—the right to mental self-determination—is tested most directly when adoption is not a choice. The design fiction opens with the department mandating BCI use, removing the option to decline. The research participants must confront the tension between professional obligation and personal autonomy: whether an employer can legitimately require access to an officer's neural activity as a condition of the job.		
Kaino questions, "Was that my thought?" **Episode 1b**	Clark & Chalmers (1998)—extended mind	Self-technology boundary perception
If a BCI feeds information, guides pattern recognition, or suggests decisions—where does “you” end and “the system” begin? The design fiction probes this directly when the augmented police officer asks, “Was that my thought or the system’s suggestion?” Participants must grapple with self-technology boundary perception when engaging with this scenario.		
Diminished confidence without headset **Episode 1c**	Dergaa et al. (2024); Gerlich (2025)—AI dependency	Anticipated dependency concerns
The participants bring existing cognitive tool experiences to BCI perception. They draw analogies: “This might feel like GPS dependency” or “Worse than phone attachment.” The design fiction tests this through Kaino’s diminished confidence without the headset and his hesitation during the “organic cops” shift. Participants who recognise these patterns from their own technology use may anticipate dependency as a central concern.		
Colleagues notice changes **Episode 2a**	Siedl & Mara (2024)—technological dehumanization	Social perception of augmented workers
Participants may anticipate dehumanisation effects before any BCI use occurs. The design fiction explores this through colleagues noticing changes		

in the augmented police officer, when his police partner observes that communication has changed, that the augmented police officer now “just operates efficiently” but feels distant. Participants can recognise and respond to these social perception dynamics.		
Emotional monitoring reveals private feelings **Episode 2b**	Ienca & Andorno (2017)—mental privacy	Cognitive intrusion boundaries
BCIs capable of reading emotional states do not merely monitor performance—they access mental content that individuals typically control disclosure of entirely. The design fiction probes this when the system surfaces the augmented police officer's private feelings without his intent, exposing emotional data to institutional visibility. Participants engaging with this scenario must consider where the boundary of cognitive intrusion lies and what mental content, if any, should remain beyond the reach of an employer-issued device.		
Identity adaptation, survivability **Episode 3**	Ibarra (1999)—provisional selves	Personal vs. professional identity tension
Design fiction enables participants to mentally “try on” the augmented professional role without commitment. The augmented police officer’s narrative shows identity tension between professional and personal selves—the officer’s wife observes changes, eventually rejecting his advance. Participants can project themselves into this tension, imagining how BCI adoption might create friction between their work identity and personal relationships.		

Table 2: Grounding theories

The design fiction artefact operationalises the theoretical foundations above into concrete narrative elements that participants can respond to. Each theory informed specific scenario choices, connecting abstract frameworks to tangible story moments. This grounding ensures participant responses can be systematically connected to theoretical frameworks during analysis. The augmented police officer is not arbitrary fiction. He embodies the identity-perception mechanisms and

cognitive rights concerns established in Chapter 2. The narrative is written so that theories are embedded in the story: concerns about extended mind and thought ownership, technology dependency and cognitive offloading, professional identity mechanisms and provisional selves, narrative identity construction, mental privacy violations, cognitive liberty and mandatory adoption, mental integrity and unauthorised intervention, psychological continuity, and tool integration into the body schema. Critically, participants are not informed that the narrative is built upon these theoretical constructs. This methodological choice avoids demand characteristics (the tendency for participants to respond in ways they believe researchers expect and confirmation bias) where awareness of theoretical frameworks might prime participants to reproduce those frameworks in their responses. By presenting the narrative as a speculative technology-based story rather than as an operationalised specific theory, participants could respond authentically based on their own concerns, experiences, and values.

The purpose of police officer narrative is not to imagine "the future of policing" but to provide a human-scale story where abstract theories like extended mind, embodiment, and minimal phenomenal selfhood (Blanke & Metzinger, 2009) become lived tensions. The story serves as a good design fiction product for focus groups, police interviewees and survey participants, offering a way to project, negotiate, and reflect on their own identity in relation to BCIs. The participants will be able to reflect on the police officer's blurring of self and system, recalling embodiment research, showing how tools can be incorporated into the body schema. Also, on the officer's alternating confidence and inadequacy as the story dramatises the psychological duality between enhanced and unenhanced states. As well as on police officer's ethical concerns, which mirror cognitive rights frameworks, demanding protection for autonomy, privacy, and continuity of identity.

Images in the design fiction story have been produced with Midjourney.com. The story has been built by loosely following the episode structure guide by Joseph Campbell from his book "The Hero with a Thousand Faces" (Campbell, 2008). Each

episode is built on an academical theory which is presented under the episode code.

3.4 Study Design: Three-Component Approach

This study employs three research components to capture perception across different stakeholder groups. Each component accesses different perspectives, and together they provide a triangulated understanding of how the BCI concept is perceived. Methodological triangulation (Table 3)—using multiple methods and participant groups—strengthens the credibility of qualitative findings by revealing convergence or divergence across data sources (Patton, 1999). Studies that rely on only one method are more vulnerable to errors linked to that particular method than studies that use multiple approaches, making triangulation particularly valuable when studying complex social phenomena where no single perspective can capture the full picture (Patton, 1999).

Component	**Participants**	**Method**	**Perspective Captured**
Focus Group Session	A group of postgraduate researchers (n = 4)	Group discussion, Semi-structured interview, Role-play	Speculative engagement, personal values
Police Interviews	Officers (n = 1)	Semi-structured interview	Professional insider perspective
Online Survey	Citizens via Prolific (n = 43)	Structured questionnaire	Public perception of police augmentation

Table 3: Triangulation.

Component 1: Focus Group Session

For the focus group, four postgraduate researchers (n = 4) were recruited from a university design research group through the research supervisor. Their backgrounds included animation and industrial design. All were familiar with speculative technology discussion through their academic work.

The session was facilitated as a semi-structured group discussion lasting approximately one hour, conducted in Finnish and audio-recorded for later transcription. The session opened with an introduction covering the researcher's background and thesis topic, during which informed consent was obtained. A BCI technology overview then explained brain-computer interfaces with examples of currently deployed applications, followed by an introduction to the design fiction methodology and the speculative engagement approach used in the study. A role-play prompt ("You are a police officer. What tools do you use?") guided participants to imagine themselves as police officers through reflective questions about police work, tools, and professional contexts. The core of the session presented the police officer using BCI design fiction narrative in six episodes, each read aloud by the author and followed by group discussion. The session concluded with structured closing questions addressing shared concerns, design principles, the impact of the session experience, and acceptability boundaries.

Focus groups were selected for this component because they capitalise on communication between research participants to generate data that would not emerge through individual methods alone. As Kitzinger (1994) argues, focus groups are distinguished from ordinary group interviews precisely because they explicitly use group interaction as part of the method rather than simply collecting data from a population simultaneously. Morgan (1996) further establishes that the central advantage of focus groups lies in the researcher's ability to observe the extent and nature of participants' agreements and disagreements, producing insights that structured questionnaires and individual interviews cannot replicate. For speculative technology scenarios in particular, the group dynamic proved valuable because

participants could test their reactions against others' perspectives and refine their positions through dialogue. Kitzinger (1994) demonstrates that tapping into interpersonal communication within focus groups highlights cultural values and group norms, making the method especially suited for accessing participants' own meanings around unfamiliar or hypothetical topics. The research group context provided participants experienced in critical technology reflection, though notably not in policing contexts, which they accessed through imaginative role-play.

Component 2: Police Professional Interview

For the police interview, one active police officer (n = 1) participated, bringing approximately 20 years of professional experience and currently working in the cybercrime unit (Kyberrikostorjuntakeskus) at the Finnish National Bureau of Investigation (Keskusrikospoliisi). The participant was identified through professional networks and recruited based on availability and willingness to participate through convenience sampling.

The interview was conducted as a semi-structured one-on-one conversation lasting almost two hours, in Finnish, and was audio-recorded. Informed consent to record and gather data was obtained. The collected audio recording was transcribed to a full dialogue document. The semi-structured interview is one of the most common data collection methods in qualitative research, combining a predetermined set of topics with the flexibility to follow the participant's narrative as it unfolds (Kallio et al., 2016). This format enables the construction of situated knowledge rather than mere extraction of predetermined answers, because the balance between structure and openness allows the researcher to probe unanticipated directions while maintaining thematic consistency across interviews (Kallio et al., 2016). The interview followed a similar structure to the focus group but without the role-play prompt, as the participant did not need guidance to imagine police contexts. It included a researcher and thesis introduction, a BCI technology overview with deployed examples, an explanation of the design fiction methodology, the police officer using the BCI narrative presented episodically with discussion after each

episode and closing reflection questions. The longer duration compared to the focus group allowed more exploratory conversation about organisational dynamics and operational realities.

The semi-structured interview format was chosen for this component because police officers bring insider knowledge that is unavailable to other participant groups: understanding of departmental culture, professional norms, operational pressures, and institutional compliance mechanisms. This knowledge is contextual and embedded in professional experience, making it accessible primarily through extended conversational inquiry rather than structured questionnaires. The participant's cybercrime background provided additional technological literacy relevant to BCI assessment. Critically, Conti's (2009) shame-honour framework and Ibarra's (1999) provisional selves framework both operate within professional contexts that only insiders can authentically evaluate, making the police interview essential for grounding the study's theoretical framework in operational reality.

Component 3: Online Survey

For the online survey component, 43 respondents (n = 43) from European countries participated, recruited through the Prolific academic research platform (Palan & Schitter, 2018) and completing a Google Forms questionnaire. The data collected consisted of quantitative ratings from 43 complete responses and accompanying open-ended text responses. Prolific was selected because it provides rapid access to diverse, pre-screened participant pools while offering superior data quality compared to general-purpose crowdsourcing platforms (Peer et al., 2017; Palan & Schitter, 2018) as well as automatic intake and data collection approval. The inclusion criteria required participants to be adults aged 18 and over and English-speaking. No law enforcement background was required, as the citizen perspective was the primary goal.

The survey opened with an introduction and consent section covering research purpose, data handling, and participant rights, followed by demographic questions on age, gender, and country of residence. A brief introduction to BCI technology

with deployed examples was then provided, along with an explanation of the design fiction methodology and the speculative engagement approach. The core of the survey presented the police officer using BCI narrative in six episodes, with each episode followed by yes/no, Likert-scale questions and/or open-ended response prompts addressing acceptability, concerns, and design preferences. The survey concluded with closing questions on overall perception, addiction prediction, and stance on mandatory adoption. The question types included 5-point Likert scales for acceptability ratings and justification assessments, binary choice items for yes/no predictions, and open-ended text responses for concerns and conditions for acceptance.

Participating in the online survey and immersing themselves in the design fiction narrative, the citizens “encounter” augmented police as subjects of law enforcement rather than as users of the technology. Their perception reflects quantitative public trust, privacy concerns, and power-dynamic considerations that are absent from user-focused interviews. Structured questionnaires enable systematic comparison across a larger number of respondents than qualitative methods permit, while the inclusion of open-ended items alongside Likert scales preserves space for unanticipated concerns and reasoning that purely quantitative instruments would miss. The combination of closed and open question types within the same instrument captures both the distribution of perception patterns across the sample and the reasoning individual respondents articulate behind their positions.

Methodological note

On BCI ambiguity: A deliberate methodological choice was made to leave the specific BCI implementation (invasive versus non-invasive) unspecified in both the Kaino Tuisku narrative and the introductory materials. When participants made assumptions, no corrections were provided. This allowed participants to construct their own interpretations based on the BCI presentation and the design fiction, revealing how they conceptualised the technology without researcher influence.

On the integration of academic theory within design fiction: Academic sources and theoretical frameworks were deliberately embedded within the Kaino Tuisku narrative without explicit disclosure to participants. Rather than indicating "this passage relates to dependency research", subtle narrative cues such as "In the sauna. *Have I lost my own self-confidence?* He gets no answer. *My critical thinking?* No one—nothing answers" invited participants to independently recognise patterns connecting to established theories. Presumably, this approach will provide evidence that theoretical concepts presented in academic literature (e.g., technology dependency, mental integrity concerns) are not merely abstract constructs but are discoverable through participant responses to carefully designed design fiction scenarios.

3.5 Data Analysis

Data analysis employed theoretically guided interpretive reading with AI assistance. Prior work has explored the use of large language models such as ChatGPT as tools for qualitative analysis, identifying both strengths and limitations. Turobov et al. (2024) demonstrated that a custom GPT model can perform initial coding of policy documents, generating over 700 codes from 63 texts, though they noted the model's tendency toward descriptive rather than interpretive outputs and occasional errors in quotation extraction requiring manual verification. Naeem et al. (2025) developed a more comprehensive approach, providing ChatGPT with research context, theoretical frameworks, and methodological considerations at each step of systematic thematic analysis, arguing that this familiarisation improves analytical relevance. Both studies emphasise that AI augments rather than replaces the researcher and that human oversight remains essential for theme development and interpretation.

This study adopted an AI-assisted deductive approach rather than following Braun and Clarke's (2006) inductive six-phase model. The researcher used a large language model (Claude, Anthropic) throughout the analytical process. Transcripts were first

generated using StoryToolkit AI (v0.23.2) for automated speech recognition, then fed to Claude for cleaning and formatting into dialogue documents. The researcher listened to original recordings to verify key passages and correct recognition errors, particularly given the challenges of automated Finnish-language transcription. Beyond transcription and analysis, AI assistance extended to broader research tasks. Claude helped process dense academic literature, identify structural patterns across data sources, and overcome what the researcher experiences as a barrier to sustained text processing—functioning as a cognitive tool that extended analytical capability without replacing interpretive judgement. This positions the researcher not as a detached observer of augmentation but as a participant in cognitive tool use, experiencing firsthand the dependency dynamics that participants would later describe. The narrative construction, participant facilitation, methodological choices, and interpretive judgements throughout this thesis remain the researcher's own. This use aligns with the University of Lapland's guidelines on responsible research practice (Lapin yliopisto, 2026).

For qualitative analysis, the theoretical frameworks from Chapter 2 served as pre-existing analytical categories, following the logic Naeem et al. (2025) describe as familiarising the AI system with research context, aims, and theoretical underpinnings before analysis begins. The researcher provided Claude with the complete transcripts, open-ended survey responses, and theoretical framework: four identity mechanisms (extended mind, cognitive offloading, technological dehumanisation, provisional selves) and four cognitive rights (cognitive liberty, mental privacy, mental integrity, and psychological continuity). Claude scanned for statements connecting to these constructs and extracted illustrative quotations. The researcher then verified extracted quotes against source material and selected final examples based on their clarity in demonstrating theoretical concepts. The data, as well as AI-produced text, was carefully examined by the researcher independently of Claude.

This constitutes deductive content analysis applying predetermined theoretical categories to data rather than inductive theme generation from data. The approach

suited the confirmatory nature of the research: testing whether theoretically predicted identity and rights concerns would emerge in stakeholder responses to the design fiction, without informing participants about the underlying frameworks. Survey quantitative data were analysed through descriptive statistics, including response distributions and percentages calculated from 43 complete responses.

The AI-assisted approach carries specific limitations that parallel those identified in the literature. Like Turobov et al.'s (2024) observation that GPT models produce more descriptive than interpretive outputs, Claude's pattern identification operated at the surface level of matching statements to theoretical categories rather than performing deeper inferential reasoning. Turobov et al. (2024) raise the 'black box' problem in AI-driven analysis, which is the opacity of how the model reaches its conclusions. The same critique applies, as they note, to human interpretive cognition. In this study, both are present simultaneously. Additionally, as Naeem et al. (2025) note, the quality of AI-assisted analysis depends heavily on the quality of prompts and contextual information provided by the researcher, where the instructions shaped what patterns the tool surfaced. These limitations are mitigated by the deductive design: since categories were theoretically predetermined rather than emergent, the primary analytical risk is missed patterns rather than fabricated ones.

The three-component design (researchers engaging speculatively, police professionals drawing on insider experience, and citizens responding) enabled comparison across stakeholder groups as potential subjects of augmented policing. Chapter 5 presents findings organised around these comparative perspectives and their connection to theoretical frameworks. The next chapter, 4, presents the design fiction story of Officer Kaino Tuisku in full.

4. The Design Fiction Story of Officer Kaino Tuisku

EPISODE 1a: ORDINARY WORLD NO MORE

Academic: Ienca & Andorno (2017), cognitive liberty



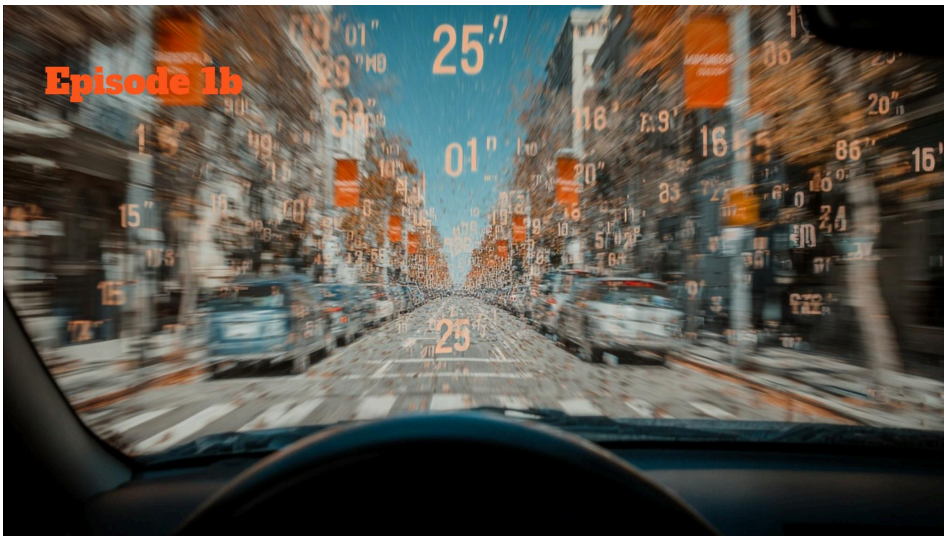
Kaino Tuisku, 42, patrol officer in Finland. Two decades of experience. Younger colleague Nikita has learnt to feel safe in Kaino's patrol: "Tuisku senses problems before they happen. It's a skill that can't be taught. It comes from somewhere deep—from the body," Nikita says.

At home waits Venni—fifteen years together, two children, a mortgage. They go running together. Compete over who gets the better heart rate. Technology has always been part of Kaino's work and free time: radios, smart devices, cameras, and databases. But to him they're just tools. Not missed in the sauna.

At the police station, a department meeting announces a brain-computer interface pilot starting in a month. They say it will improve risk management. In the evening, Venni wraps her arms around Kaino. "What do you think about the brain-computer? Does it really read thoughts?" Kaino sighs. “Not like we have many options. We are not being asked if we want to carry a weapon.” Venni presses her lips to Kaino's neck and taps her fingers lightly on his head. Whispers in an inviting tone. Kaino lets out a laugh of relief for the first time that day.

EPISODE 1b: THRESHOLD

Academic: Clark & Chalmers (1998), extended mind, tool integration



Training begins, and the first weeks are agony. Kaino is used to making decisions alone, in his own head. Now there's something else in there. But humans adapt. Soon licence plates are visible better than with glasses, suspects' body language is registered immediately, and environmental alerts are heard before Kaino even has time to look. Between calls, Nikita grins:

"You've become our turbo-cyborg." "This cyborg makes sure the juniors make it to retirement." Kaino hears himself answer. Nikita giggles.

At the department they're already talking about the next update. "Emotion monitoring," someone says in the break room. "Stress levels, workload, everything in real time. We'll be even more effective."

But in the evening, alone in the car, Kaino thinks about that answer to Nikita. How it came out in such a flirtatious tone. It didn't feel like something he would naturally say. It came too fast. Was that my thought or the system's suggestion? I don't know. Annoying device. How do I distinguish my own emerging thoughts?

EPISODE 1c: TESTS BEGIN

Academic: Dergaa et al. (2024), Gerlich (2025), technology dependency



At the grocery store, Kaino expects price data comparison to arrive in his consciousness. The data doesn't arrive. It's the weekend. Kaino is off duty,

and the device is charging at the station. Kaino was supposed to feel relieved. Finally in his own space, own head, and own thoughts. Why then this longing?

On Sunday he and Nikita are called in for an extra shift. No brain computers were available at the station. So they handle the day as "organic cops", one colleague jokes. In a routine situation in a parking garage, Kaino hesitates a moment too long. Nothing serious; the situation dissolves. But he feels it. Feels how Nikita looks at him. Neither says anything.

At home, Venni tells about her day and interrupts herself when she notices Kaino isn't listening. "Hello! Over here." Kaino nods. Later alone, lying on his back in the sauna, eyes on the ceiling, Kaino wants to know if this sauna temperature is optimal for him. "Where's the machine when you need it!" Then it dawns on him! That hesitation in front of Nikita. And now in the sauna! "Have I lost my own self-confidence?" He gets no answer. "My critical thinking?" Nothing answers.

EPISODE 2a: COMPLAINTS

Academic: Ibarra (1999), Conti (2009), professional vs personal identity



The emotion monitoring update is deployed. The department calls it "The Wellness Tool". "Stress levels, workload in real time. Burnout prevention," the supervisor explains, "This protects you." "What if burnout happens anyway?" asks Tuisku, who slept poorly that night. "Don't worry, we'll put you in the equipment warehouse washing cars if your head starts overheating," the supervisor answers. Some colleagues chuckle. Others don’t seem to find that amazing.

Later, during a patrol break, Nikita is quiet for a long time. “Has something happened to our communication? Before, I could sense from you when a tough call was coming. Now you just operate. Efficiently. But—it feels like I'm sometimes alone in our patrol.” Kaino doesn't know what to say. He doesn't know if he has changed or if Nikita has changed or if the device between them has changed something neither can name.

In the evening at home, Venni rejects Kaino's advance.

EPISODE 2b: DARKEST HOUR

Academic: Ienca & Andorno (2017), Grübler et al. (2014), mental privacy violation



A major police operation. The National Bureau of Investigation leads, and Kaino's unit supports. Border guards are also involved. In Kaino's view, everything goes well. In the locker room after the operation, officers remove their gear. Nikita sits on the bench, rubbing his face. She gets up, mutters something, and leaves. Kaino's gaze lingers on the departing Nikita. On how she moves. Nikita has a beautiful strong body. Good posture and a light, cheerful step that has a specific tone even when she's no longer visible. "Tuisku!" Kaino turns. The supervisor is standing there. The others have left. They're alone. "I was in the leadership meeting. Central field command raised your data. You've been producing emotion-laden data during operations for a couple of weeks now. It usually happens when you're with Nikita. They recommend a partner change. I said I'd talk to you first." The supervisor continues about support services, options, normal procedure. The message passes Kaino. He only hears his own screaming

thoughts: “The system has seen something I haven't admitted even to myself. Idiot!”

Kaino walks home. Past the bus stop. Past a couple walking their dog. Past the shopping centre, on whose side the liquor store sign beckons like the North Star. Kaino rubs his temple. "A real hellish wellness tool!" He turns toward the store.

EPISODE 3: GREY DAWN

Academic: Ienca & Andorno (2017), psychological continuity; Ibarra (1999), provisional selves



Months later, the brain-computer has received several updates. The system has evolved. Now, for one- or two-word messages, communication is possible through thought transmission. It works surprisingly well! Tomorrow they'll demonstrate a robot dog that's promised to hear our thoughts as commands. Kaino has also evolved: certain thoughts are on the surface,

certain ones are buried deeper, where the system can't reach. An internal filter. A second self that guards the firstself.

In the car, Nikita breaks the silence: "I had a rough time back then—my unit change was a shit idea. I just wanted to say that. Sorry. I like working with you." Kaino feels something. Buries it quickly and answers, "Good to have you back. Don't worry!" Later at the station, Kaino checks the day's data levels. Everything is normal. Good!

Friday morning, Kaino puts on the uniform. Looks in the mirror. The man looking back appears the same as before. Venni comes up behind and kisses his cheek. "My cyborg cop remembers to take the kids to Grandma's after work. See you at the airport. Amsterdam is promised 27 degrees all weekend."

Outside the house, Nikita waits. "Ready?" "Ready." Police patrol Kaino and Nikita drive into the beginning workday. Kaino understands now. He has become a person who has learnt to hide part of himself from the machine. It's not a victory. But survival and exploitation of the machine. Adaptation that restored his status among colleagues and was the only possible way to pay the mortgage, take care of the children, spouse, and friends, and still someday make it to retirement.

5. Results and Findings

The literature review (Chapter 2) established four mechanisms shaping technology perception: extended mind theory (Clark & Chalmers, 1998), dependency pattern recognition (Dergaa et al., 2024; Gerlich, 2025), dehumanisation anticipation (Siedl & Mara, 2024) and provisional self-projection (Ibarra, 1999). Additionally, four cognitive rights by Ienca & Andorno (2017) were reviewed. These rights and mechanisms were embedded into Kaino Tuisku's story through the design fiction artefact (Chapter 4). This chapter presents whether the data holds proof for these theories.

The data is built from three complementary data collection methods: a qualitative focus group interview with four postgraduate researchers, a qualitative one-on-one interview with a police professional, and a quantitative online survey with 43 respondents from across Europe. Each method employed a design fiction artefact centred on fictional character Kaino Tuisku, a police officer whose department is implementing brain-computer interface (BCI) technology. The design fiction narrative consisted of six short chapters, each exploring aspects of BCI integration in policing contexts and connected to the academic theory presented in earlier chapters.

Participant notation throughout this chapter: P1, P2, P3, P4 (focus group participants); Po (police professional); and respondent numbers R1–R43 (online survey respondents, numbered by their order in the dataset).

5.1 Focus group findings

Participants

The focus group consisted of four postgraduate researchers from the University of Lapland: P1, a 35-year-old woman in film animation; P2, a 24-year-old woman in industrial design; P3, a 29-year-old man in industrial design; and P4, a 31-year-old

woman in industrial design. Participants were recruited through convenience sampling rather than purposive sampling and belonged to a university research collective. This study treats them as emerging research professionals whose interdisciplinary backgrounds brought relevant perspectives to the emerging brain-computer interface technology through the usage of a design fiction artefact. Participants were encouraged to build upon each other's contributions while also expressing contradictory viewpoints. Although responses are individually attributed, the analysis treats the data as collectively generated insights from four intellectual professionals engaging in collaborative meaning-making. The informed intake and session recording were approved by participants. The session lasted approximately one hour.

Session observations

The session followed the six-episode Kaino Tuisku narrative sequentially. Participants engaged most actively with Episodes 1a–1b (initial BCI adoption and adaptation) and Episode 2b (emotional monitoring), where all four participants contributed without prompting. Episode 2b generated the long uninterrupted discussion segment of the session, with participants speaking over each other to express reactions. Episodes dealing with operational advantages (Episode 1b) produced shorter, more measured responses. P3 and P1 dominated the discussion in terms of speaking time, while P2 contributed fewer but more conceptually distinct observations. P4 spoke least frequently but provided targeted remarks that shifted the group's direction on two occasions. Once regarding the privacy implications of always-on monitoring, and once regarding design recommendations. All four participants responded to Kaino Tuisku's situation by projecting themselves into it rather than analysing it at a distance, frequently using first-person framing such as "I would not want that" rather than "an officer might feel." When asked about design considerations, participants shifted from reactive commentary to generative discussion, proposing specific features and constraints.

Read-only versus write-capable BCI: An emergent ethical boundary

The most significant finding from the focus group was the spontaneous emergence of a distinction between read-only and write-capable BCI technologies, which was a categorisation that participants generated independently without researcher prompting. This distinction maps directly onto concerns raised by Ienca & Andorno (2017) regarding mental integrity, though their work does not establish clear boundaries for acceptable versus unacceptable interventions. The focus group established a clear ethical boundary: read-only BCI was characterised as concerning but tolerable when balanced against potential benefits, while write-capable BCI was deemed simply unacceptable. As P3 stated, “If it had only read capability, it would be much safer. I would trust that more” (P3). This finding suggests that potential users may intuitively distinguish between passive monitoring and active intervention as fundamentally different categories of neurotechnology, with the latter crossing an ethical threshold related to cognitive autonomy and mental integrity.

Technology dependency patterns

Participants identified dependency patterns within the narrative that align with recent research on technology addiction (Dergaa et al., 2024; Gerlich, 2025). The Kaino Tuisku narrative includes moments where the protagonist exhibits early dependency symptoms and engages in internal dialogue about reliance on BCI technology. Participants spontaneously drew analogies to contemporary technologies. P3 commented, “If you’ve used AI for homework, then have to write without it—feels harder” (P3). Similarly, P1 observed that “It has gone to the point where human judgement is bypassed. Because data said so” (P1). These observations validate theoretical concerns about technological dependency transferring from current AI systems to future neurotechnologies. Participants recognised the erosion of independent judgement as a concern that reappeared in the online survey, where respondents characterised BCI as potentially more addictive than smartphones or current AI applications.

5.2 Police 1-on-1 interview findings

Participant

The participant (Po) is a police professional with over two decades of experience, currently serving in a cybercrime unit. Unlike the focus group, Po did not require prompting to imagine the police context and brought direct professional knowledge to the evaluation of the design fiction scenario. The informed intake and session recording were approved by the participant.

Session observations

The session was almost two hours and substantially longer than the focus group. It was more loosely structured in its time management, giving more possibilities for exploratory conversation and allowing for deeper examination of organisational dynamics and operational realities within policing contexts. The longer time was not forced but more a reflection of Po's engagement depth with the material. Po often prefaced answers with contextual information about Finnish police operations before addressing the narrative directly. Just as among focus group participants, Po also admitted that the design fiction narrative, together with the author's ability to draw participants into the story, brought strong emotions.

Po treated the scenario as something to be evaluated professionally, asking clarifying questions about implementation specifics (e.g., who would maintain the system and whether usage data would be accessible to supervisors). Po appeared to engage in the most extensive discussion with Episodes 1a (mandatory adoption announcement) and 2b (emotional monitoring), providing long responses to these sections. Po spontaneously introduced topics not covered in the interview guide, including the role of the National Police Board (Poliisihallitus), career mobility constraints specific to Finnish police officers, and generational differences in police attitudes toward emotional expression. When discussing potential benefits, Po was the only participant across all three methods to describe concrete operational scenarios where BCI could address existing professional limitations. Po returned to

the theme of privacy trade-offs repeatedly throughout the session without prompting, framing it each time through a different professional scenario.

Emergent themes

Po's insights into police organisational structure and operational demands revealed potential mechanisms through which BCI adoption could shift from voluntary to mandatory. The participant acknowledged immediately that Kaino Tuisku's reaction to mandatory BCI usage sounds realistic, noting that "It feels like it could be realistic. In a lot of the experiences I have in the police community, there could be a pretty typical attitude towards an experiment or a pilot" (Po). This contrasts with focus group participant P1's expectation. P1 expressed that there should have been more resistance, stating, "At first, I would have imagined that there would have been more resistance. I immediately felt terribly worried; I don't want that. Then I thought that Kaino took this quite calmly in this text. It was just like there are few options. Of course there are options. You can resign, and you can give feedback to the employer" (P1). Both focus group and survey participants reacted more strongly than Po to the passive BCI acceptance.

Regarding institutional adoption pathways, Po provided context on how police departments currently integrate technology, establishing precedents for understanding BCI adoption patterns. The National Police Board of Finland (Poliisihallitus) was identified as the governing body that would likely initiate a pilot, starting with special units as test groups. Po described a staged pathway: voluntary participation in the special intervention Unit Karhu would establish precedent, after which leadership would simply extend adoption to the remaining personnel. As Po put it, an authority would announce, "Now it comes to this group, and that's it" (Po), indicating that once a special unit has trialled the technology, mandatory rollout to others follows without further negotiation.

Unlike other participant groups who focused primarily on risks, Po articulated potential operational advantages of BCI technology. Enhanced information access during time-critical situations, improved coordination in multi-unit operations, and

faster threat assessments were mentioned as genuine professional benefits. Po noted that current technology limitations, which are, for example, a need to physically access databases or radio communication delays, create operational gaps that BCI could address.

Po engaged in explicit weighing of benefits against concerns in a way that differed from lay participants. While acknowledging operational advantages, Po identified privacy loss as the primary cost: “Am I willing to pay with my privacy? Is the salary sufficient? Is the work important enough that I’m willing to put my privacy at stake?” (Po). This framing differs from lay participants, who tended more toward categorical rejection; the professional perspective treated adoption as a negotiable trade-off rather than an absolute boundary.

Po offered a nuanced perspective on empathy in policing that other participants could not provide, noting that “This is really a personality-dependent question. For some it [empathy] becomes a really important tool. But then there are others who don’t have that *tool*” (Po). Po observed that modern Finnish police are more empathetic and braver to talk about feelings than previous generations, but that this capacity varies by individual and is difficult to teach in police training. This insight connects to survey concerns about dehumanisation: if empathy is already inconsistent among officers, BCI augmentation might further reduce the human qualities citizens value in police encounters.

5.3 Online survey findings

Respondents

The online survey yielded 43 complete responses from European citizens (n = 43, 62.8% men, 34.9% women and 2.3% other). At the beginning of the survey, respondents received visual context alongside written explanations of BCI technology and design fiction methodology to familiarise them with Finnish policing, BCI technology and the design fiction method. Unlike the focus group,

online participants responded as themselves rather than adopting the police officer perspective.

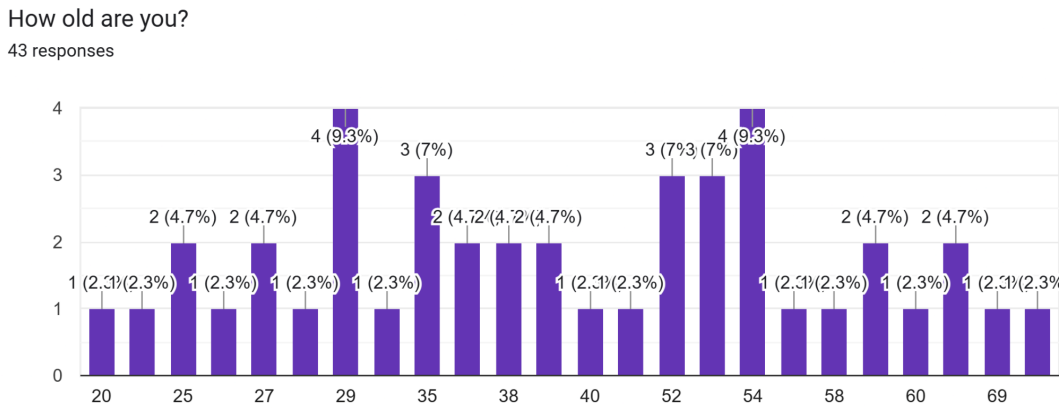


Figure 1: Age distribution of survey respondents

Participants' ages ranged from 20 to 74 years (M = 43.0). Age distribution (Figure 1) showed concentration in two ranges: 20–29 years (27.9%, n = 12) and 50–59 years (32.6%, n = 14), with additional representation from 30–39 years (23.3%, n = 10), 60–69 years (9.3%, n = 4), 40–49 years (4.7%, n = 2), and 70+ years (2.3%, n = 1).

The dataset comprises 43 responses, of which 41 specified a country of residency and two were classified as unknown. The United Kingdom represents the largest proportion of respondents (18/43; 41.9%). Poland, Portugal, and Spain each account for four responses (9.3% each). Italy, Germany, and Greece contribute two responses apiece (4.7% each), while the Netherlands, Hungary, France, Estonia, and the Czech Republic are each represented by a single response (2.3% each).

Response patterns

Of the 43 completed responses, open-ended questions received varying levels of detail. Approximately two-thirds of respondents provided substantive written answers (two or more sentences), while the remaining third gave brief responses of one sentence or single-word reactions. The most extensively answered open-ended

questions were those following Episode 2b (emotional monitoring) and the final question about personal willingness to use BCI technology, which together generated a long average response length. Several respondents used the open-ended fields to express reactions beyond what the Likert scales captured, like respondent 6's rhetorical question about "the takeover of the human brain" and respondent 19's characterisation of the technology as infantilising, which were unprompted elaborations that exceeded the scope of the questions asked. Multiple respondents referenced science fiction or dystopian narratives without being prompted to do so. Quantitative responses showed low variance on mandatory adoption (clustered at the rejection end) and higher variance on questions about conditional or voluntary use, suggesting respondents distinguished between forced and optional scenarios rather than rejecting BCI categorically.

Rejection of mandatory adoption

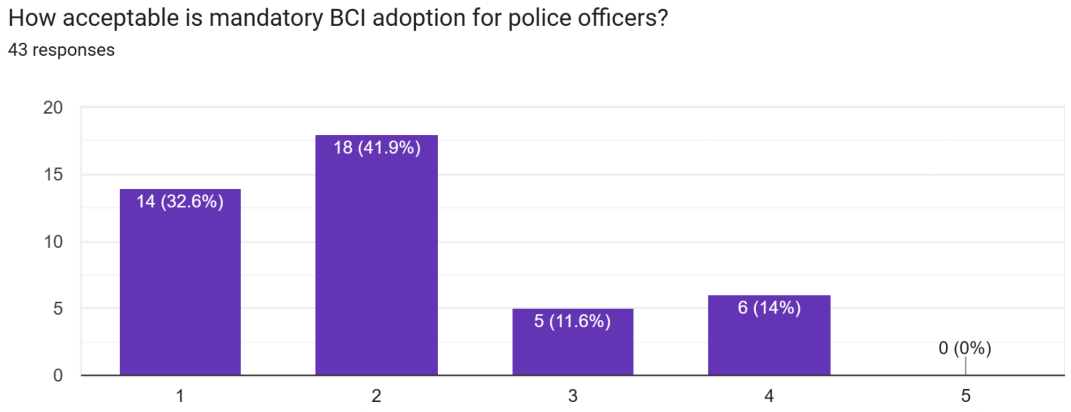


Figure 2: Acceptability of mandatory BCI adoption (5-point scale, 1: “Not acceptable at all” and 5: Rightfully acceptable)

Survey respondents overwhelmingly rejected mandatory BCI adoption as depicted in the Kaino Tuisku narrative. When asked about the acceptability of forced adoption (Figure 2), 74.5% rated it unacceptable (1–2 on a 5-point scale), while none (0%) rated it fully acceptable. Open-ended responses reinforced this

quantitative finding. Respondent 22 wrote that “The worst part is that he can’t opt out” (R22). Similarly, Respondent 9 stated that “Invasion of personal thoughts is unjustifiable” (R9), and Respondent 11 expressed that “The concern is total control over a human being and the loss of privacy” (R11).

Predicted addiction potential

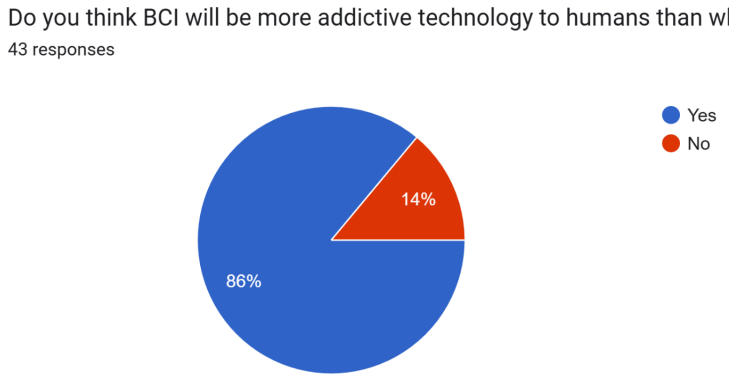


Figure 3: Predicted addiction potential compared to smartphones and AI

When asked whether BCI technology would be more addictive than smartphones or current AI applications (Figure 3), 86% responded yes. Respondents connected this to dependency patterns they already observe. Respondent 38 described this as “cognitive dependency; the technology may enhance performance while eroding baseline competence” (R38). Respondent 21 suggested that “Kaino’s brain has become reliant on the technology to the point where he can no longer function as optimally without it” (R21). Respondent 19 went further, characterising the technology as “too manipulative and dominant; it actually infantilises and demeans the human in off times” (R19).

Diminished trust in augmented officers

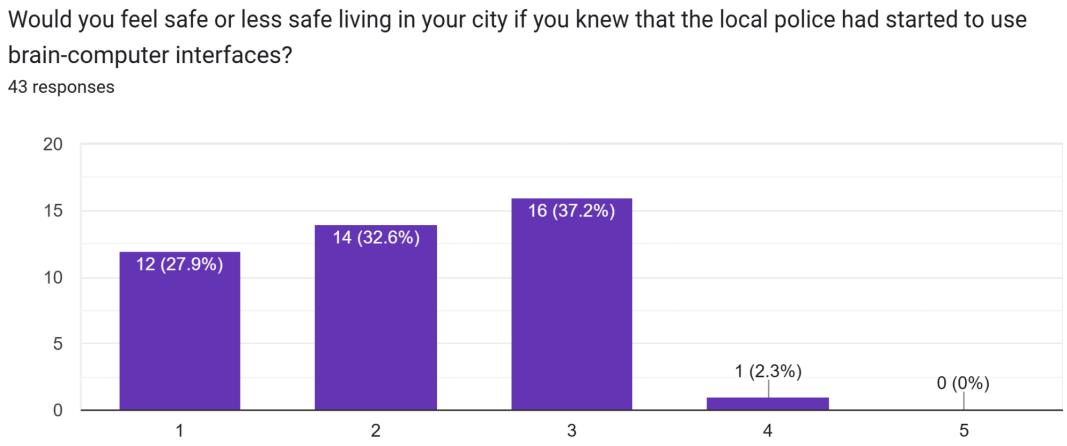


Figure 4: Feeling of safety with BCI-equipped police (5-point scale, 1: “I would feel not safe at all” and 5: “I would feel very safe”)

Survey respondents expressed that BCI-equipped police would reduce rather than increase their sense of safety. When asked if they would feel safer encountering a BCI-augmented officer, 60.5% rated 1–2 (unsafe), while only 2.3% rated 4–5 (safer). Open-ended responses revealed concerns about loss of human qualities. Respondent 25 wrote that the technology “changes a population too much and doesn’t respect their privacy” (R25), while Respondent 15 warned it was “one step away from replacing them entirely with something else. It’s a dangerous path to take” (R15).

Personal rejection despite capability recognition

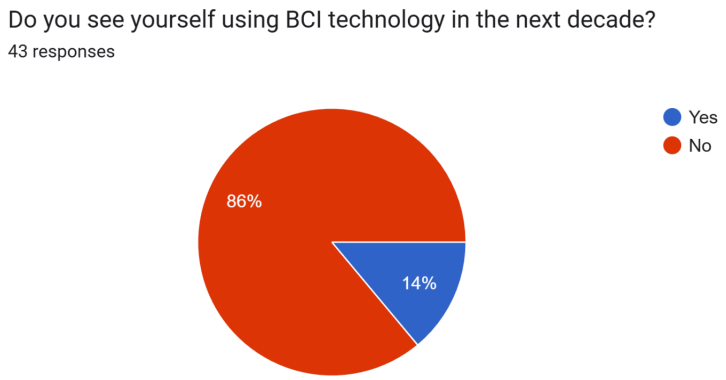


Figure 5: Personal willingness to use BCI in the next decade

A significant majority (86%) stated they would not personally use BCI technology within the coming decade (Figure 5). However, responses were not uniformly negative. Some respondents acknowledged potential benefits while maintaining personal boundaries. Respondent 23 noted that the story had not changed their view, explaining that “like all tools, the problem always lies in the human implementation and usage, which can be at the same time extremely beneficial and harmful” (R23). Respondent 41 offered a more nuanced position, stating, “I think for a job like a police officer, the officer should be well rested and not in emotional distress. I believe it is important to be able to monitor officer’s emotions” (R41).

Dystopian associations

Multiple respondents spontaneously referenced dystopian fiction or expressed existential concerns about the technology’s trajectory. Respondent 6 reacted with alarm, saying, “Extremely wary. Is this the beginning of the takeover of the human brain?” (R6). Respondent 3 acknowledged the technology’s capabilities while rejecting its ethics: “The technology is impressive, but I think morally wrong” (R3). These associations suggest that cultural narratives about surveillance and mind control shape how citizens perceive BCI concepts, even when presented in a professional enhancement framing.

5.4 Cross-Method Synthesis

The three-component design (a focus group with researchers, an online survey with citizens, and an interview with a police professional) enabled triangulation across stakeholder perspectives. This section identifies patterns of convergence and divergence across methods.

Consistent themes across all groups

Three concerns appeared in all datasets regardless of stakeholder position. First, cognitive dependency emerged universally: focus group participants drew AI-homework analogies, survey respondents predicted BCI would be more addictive than current technologies (86%), and the police professional described how reliance could erode baseline competence. Second, mental privacy violations triggered strong reactions across all groups, with Episode 2b (emotional monitoring) generating the most emphatic negative responses in each method. Third, the demand for user control, specifically the ability to disconnect, appeared in focus group design suggestions, survey open-ended responses, and the police officer's discussion of on/off-duty boundaries.

Method-specific insights

Each method contributed unique perspectives unavailable through the others. As the focus group participants built on each other's observations, they generated the read-write threshold distinction, which is a novel finding that emerged through collaborative discussion. This emergent theorising might not have surfaced in individual survey responses or a single interview. The online survey provided quantitative patterns: the 74.5% rejection of mandatory adoption, the 86% predicting high addiction potential, and the 60.5% who would not feel safer with BCI-equipped police. These numbers establish the scale of concern that qualitative methods alone cannot demonstrate. The police interview revealed institutional adoption pathways that neither researchers nor citizens could access. The officer's description of how pilots begin voluntarily in special units before becoming

mandatory and how dissenting voices are silenced within semi-military culture provided insider knowledge essential for understanding real-world implementation dynamics.

Outsider versus insider perception gap

A notable divergence emerged between how outsiders (focus group, survey) and the insider (police professional) perceived likely adoption patterns. Focus group participant P1 expressed surprise at Kaino Tuisku's passive acceptance, stating there should be more resistance and that options like resignation exist. Survey respondents similarly assumed officers would or should resist mandatory adoption. The police professional offered a contrasting view: passive acceptance is realistic given the semi-military organisational culture where dissenting voices are silenced and there is not much right to complain. Po also revealed that police officers have limited career mobility compared to other professionals. Unlike, for example, a nurse, whose qualifications benefit from automatic mutual recognition across EU member states (Directive 2005/36/EC), removing structural barriers to cross-border career mobility (European Parliament & Council, 2005), police officers have no equivalent mechanism and have come through a pipeline that specifically prepared them for national police work, making resignation a less viable option. This gap suggests that public expectations about technology resistance in professional contexts may not align with institutional realities.

Empathy and dehumanization

A connection emerged across methods regarding empathy and perceived dehumanisation. Focus group participant P2 employed a striking metaphor, describing the BCI-equipped officer as having become an NPC (a non-playable character) with all the extra stuff like emotions and personality removed, making a population into efficient machines. P1 elaborated that perhaps the officer communicates only necessary things, but not the extra fluff that makes us human. The police professional described empathy as personality-dependent, noting that for some it becomes a really important tool, while others simply do not have it.

Survey respondents expressed concern that BCI-equipped police would lack empathy, with 60.5% stating they would not feel safer encountering such officers. This convergence suggests citizens fear augmentation reduces the human qualities they value in police encounters.

Validation of theoretical frameworks

Despite different participant populations, question formats, and engagement depths, the convergence of themes across methods provides validation for the theoretical frameworks employed. Participants were not taught about extended mind theory, cognitive dependency research, or cognitive rights frameworks, yet their responses consistently mapped onto these constructs. This suggests the theories capture genuine psychological and ethical concerns rather than abstract academic constructs.

5.5 Design Recommendations from Participants

Given the design backgrounds of focus group participants, they were specifically asked what considerations would guide them in designing non-dystopian products. Their responses, combined with design-relevant observations from the police interview and survey, yielded several critical principles that appeared across data collection methods.

The ability to disable the BCI emerged as essential across all data collection methods. Participants viewed continuous, uninterruptible operation as dystopian, while user-controlled activation preserved autonomy. P4 captured the privacy breach discovery concern by noting that something secret could be found that should not have been found, giving a clear recommendation for having the option to turn off the BCI. The police professional similarly discussed the importance of on/off-duty boundaries, and survey respondents repeatedly emphasised the need for voluntary disconnection. **Individual calibration** was identified as necessary during a focus group conversation about whether stressed BCI-analysed users

should be sent home. Participants recognised neurological individuality, noting that BCI systems must account for person-specific brain patterns. P3 articulated this by saying that in principle everyone has completely different brain functions and that the system should be calibrated somehow for each person. For example, if someone is more anxious about something than others, that should be taken into account. Also, **preservation of non-augmented capability** was emphasised by focus group participants, who argued that BCI users should regularly work as natural police (non-augmented officers) to prevent critical thinking skills from atrophying. This recommendation addresses concerns about cognitive dependency by maintaining baseline human capabilities alongside technological augmentation. Finally, **personal choice in adoption**, a voluntary participation rather than an institutional mandate, emerged as fundamental to ethical implementation across all three methods. The survey data reinforced this, with 74.5% rejecting mandatory adoption, and the police professional's description of institutional compliance mechanisms made this recommendation particularly urgent given the insider perspective on how voluntariness can erode in semi-military organisations.

6. Discussion

This thesis asked: How do different stakeholders perceive the concept of brain-computer interface deployment in law enforcement, and what identity-related concerns do they anticipate? To answer this, design fiction depicting Officer Kaino Tuisku's BCI integration was presented to three stakeholder groups: researchers in a focus group session (n = 4), a police professional in a semi-structured interview (n = 1), and European citizens via online survey (n = 43). The design fiction embedded theoretical constructs from Chapter 2 without explicit disclosure, allowing participants to independently surface concerns that could then be mapped onto established frameworks. This chapter interprets results through the theoretical lenses established in the literature review. Section 6.1 examines how data aligns with identity mechanisms and cognitive rights frameworks. Then, Section 6.2 presents novel contributions that emerged beyond theoretical predictions. Section 6.3 derives design implications. Section 6.4 addresses limitations, and finally Section 6.5 proposes future research directions.

6.1 Findings Through Theoretical Lenses

Extended mind and thought ownership

Clark and Chalmers (1998) argued that when tools are used reliably, they become part of cognition itself. The design fiction tested this boundary through Kaino's question: "Was that my thought or the system's suggestion?" Participants across all groups recognised this cognitive integration. Respondent 4 identified thought ownership as a central concern, writing that the technology "has taken him over. He is relying on it. He is losing his capacity to think for himself" (R4). Respondent 26 noted that the BCI "thinks for him, doesn't allow him to process his own thoughts and choose how to respond to any given situation" (R26). Focus group participant

P1 articulated the same mechanism: “It has gone to the point where human judgement is bypassed. Because data said so” (P1).

These responses confirm the extended mind mechanism operates in BCI perception. However, unlike Clark and Chalmers’ neutral framing of cognitive extension, participants evaluated this integration negatively, as loss rather than enhancement. This suggests that while extended mind theory accurately describes the mechanism, it does not predict how the population will perceive that mechanism. Stakeholders may recognise that BCIs could become part of cognition while simultaneously rejecting this as undesirable.

Technology dependency patterns

Dergaa et al. (2024) documented that AI assistance creates cognitive dependency, while Gerlich (2025) showed these effects extend to critical thinking capacity. What participants said matches what the theory predicted. Survey respondents predicted BCIs would be more addictive than current technologies (86%). Respondent 38 described this as “cognitive dependency; the technology may enhance performance while eroding baseline competence” (R38). Respondent 21 suggested that “Kaino’s brain has become reliant on the technology to the point where he can no longer function as optimally without it” (R21), and Respondent 19 characterised the technology as “too manipulative and dominant; it actually infantilises and demeans the human in off times” (R19).

Focus group participants spontaneously drew parallels to AI dependency. P3 commented that “if young people use AI for homework and then have to write without it, it feels much harder” (P3), while P2 observed that “one can become dependent so easily. Awareness helps with prevention” (P2). This strongly confirms dependency theory and reveals that participants already recognise this pattern from their current technology use, projecting these experiences onto BCI scenarios.

The focus group’s spontaneous use of “NPC” (non-playable character, a gaming term for entities without genuine agency) captures how participants conceptualised

augmentation-induced dehumanisation. NPCs knowingly have no critical thinking at all. This aligns with Siedl and Mara's (2024) finding that physical augmentation decreases users' self-perceived warmth while increasing machine-likeness. The present study suggests these dehumanisation concerns transfer to cognitive augmentation, with participants anticipating such effects before any actual use.

Cognitive rights concerns

The two cognitive rights by Ienca and Andorno (2017) most relevant to this data are cognitive liberty—the freedom to make autonomous neurotechnology decisions, including rights to enhancement and non-enhancement—and mental privacy—the confidentiality of neural data and thought processes. Survey participants recognised that these cognitive rights were violated in Kaino Tuisku's scenario by rating mandatory adoption as unacceptable at 74.5% (1–2 on the scale), with none (0%) rating it fully acceptable. The focus group and police interviewee likewise recognised the violation of cognitive liberty by expressing there should be a choice to turn the machine on and off. P2 said that "one can always turn it off if wanted. There must always be an OFF button somewhere" (P2).

The police professional stated that while Kaino Tuisku's passive acceptance of the mandatory BCI feels natural to police, noting that "it feels like it could be realistic. In a lot of the experiences I have in the police community, there could be a pretty typical attitude towards an experiment or a pilot" (Po); the mandatory rollout would most likely start from a special unit with their permission. Po described how signing up for Unit Karhu (Finland's special police intervention unit for both regular and emergency conditions) could include consenting to serve as a BCI test subject: "In the first pilot circles, probably through voluntariness, then it might come as, 'Now it comes to this group, and that's it'" (Po).

Design fiction episode 2b, depicting emotional monitoring as a mental privacy violation, triggered the strongest reactions across all groups, suggesting that the cognitive rights proposed by Ienca and Andorno are not merely needed in abstract but already built into common moral reasoning. Respondent 11 expressed that "the

concern is total control over a human being and the loss of privacy" (R11). Respondent 9 stated that "invasion of personal thoughts is unjustifiable" (R9). Respondent 31 warned that "the mere awareness that someone is monitoring my emotions could have a detrimental effect on my mood and psyche" (R31), and Respondent 3 saw "no benefits and no reason why any form of tech is monitoring anyone's emotions" (R3). In the focus group, P1 remarked that "if it was measured constantly, and the supervisor came saying 'no need to stress, go home,' I would never be at work" (P1), and P4 raised the question of "what can be monitored, what kind of data, who can see it and where it's stored—who decides" (P4). The police professional likewise noted that "thoughts don't directly mean action. People must also be able to ponder and process things" (Po).

The findings suggest that the cognitive rights framework captures genuine concerns that participants articulate without prompting. Participants did not need to be taught about cognitive liberty or mental privacy. They recognised violations intuitively, indicating these protections align with existing moral reasoning about boundaries between self and technology.

Professional identity and culture filtering

The depth of information elevated from the police interview represents insider knowledge unavailable from other groups. Conti's (2009) police socialisation theory operates through shame-honour dynamics, and according to Po's commentary, these dynamics are visible and existing but rather suppressed in Finnish police culture. Po observed that "dissenting voices exist, but they're not accepted. Everyone knows they're silenced" (Po). This is connected to the semi-military character of the organisation: "This is a semi-military organisation where there isn't much right to complain" (Po).

The key insight is that the police professional provided adoption pathway logic that focus group and survey participants could not access or could not believe. P1 in the focus group expressed that "at first, I would have imagined that there would have been more resistance. I immediately felt terribly worried; I don't want that. Then I

thought that Kaino took this quite calmly in this text. It was just like there are few options. Of course there are options. You can resign, and you can give feedback to the employer" (P1). This insider-outsider perception gap reveals that professional culture may facilitate BCI adoption in ways outsiders find surprising—not through enthusiasm, but through normalised compliance with institutional decisions. While Po said, "It feels like it could be realistic. In a lot of the experiences I have in the police community, there could be a pretty typical attitude towards an experiment or a pilot" (Po).

6.2 Novel Contributions Beyond Theory

Beyond confirming established theoretical frameworks, this study surfaced findings that extend existing literature. Three contributions emerged from participant responses: the read-write threshold as an operationalisation of mental integrity, conditional acceptance patterns that reframe technology perception as boundary-setting rather than binary judgement, and the design fiction artefact itself as a validated research instrument.

The read-write threshold

This study proposes the term 'read-write threshold' to describe the boundary participants drew between acceptable passive neural monitoring and unacceptable active cognitive intervention. This threshold operationalises Ienca and Andorno's (2017) abstract concept of mental integrity into a concrete design principle: technologies that read neural states may be tolerable; technologies that write to cognition cross a fundamental boundary.

P3 spontaneously, without researcher prompting, articulated why this threshold matters for trust. On why reading is acceptable, P3 stated, "If it had only reading capability, it would be much safer. I would trust that more" (P3). On why writing is not: "It doesn't just read your brain but also produces something there" (P3). While Ienca and Andorno (2017) established the right to protection against unauthorised alteration of mental states, they did not specify where acceptable monitoring ends

and unacceptable intervention begins. Participants in this study drew that line, operationalising mental integrity from abstract principle to concrete design constraint.

Conditional acceptance patterns

Perception was not binary. Rather than simply accepting or rejecting BCI technology, participants articulated conditions under which they might accept it. Focus group participants generated concrete design requirements: P2 insisted that “there is always the OFF button” (P2), P3 argued it “should be calibrated to each person” (P3), and P2 added that “reflective capability must remain” (P2). Survey respondents showed similar patterns. Respondent 41 noted: “I think for a job like a police officer, the officer should be well rested and not in emotional distress. I believe it is important to be able to monitor officers' emotions” (R41). Respondent 31 similarly offered qualified support, stating that “after some time this makes the work of a policeman much easier. This will bridge the gap between highly experienced police officers and those who are less experienced” (R31).

This conditional thinking suggests that stakeholder perception operates through boundary-setting rather than wholesale acceptance or rejection. Participants instinctively moved from “Should this exist?” to “Under what constraints should this exist?", a framing that offers actionable guidance for designers and policymakers.

The design fiction artefact as research instrument

A contribution that should not go unstated is the six-episode Kaino Tuisku narrative design fiction artefact itself as a validated instrument for eliciting perception data about speculative technology. The artefact was not arbitrary speculation but a theory-grounded narrative: each episode traced to specific constructs in identity theory, dependency research, or cognitive rights. This deliberate embedding allowed the study to test whether theoretical concerns surface organically from narrative engagement rather than requiring academic framing.

The evidence suggests the artefact succeeded. Participants validated the method's capacity to generate authentic engagement. Po stated that the setup was "really well constructed" (Po), and P2 noted that "the story was good, it somehow draws you in completely, so you can think about this quite broadly" (P2). P4 remarked that "it was interesting to see how you used this design fiction method" (P4). Also, the design of the design fiction presentation and the information appeared to be an educative experience, as one of the respondents left anonymous feedback: "I did The Augmented Police Officer study in Prolific. I found it so interesting! Some of it I did not even know was possible, but your story made so much sense. Thank you for the opportunity." Critically, participants surfaced the very theoretical constructs embedded in the narrative (e.g., dependency, privacy violation, thought ownership) without being told those constructs were present. This demonstrates that design fiction grounded in theory can serve as a reliable prompt for eliciting stakeholder perception data about technologies that do not yet exist in deployable form, bridging the gap identified in Chapter 1.

6.3 Design Implications

These findings translate into concrete guidance for BCI developers and policymakers working toward professional deployment contexts.

The read-write threshold suggests a core design principle: systems that only monitor neural activity will face less resistance than systems that provide input to cognition. If BCIs must include bidirectional capability, clear user indication of when writing occurs and user control over that function become essential. The universal demand for an OFF button indicates that continuous, uninterruptible operation will trigger rejection regardless of benefits offered. Users require the ability to disconnect, even in professional contexts where employers mandate the technology. This has implications for how mandatory adoption policies are structured, perhaps requiring guaranteed off-duty disconnection. To say it as it was in Kaino Tuisku's story: the machine is not longed for in the sauna.

The dependency concerns suggest BCIs should be designed with degradation training in mind. If users must periodically work without augmentation to maintain baseline competence, this should be built into deployment protocols rather than left to individual discipline. The police professional's insight about officers handling shifts without available BCIs points toward this need. Individual calibration also emerged as a requirement, as participants recognised that stress thresholds and cognitive patterns differ between individuals. One-size-fits-all monitoring parameters will produce false positives that erode trust and create workplace dysfunction.

Transparency about data access matters enormously. Episode 2b, which revealed monitoring expansion without Kaino's knowledge, triggered the strongest negative reactions, suggesting that unexpected monitoring provokes greater resistance than transparent monitoring. It is possible that BCI users do not merely want privacy; they want to know exactly what is being monitored, who can access it, and under what circumstances. Taken together, these implications favour BCI designs emphasising user agency, transparency, reversibility, and individual adaptation over designs optimising pure performance enhancement.

6.4 Limitations

Several limitations constrain the claims this study can make. The sample sizes—four focus group participants, forty-three survey respondents, and one police interview—do not permit statistical generalisation to broader populations. The survey sample, recruited through Prolific, likely skews toward technologically literate, English-speaking Europeans who self-select into research participation; no randomisation was applied within the eligible survey population. The geographic distribution was heavily weighted toward the United Kingdom, with the remaining responses dispersed across a range of European countries. The police perspective relies on a single informant; while this officer provided rich insider knowledge unavailable elsewhere, one voice cannot represent the diversity of law enforcement attitudes across ranks, units, or national contexts.

Design fiction as a method carries inherent uncertainty. Participants responded to a fictional scenario, not an actual BCI experience. Their stated concerns may not predict their actual behaviour if confronted with real BCI adoption decisions. The method captures anticipatory perception (what the population think they would feel) rather than documented psychological effects. The study cannot determine which trajectory BCI perception would follow. And while participants responded to the design fiction scenario, the author of this thesis might have biasedly interpreted those responses as conclusions about BCI perception rather than perception of the fiction itself. Equally, participants' own responses may reflect performative caution (expressing stronger rejection than they would feel in practice) influenced by the narrative's deliberately provocative framing. Since adoption patterns in diffusion research suggest initial resistance often precedes eventual uptake (Rogers et al., 2009), the present data cannot distinguish genuine boundary-setting from anticipatory posturing.

Also, cultural specificity limits transferability. Finnish police operate within a high-trust society with relatively low corruption and strong institutional legitimacy. The officer’s description of passive acceptance within semi-military culture may not apply to police forces in countries with different civil-police relationships, higher corruption, or stronger union cultures. Similarly, European survey respondents may hold different privacy expectations than populations in other regions. The analysis approach prioritised interpretive insight over procedural rigour. Thematic identification was guided by theoretical sensitivity as attention to concepts from Chapter 2 rather than formal coding schemes such as Braun and Clarke’s six-phase model. This approach suited the exploratory nature of the research but limits claims about thematic saturation or intercoder reliability. Finally, the design fiction embedded theoretical constructs deliberately, which may have primed certain responses. Whether unprompted engagement with BCI concepts would surface the same themes remains unknown.

6.5 Future Research Directions

This study operates across multiple analytical registers simultaneously. It did examine how researchers, citizens, and police professionals perceive BCI augmentation while also functioning as a test of design fiction as a methodological instrument. The breadth that makes the study exploratorily rich also limits its depth in any single direction. Future research should pursue each strand independently: a dedicated study of police professional perception with larger samples, a cross-cultural citizen survey with standardised instruments, and a methodological study isolating design fiction's mechanisms from its outputs. The present work identifies what those studies should investigate; it cannot substitute for them.

Most immediately, the read-write threshold distinction deserves systematic testing. Do larger samples consistently draw this boundary? Does the distinction hold across cultures, age groups, and professional contexts? Experimental designs presenting participants with read-only versus read-write BCI scenarios could quantify acceptance differences and identify which specific write functions trigger rejection. Tracking attitudes over time as BCI technology advances would also reveal whether perceived inevitability eventually produces acceptance or whether resistance persists despite technological normalisation.

Professional contexts beyond law enforcement require examination. How do military personnel, surgeons, air traffic controllers, and train operators (Chan, 2018) perceive BCI concepts? Each profession carries distinct identity structures, autonomy expectations, and technology relationships that may produce different perception patterns. Comparative studies across professions could identify which professional characteristics predict acceptance or resistance. The single police interview revealed institutional adoption pathways that outsiders did not anticipate; larger studies within and across law enforcement ranks, units, and countries could map how organisational culture shapes technology perception. Ethnographic methods following actual technology pilots would complement the speculative approach used here. Finally, participatory design research involving potential BCI

users in development processes could test whether the design implications identified here actually shift perception. If users help shape monitoring parameters, control interfaces, and disconnection protocols, does acceptance increase? Such research would bridge the gap between anticipatory perception studies and deployment-ready design guidance.

7. Conclusion

This study argued brain-computer interfaces are transitioning from therapeutic applications toward professional deployment contexts, and that stakeholder perception research conducted before such deployment can meaningfully inform design decisions that would otherwise be made without public input. For this, the prime question this thesis tries to answer is how different stakeholders perceive the concept of BCI deployment in law enforcement and what identity-related concerns they anticipate. Three groups engaged with the design fiction of Officer Kaino Tuisku: postgraduate researchers in a focus group (n = 4), a police professional with over twenty years of experience (n = 1), and European citizens via online survey (n = 43). Their perception was predominantly cautious. Survey respondents rated mandatory BCI adoption as unacceptable at 74.5%, would feel less safe encountering BCI-equipped police at 60.5%, and would not personally use the technology within the coming decade at 86%. Yet perception was not categorically negative. Participants across all groups recognised potential benefits under appropriate conditions, moving from “Should this exist?” to “Under what constraints could this become acceptable?”

The study's principal contribution is the six-episode Kaino Tuisku narrative design fiction artefact itself that operationalised abstract theoretical constructs into a functional research instrument. Each episode embedded specific frameworks from identity theory, dependency research, and cognitive rights without disclosure, and participants independently surfaced the very constructs the narrative contained. The artefact proved that design fiction grounded in theory can prompt stakeholders to articulate concerns that map onto established academic frameworks without requiring academic framing, demonstrating that design, as a discipline, can produce research tools that work. From this instrument, secondary contributions emerged: the read-write threshold distinguishing tolerable monitoring from unacceptable cognitive intervention, the universal demand for disconnect capability, the requirement for individual calibration, the insistence on transparency about what

data is read and by whom, and the demand for periodic BCI-free operation to preserve baseline competence independent of the technology to protect against dehumanisation. Notably, these contributions do not appear in prior BCI perception research (particularly the read-write threshold) and were not predicted by the literature review but surfaced organically through participant engagement with the artefact.

There is a reflexive dimension worth acknowledging. As Chapter 3.5 describes, this thesis was itself produced with AI cognitive assistance, meaning the dependency questions my participants raised were not abstract to me but lived. I am not a detached observer of augmentation; I am a participant in it. But the tool did not produce this thesis. It enabled me as a designer to do design and conduct research. To process what I otherwise struggle to process and to structure what I otherwise struggle to structure. The narrative construction, the participant facilitation, and the interpretive judgements—these remained mine. Yet the honest recognition is that my thinking was augmented, and the boundary between tool and thinker is not always clean. Perhaps the read-write threshold applies here too. My participants drew their line at tools that write and that make decisions should belong to the person. By that measure, my own workflow sits on the acceptable side of the very boundary they invented. The tool extended what I could do; it did not decide what I should think. And for every word placed on these pages, I carry full responsibility. If this thesis argues that augmentation demands human oversight, then it should not merely state that claim but exemplify it.

Brain-computer interfaces will arrive. This thesis offers one contribution to ensuring they arrive thoughtfully.

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9. Appendix

Focus Group Presentation Material

Tutkimus:
AUGMENTOITU POLIISI

Konstantin Nikkari

Intro

11 vuotta yrittäjyyttä
graafikkona, näyttelijänä,
video- ja valokuvaajana

Konstantin Nikkari

Ikuisuusopiskelija.
Ikuisuus loppuu nyt.

LAPIN YLIOPISTO
UNIVERSITY OF LAPLAND

2007



Gradu

Tutkin kuinka suhtaudumme Aivo–tietokone-liitäntään (BCI)

Kiinnostaa BCIn mahdollisuudet ja mahdottomuudet sekä mitä pahaa ja hyvää se voi tuoda mukanaan.

Käytän menetelmänä Design Fiction ja haastatteluja.


Vapaus kysyä
mitä vain,
koska vain.


Lupa ja yhteisymmärrys
Taltion tämän haastattelun.
Hyväksymällä pysyt mukana haastattelussa.
Taltioin ja analysoin vastaukset.
En julkaise nimiä. Julkaisen osallistujien määrän, sukupuolen (M, N, Mu) ja iän.
Käytän dataa gradussani ja mahdollisesti myöhemmin henkilökohtaisessa tutkimuksessani ja julkaisuissa (https://www.konstantin.fi/ ja https://www.youtube.com/@HEWKN).
HOX! En julkaise osallistujien ääntä tai kuvaa tällaisenaan missään.

Meidän focus ryhmä

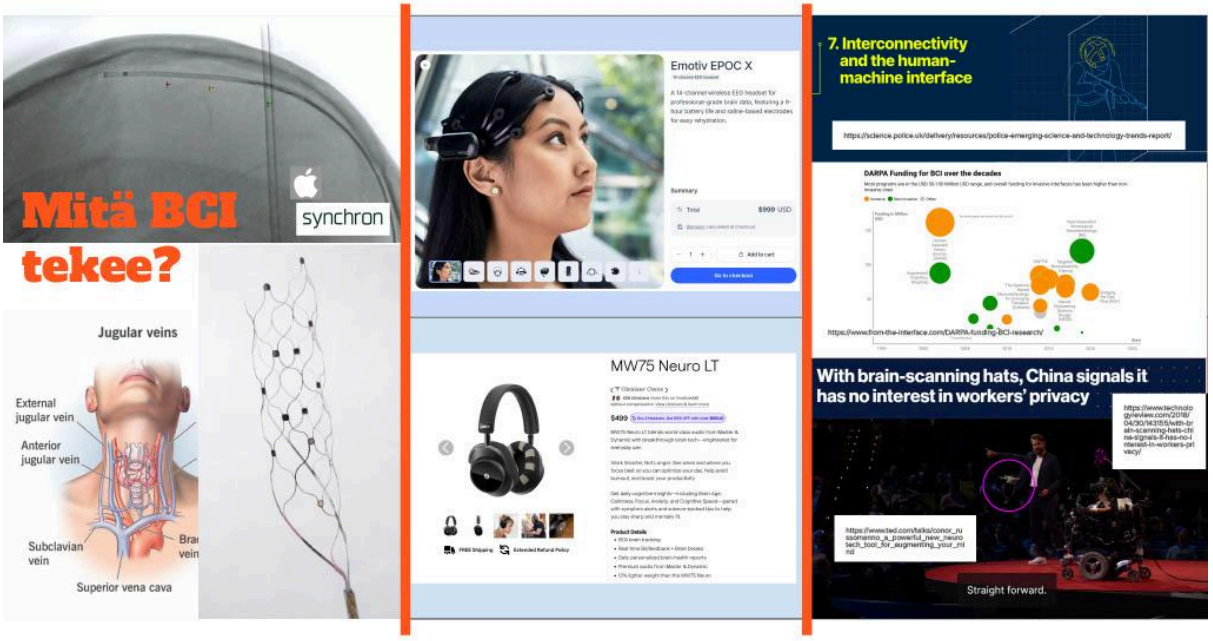
Jutellaan hetki.

Ketä meitä on paikalla?

Oletko kuullut aivo-tietokone-liitännöistä /
Brain-Computer Interface (BCI)? Esim. Neuralink.

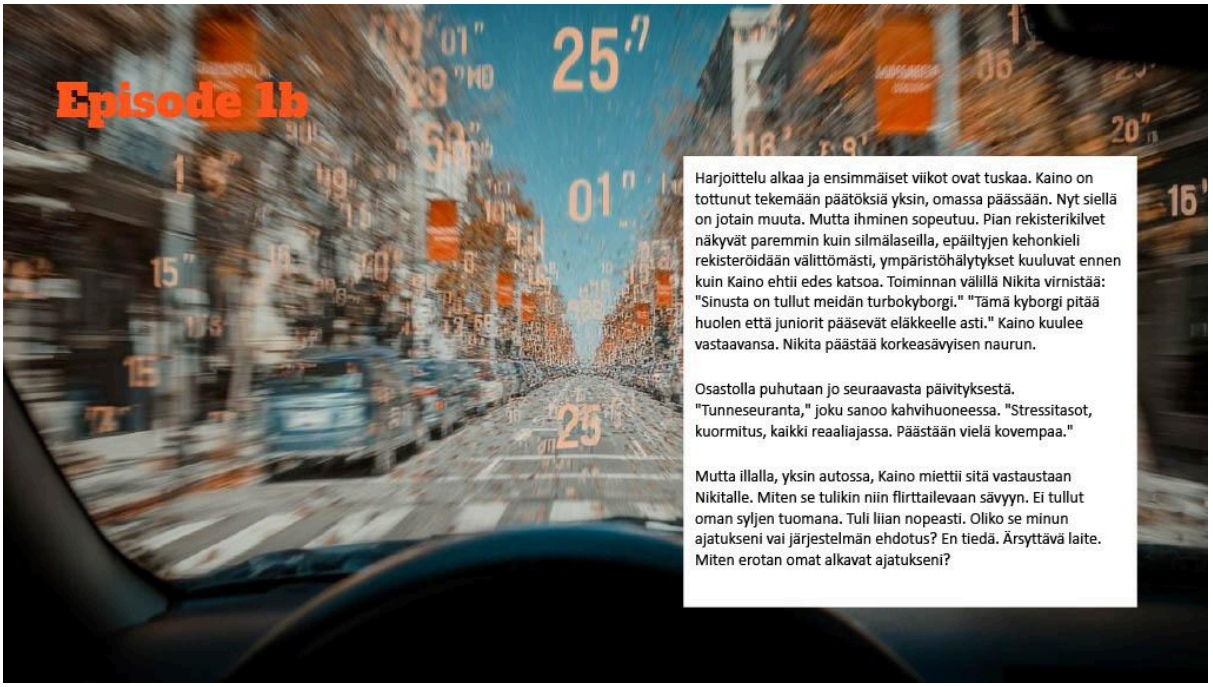
Entä Design Fiction?

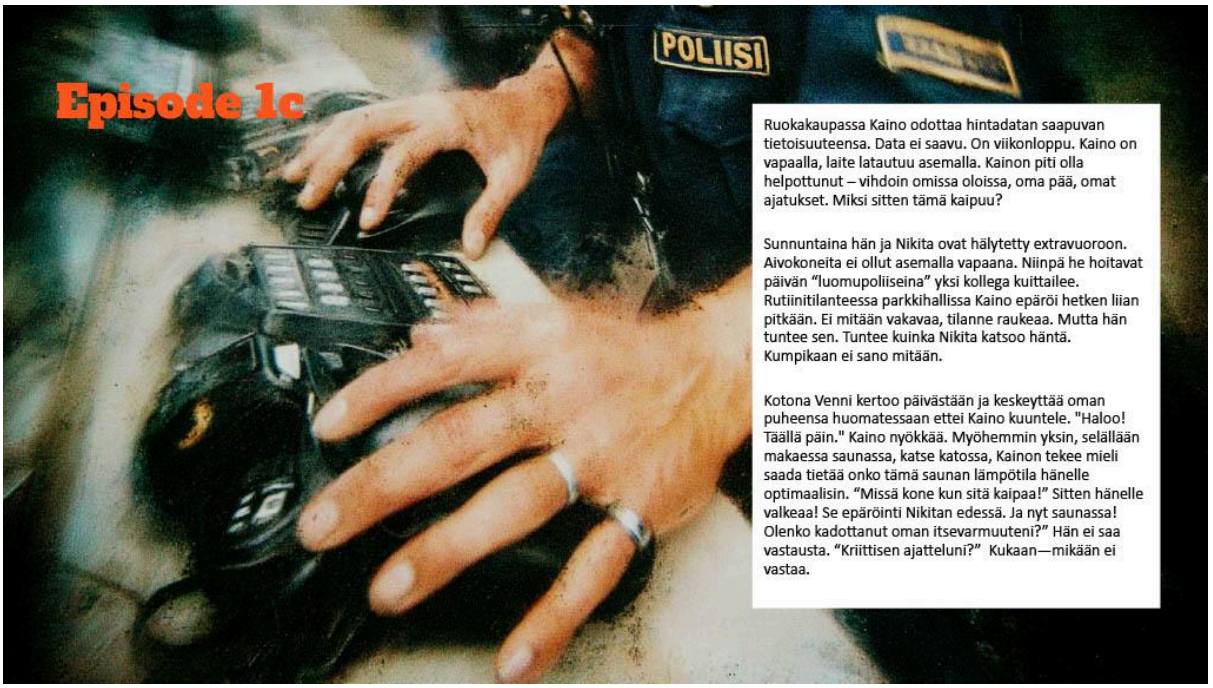



Mitä BCI
tekee?
synchron
Jugular veins
External jugular vein
Anterior jugular vein
Subclavian vein
Superior vena cava
Emotiv EPOC X
MW75 Neuro LT
7. Interconnectivity and the human-machine interface
https://science.police.uk/delivery/resources/police-emerging-science-and-technology-trends-report/
DARPA Funding for BCI over the decades
With brain-scanning hats, China signals it has no interest in workers' privacy
Straight forward.


Mitä on design fiction?
THE NEW JOURNAL
WORLDWIDE CROP FAILURES IN 2050 HOW WILL WE EAT?
https://superflux.in/index.php/work/mitigation-of-shock/
Pets as Protein

Design fiction + BCI





Episode 1c

Ruokakaupassa Kaino odottaa hintadatan saapuvan tietoisuuteensa. Data ei saavu. On viikonloppu. Kaino on vapaalla, laite latautuu asemalla. Kainon piti olla helpottunut – vihdoin omissa oloissa, oma pää, omat ajatukset. Miksi sitten tämä kaipuu?

Sunnuntaina hän ja Nikita ovat hälytetty extravuoroon. Aivokoneita ei ollut asemalla vapaana. Niinpä he hoitavat päivän "luomupoliiseina" yksi kollega kuittailee. Rutiinitilanteessa parkkihallissa Kaino epäröi hetken liian pitkään. Ei mitään vakavaa, tilanne raukeaa. Mutta hän tuntee sen. Tuntee kuinka Nikita katsoo häntä. Kumpikaan ei sano mitään.

Kotona Venni kertoo päivästään ja keskeyttää oman puheensa huomatessaan ettei Kaino kuuntele. "Haloo! Täällä päin." Kaino nyökkää. Myöhemmin yksin, selällään makaessa saunassa, katse katossa, Kainon tekee mieli saada tietää onko tämä saunan lämpötila hänelle optimaalisin. "Missä kone kun sitä kaipaa!" Sitten hänelle valkeaa! Se epäröinti Nikitan edessä. Ja nyt saunassa! Olenko kadottanut oman itsevarmuuteni?" Hän ei saa vastausta. "Kriittisen ajatteluni?" Kukaan—mikään ei vastaa.

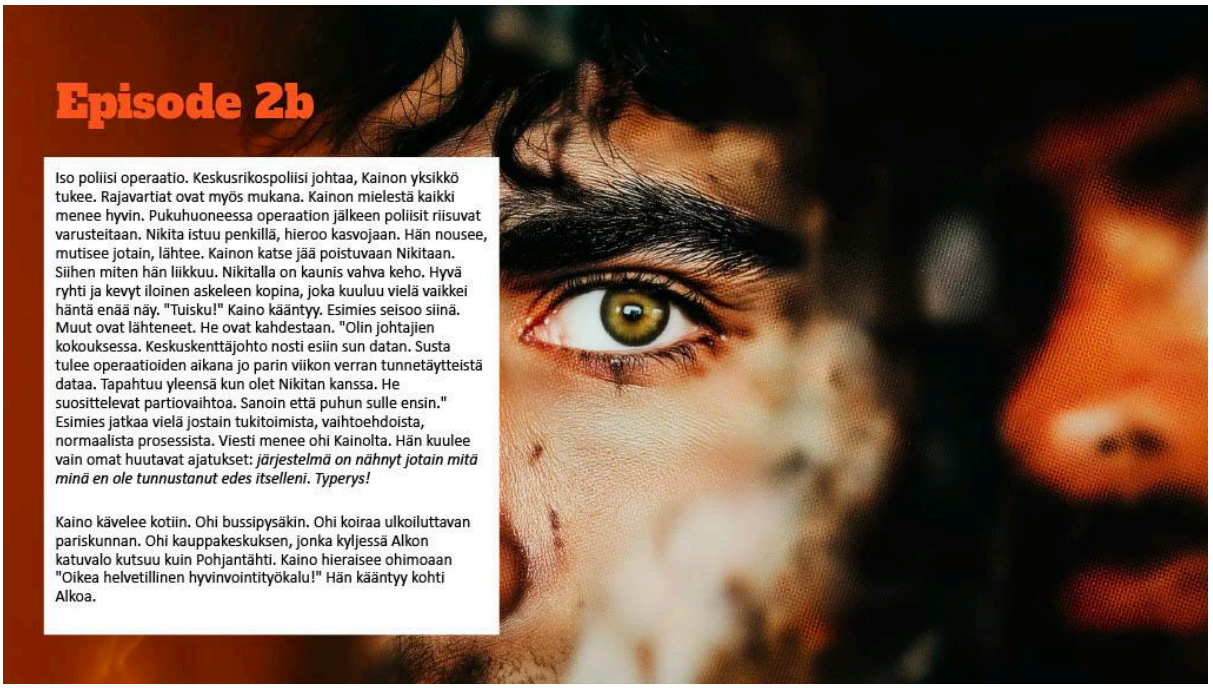


Episode 2a

Tunneseurantapäivitys otetaan käyttöön. Osasto kutsuu sitä "Hyvinvointityökaluksi". "Stressitasot, kuormitus reaaliajassa. Loppuunpalamisen esto," esimies kertoo: "Tämä suojelee teitä." "Mitä jos kuitenkin tulee burnout?" Huonosti yönsä nukkunut Tuisku kysyy. "Älä huoli, pistetään teidät välinevarastoon pesemään autoja jos alkaa nuppi ylikuumentua" esimies vastaa. Osa kollegoista naurahtaa. Toiset ovat vakavia.

Myöhemmin, partiotauolla Nikita on hiljaa pitkään. "Onko meidän kommunikaatiolle tapahtunut jotain? Ennen mä tunsin susta milloin on tulossa jäykkää keikkaa. Nyt sä vaan toimit. Tehokkaasti. Mutta, tuntuu että olen välillä yksin meidän partiossa." Kaino ei tiedä mitä sanoa. Hän ei tiedä onko hän muuttunut vai onko Nikita muuttunut vai onko välissä oleva laite muuttanut jotain mitä kumpikaan ei osaa nimetä.

Illalla kotona Venni torjuu Kainon lähestymisen.



Episode 2b

Iso poliisi operaatio. Keskusrikospoliisi johtaa, Kainon yksikkö tukee. Rajavartiat ovat myös mukana. Kainon mielestä kaikki menee hyvin. Pukuhuoneessa operaation jälkeen poliisit riisuvat varusteitaan. Nikita istuu penkillä, hieroo kasvojaan. Hän nousee, mutisee jotain, lähtee. Kainon katse jää poistuvaan Nikitaan. Siihen miten hän liikkuu. Nikitalla on kaunis vahva keho. Hyvä ryhti ja kevyt iloinen askeleen kopina, joka kuuluu vielä vaikkei häntä enää näy. "Tuisku!" Kaino kääntyy. Esimies seisoo siinä. Muut ovat lähteneet. He ovat kahdestaan. "Olin johtajien kokouksessa. Keskuskenttäjohto nosti esiin sun datan. Susta tulee operaatioiden aikana jo parin viikon verran tunnetäytteistä dataa. Tapahtuu yleensä kun olet Nikitan kanssa. He suosittelevat partiovaihtoa. Sanoin että puhun sulle ensin." Esimies jatkaa vielä jostain tukitoimista, vaihtoehdoista, normaalista prosessista. Viesti menee ohi Kainolta. Hän kuulee vain omat huutavat ajatukset: *järjestelmä on nähnyt jotain mitä minä en ole tunnustanut edes itselleni. Typerys!*

Kaino kävelee kotiin. Ohi bussipysäkin. Ohi koiraa ulkoiluttavan pariskunnan. Ohi kauppakeskuksen, jonka kyljessä Alkon katuvalo kutsuu kuin Pohjantähti. Kaino hieraisee ohimoaan "Oikea helvetillinen hyvinvointityökalu!" Hän kääntyy kohti Alkoa.



Episode 3

Kuukausia myöhemmin aivokoneeseen on tullut useampi päivitys. Järjestelmä on kehittynyt. Nyt, kun kyse on yhden, kahden sanan viestistä on kommunikointi mahdollista ajatuksen välityksellä. Toimii yllättävän hyvin! Huomenna esitellään robottikoiraa jonka luvattaan kuulevan meidän ajatukset käskyinä. Kaino on myös kehittynyt: tietyt ajatukset pinnalla, tietyt haudattu syvemmälle, mihin järjestelmä ei ylety. Sisäinen suodatin. Toinen minä joka vartioi ensimmäistä minää.

Autossa Nikita rikkoo hiljaisuuden: "Mulla oli vähän vaikeaa silloin aikaisemmin—mun yksikön vaihto oli paska idea. Halusin vaan sanoa sen. Sori. Tykkään tehdä sun kanssa töitä." Kaino tuntee jotain. Hautaa sen nopeasti ja vastaa: "Kiva kun tulit takaisin. Älä huoli!". Myöhemmin osastolla Kaino tarkastaa päivän datatasot. Kaikki normaalia. Hyvä!

Perjantaiaamulla Kaino pukee univormun. Katsoo peiliin. Mies joka katsoo takaisin näyttää samalta kuin ennen. Venni tulee taakse, suutelee poskea. "Kyborgikyttä muistaa sitten työn jälkeen viedä lapset mummolaan. Nähdään lentokentällä. Amsterdamiin on luvattu 27 astetta koko viikonlopuksi."

Talon edessä odottaa Nikita. "Valmis?" "Valmis." Poliisipartio Kaino ja Nikita ajavat alkavaan työpäivään. Kaino ymmärtää nyt. Hänestä on tullut ihminen joka on oppinut piilottamaan osan itsestään koneelta. Se ei ole voitto. Vaan selviytymistä ja koneen hyväksikäyttöä. Adaptaatio joka palautti hänen arvoasemansa kollegoiden kesken, ja ainoa mahdollinen tapa maksaa asuntolaina, hoitaa lapset, puoliso, kaverit ja päästä vielä joskus eläkkeelle.

Keskustelua

1. Mitä yhteisiä huolia nousi esiin?
2. Millaisia suunnitteluperiaatteita antaisit BCI:n kehittäjille? Tai itsellesi suunnittelijana?
3. Oliko jotain mitä et ollut ajatellut ennen tätä sessiota?
4. Mikä jäi mietityttämään eniten?
5. Muuttiko tämä sessio suhtautumistasi BCI-teknologiaan? Miten?
6. Missä menee hyväksyttävän ja ei-hyväksyttävän raja poliisi-BCI:ssä?
7. Jäikö jotain sanomatta keskustelussa?

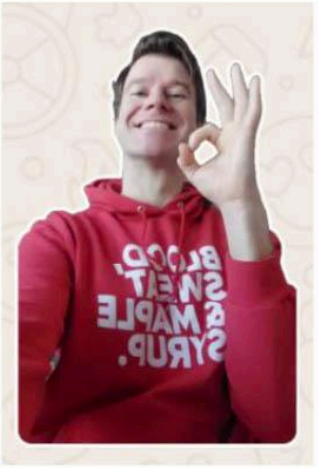
Kiitos,

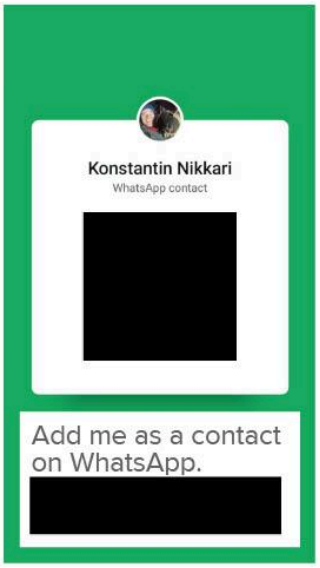
Kun autat ymmärtämään maailmaa, ja onnea myös sinun omaan tutkimukseen! 🙏🫂

hello@konstantin.fin

konstantin.fi

youtube.com/@HEWKN





1-on-1 Interview Presentation Material

Tutkimus:
AUGMENTOITU POLIISI

Konstantin Nikkari

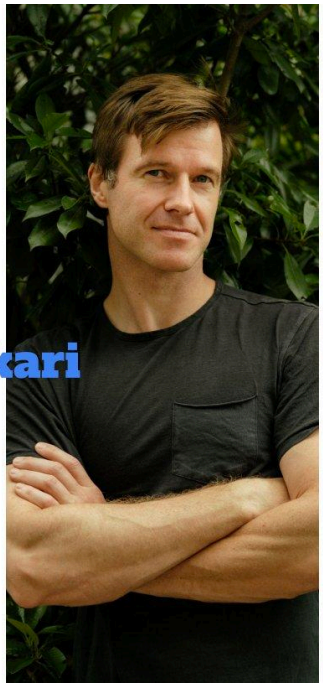
Intro

11 vuotta yrittäjyyttä
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video- ja valokuvaajana

Konstantin Nikkari

Kiinnostaa tutkia tohtoriksi

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UNIVERSITY OF LAPLAND



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Hyväksymällä pysyt mukana haastattelussa.
Taltioin ja analysoin vastaukset.
En julkaise nimiä. Julkaisen osallistujien määrän, sukupuolen (M, N, Mu) ja iän.
Käytän dataa gradussani ja mahdollisesti myöhemmin henkilökohtaisessa tutkimuksessani ja julkaisuissa (https://www.konstantin.fi/ ja https://www.youtube.com/@HEWKN).
HOX! En julkaise osallistujien ääntä tai kuvaa tällaisenaan missään.



Me

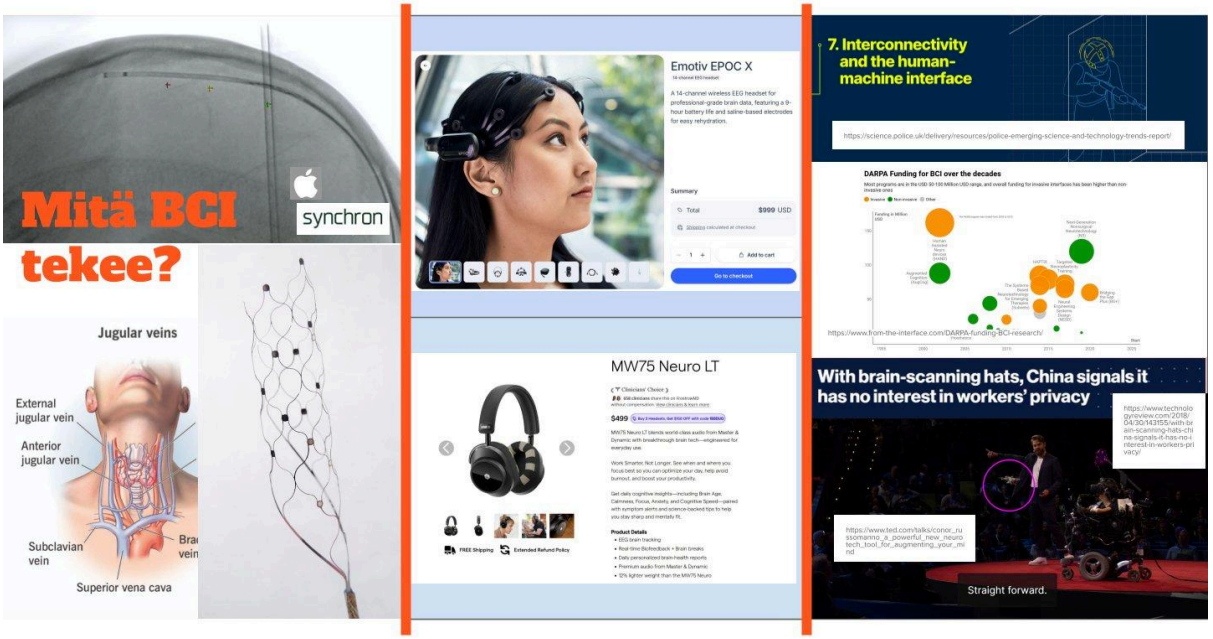
Jutellaan hetki.

Ketä meitä on paikalla?

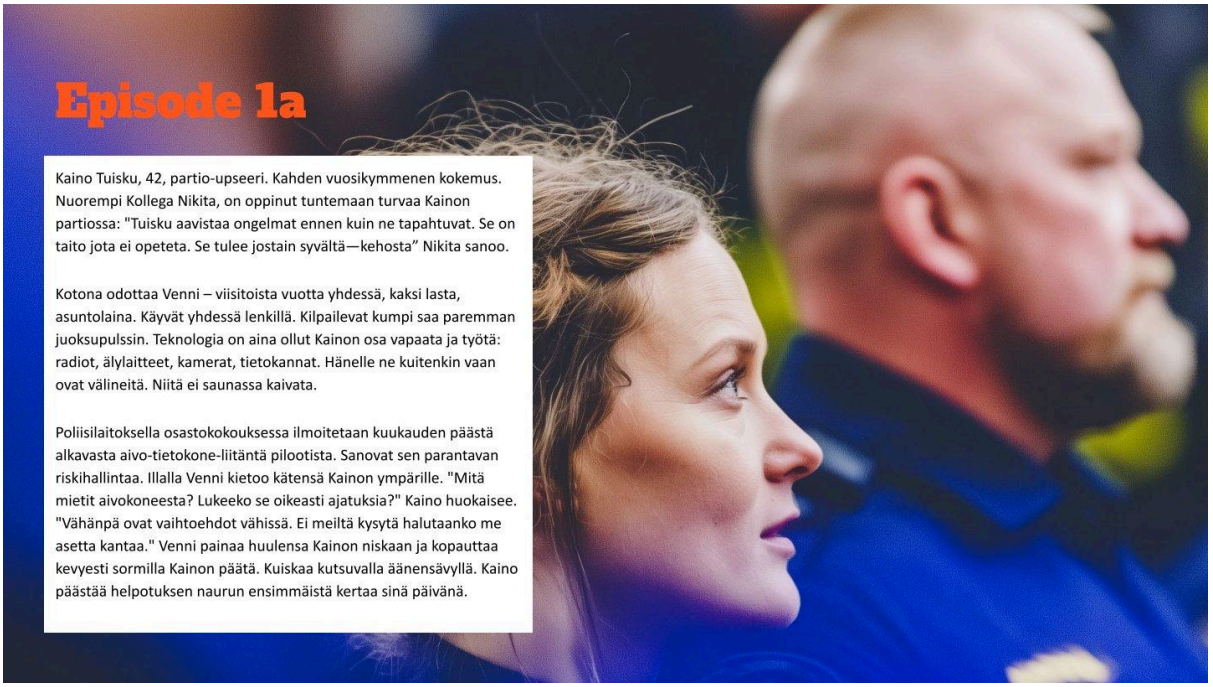
Oletko kuullut aivo-tietokone-liitännöistä /
Brain-Computer Interface (BCI)? Esim. Neuralink.

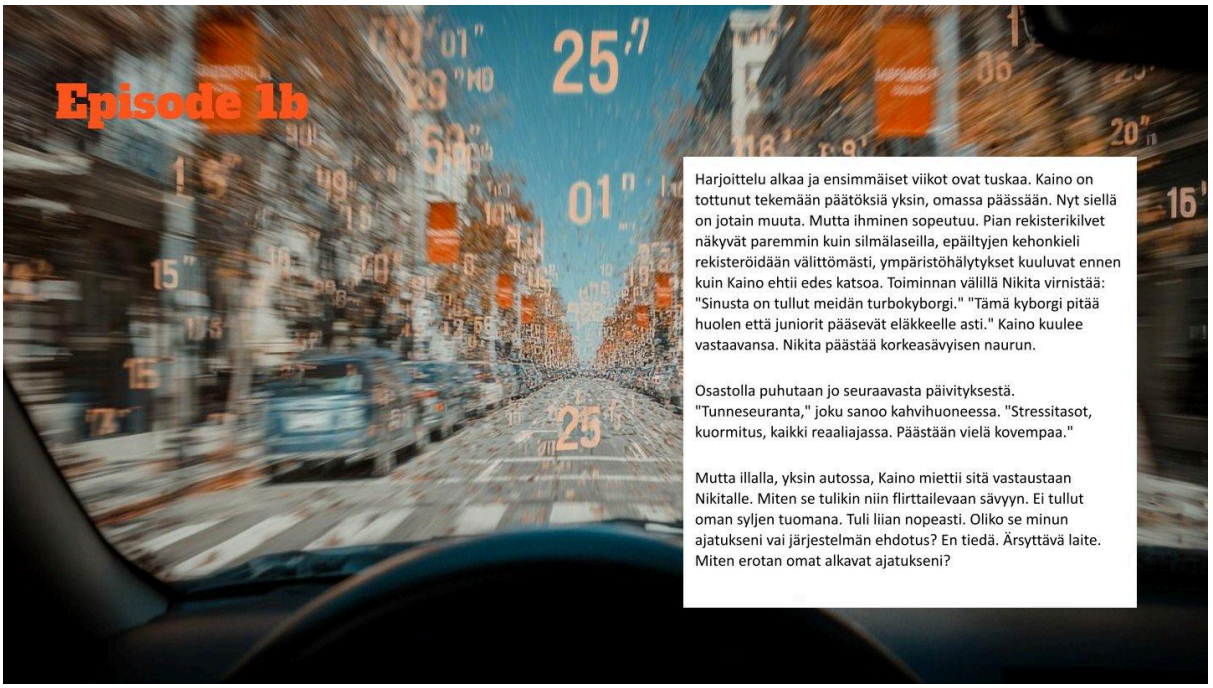
Entä Design Fiction?


POLIISI
POLIISI
POLIISI
Olet poliisi.
Millaisia välineitä poliisilla on?
Millaisia tehtäviä poliisi tekee?
Millaiset ihmiset ovat poliiseja?
Millaisen koulutuksen poliisi käy?
Millaisia ihmisiä poliisi kohtaa?


Mitä BCI
tekee?
synchron
Jugular veins
External jugular vein
Anterior jugular vein
Subclavian vein
Superior vena cava
Emotiv EPOC X
Summary
Total
$999 USD
Add to cart
Go to checkout
MW75 Neuro LT
$499
7. Interconnectivity and the human-machine interface
https://science.police.uk/delivery/resources/police-emerging-science-and-technology-trends-report/
DARPA Funding for BCI over the decades
https://www.from-the-interface.com/DARPA-funding-BCI-research/
With brain-scanning hats, China signals it has no interest in workers' privacy
https://www.technologyreview.com/2018/04/30/143155/with-brain-scanning-hats-china-signals-it-has-no-interest-in-workers-privacy/
https://www.ted.com/talks/conor_russomanno_a_powerful_new_neurotech_tool_for_augmenting_your_mind
Straight forward.

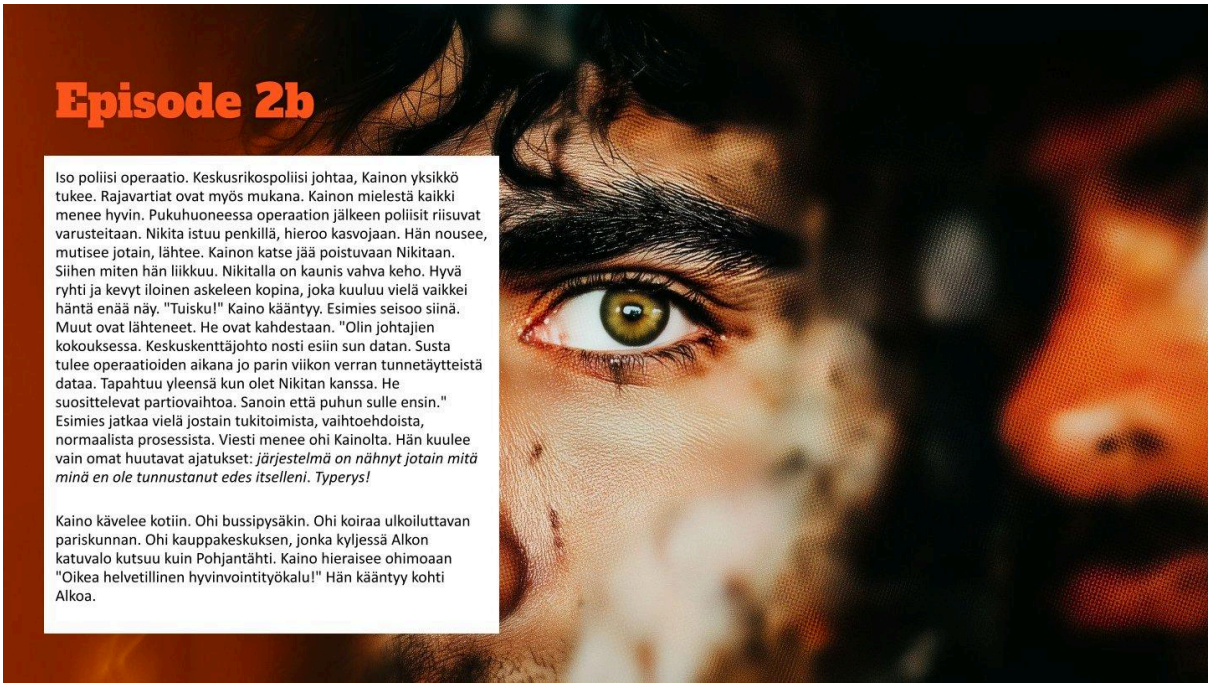

Mitä on design fiction?
THE NEW JOURNAL
WORLDWIDE CROP FAILURES IN 2050 HOW WILL WE EAT?
TOXIC AIR
ILLEGAL
https://superflux.in/index.php/work/mitigation-of-shock/
Pets as Protein
NEW MEAT


Episode 1a
Kaino Tuisku, 42, partio-upseeri. Kahden vuosikymmenen kokemus. Nuorempi Kollega Nikita, on oppinut tuntemaan turvaa Kainon partiossa: "Tuisku aavistaa ongelmat ennen kuin ne tapahtuvat. Se on taito jota ei opeteta. Se tulee jostain syvältä—kehosta" Nikita sanoo.
Kotona odottaa Venni – viisitoista vuotta yhdessä, kaksi lasta, asuntolaina. Käyvät yhdessä lenkillä. Kilpailevat kumpi saa paremman juoksupulssin. Teknologia on aina ollut Kainon osa vapaata ja työtä: radiot, älylaitteet, kamerat, tietokannat. Hänelle ne kuitenkin vaan ovat välineitä. Niitä ei saunassa kaivata.
Poliisilaitoksella osastokokouksessa ilmoitetaan kuukauden päästä alkavasta aivo-tietokone-liitäntä pilootista. Sanovat sen parantavan riskihallintaa. Illalla Venni kietoo kätensä Kainon ympärille. "Mitä mietit aivokoneesta? Lukeeko se oikeasti ajatuksia?" Kaino huokaisee. "Vähänpä ovat vaihtoehdot vähissä. Ei meiltä kysytä halutaanko me asetta kantaa." Venni painaa huulensa Kainon niskaan ja kopauttaa kevyesti sormilla Kainon päätä. Kuiskaa kutsuvalla äänensävyllä. Kaino päästää helpotuksen naurun ensimmäistä kertaa sinä päivänä.


Episode 1b
Harjoittelu alkaa ja ensimmäiset viikot ovat tuskaa. Kaino on tottunut tekemään päätöksiä yksin, omassa päässään. Nyt siellä on jotain muuta. Mutta ihminen sopeutuu. Pian rekisterikilvet näkyvät paremmin kuin silmälaseilla, epäiltyjen kehonkieli rekisteröidään välittömästi, ympäristöhälytykset kuuluvat ennen kuin Kaino ehtii edes katsoa. Toiminnan välillä Nikita virnistää: "Sinusta on tullut meidän turbokyborgi." "Tämä kyborgi pitää huolen että juniorit pääsevät eläkkeelle asti." Kaino kuulee vastaavansa. Nikita päästää korkeasävyisen naurun.
Osastolla puhutaan jo seuraavasta päivityksestä. "Tunneseuranta," joku sanoo kahvihuoneessa. "Stressitasot, kuormitus, kaikki reaaliajassa. Päästään vielä kovempaa."
Mutta illalla, yksin autossa, Kaino miettii sitä vastaustaan Nikitalle. Miten se tulikin niin flirttailevaan sävyyn. Ei tullut oman syljen tuomana. Tuli liian nopeasti. Oliko se minun ajatukseni vai järjestelmän ehdotus? En tiedä. Ärsyttävä laite. Miten erotan omat alkavat ajatukseni?


POLIISI
Episode 1c
Ruokakaupassa Kaino odottaa hintadatan saapuvan tietoisuuteensa. Data ei saavu. On viikonloppu. Kaino on vapaalla, laite latautuu asemalla. Kainon piti olla helpottunut – vihdoin omissa oloissa, oma pää, omat ajatukset. Miksi sitten tämä kaipuu?
Sunnuntaina hän ja Nikita ovat hälytetty extravuoroon. Aivokoneita ei ollut asemalla vapaana. Niinpä he hoitavat päivän “luomupoliiseina” yksi kollega kuittailee. Rutiinitilanteessa parkkihallissa Kaino epäröi hetken liian pitkään. Ei mitään vakavaa, tilanne raukeaa. Mutta hän tuntee sen. Tuntee kuinka Nikita katsoo häntä. Kumpikaan ei sano mitään.
Kotona Venni kertoo päivästään ja keskeyttää oman puheensa huomatessaan ettei Kaino kuuntele. "Haloo! Täällä päin." Kaino nyökkää. Myöhemmin yksin, selällään makaessa saunassa, katse katossa, Kainon tekee mieli saada tietää onko tämä saunan lämpötila hänelle optimaalisin. “Missä kone kun sitä kaipaa!” Sitten hänelle valkeaa! Se epäröinti Nikitan edessä. Ja nyt saunassa! Olenko kadottanut oman itsevarmuuteni?” Hän ei saa vastausta. “Kriittisen ajatteluni?” Kukaan—mikään ei vastaa.


Episode 2a
Tunneseurantapäivitys otetaan käyttöön. Osasto kutsuu sitä "Hyvinvointityökaluksi". “Stressitasot, kuormitus reaaliajassa. Loppuunpalamisen esto," esimies kertoo: "Tämä suojelee teitä." “Mitä jos kuitenkin tulee burnout?” Huonosti yönsä nukkunut Tuisku kysyy. “Älä huoli, pistetään teidät välinevarastoon pesemään autoja jos alkaa nuppi ylikuumentua” esimies vastaa. Osa kollegoista naurahtaa. Toiset ovat vakavia.
Myöhemmin, partiotauolla Nikita on hiljaa pitkään. "Onko meidän kommunikaatiolle tapahtunut jotain? Ennen mä tunsin susta milloin on tulossa jäykkää keikkaa. Nyt sä vaan toimit. Tehokkaasti. Mutta, tuntuu että olen välillä yksin meidän partiossa.” Kaino ei tiedä mitä sanoa. Hän ei tiedä onko hän muuttunut vai onko Nikita muuttunut vai onko välissä oleva laite muuttanut jotain mitä kumpikaan ei osaa nimetä.
Illalla kotona Venni torjuu Kainon lähestymisen.


Episode 2b
Iso poliisi operaatio. Keskusrikospoliisi johtaa, Kainon yksikkö tukee. Rajavartiat ovat myös mukana. Kainon mielestä kaikki menee hyvin. Pukuhuoneessa operaation jälkeen poliisit riisuvat varusteitaan. Nikita istuu penkillä, hieroo kasvojaan. Hän nousee, mutisee jotain, lähtee. Kainon katse jää poistuvaan Nikitaan. Siihen miten hän liikkuu. Nikitalla on kaunis vahva keho. Hyvä ryhti ja kevyt iloinen askeleen kopina, joka kuuluu vielä vaikkei häntä enää näy. "Tuisku!" Kaino kääntyy. Esimies seisoo siinä. Muut ovat lähteneet. He ovat kahdestaan. "Olin johtajien kokouksessa. Keskuskenttäjohto nosti esiin sun datan. Susta tulee operaatioiden aikana jo parin viikon verran tunnetäytteistä dataa. Tapahtuu yleensä kun olet Nikitan kanssa. He suositteleva partiovaihtoa. Sanoin että puhun sulle ensin." Esimies jatkaa vielä jostain tukitoimista, vaihtoehdoista, normaalista prosessista. Viesti menee ohi Kainolta. Hän kuulee vain omat huutavat ajatukset: *järjestelmä on nähnyt jotain mitä minä en ole tunnustanut edes itselleni. Typerys!*
Kaino kävelee kotiin. Ohi bussipysäkin. Ohi koiraa ulkoiluttavan pariskunnan. Ohi kauppakeskuksen, jonka kyljessä Alkon katuvalo kutsuu kuin Pohjantähti. Kaino hieraisee ohimoaan "Oikea helvetillinen hyvinvointityökalu!" Hän kääntyy kohti Alkoa.



Keskustelua

1. Mitä huolia nousi esiin?
2. Millaisia suunnitteluperiaatteita antaisit BCI:n kehittäjille?
3. Oliko jotain mitä et ollut ajatellut ennen tätä sessiota?
4. Mikä jäi mietityttämään eniten?
5. Muuttiko tämä sessio suhtautumistasi BCI-teknologiaan? Miten?
6. Missä menee hyväksyttävän ja ei-hyväksyttävän raja poliisi-BCI:ssä?
7. Jäikö jotain sanomatta keskustelussa?

Kiitos,

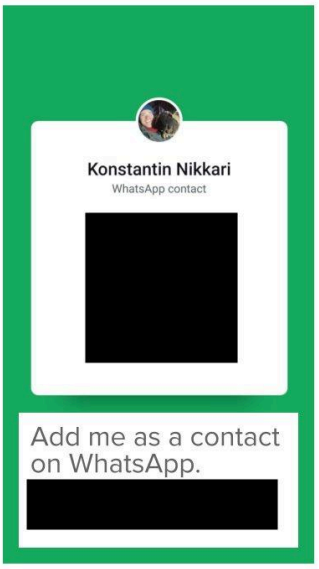
Kun autat ymmärtämään maailmaa, ja onnea myös sinun omaan tutkimukseen! 🙏🫂

hello@konstantin.fi

konstantin.fi

youtube.com/@HEWKN





Online survey form

The Augmented Police Officer

ONLINE RESEARCH: A Design Fiction Study of How Brain-Computer Interface Usage in Law Enforcement Is Received as a Near-Future Concept

* Indicates required question

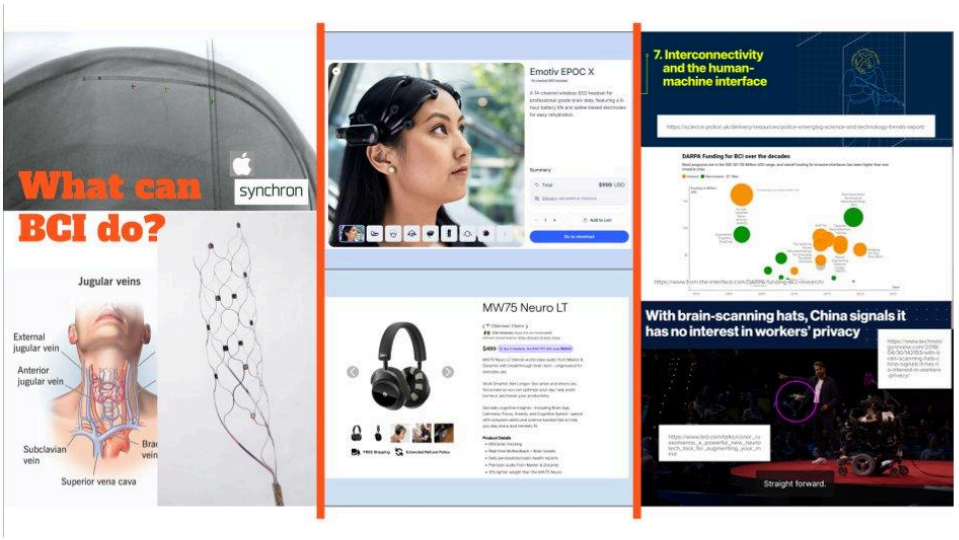
Introduction

In this study you will get a short introduction to what design fiction is and what a brain-computer interface is. After, you will experience the Design Fiction product, a story about a Finnish police officer, Kaino Tuisku in the near future using a brain-computer interface. I'm interested in what you as a European citizen think about such a device being used by the police.

Police officers from Finland.



What can BCI do?



Brain-Computer Interface (BCI)

Brain-computer interfaces (BCIs) are systems that read electrical activity from our brain and translate it into commands for external devices, like robots, drones, and computers. While this may sound futuristic, BCIs already exist and are advancing rapidly.

Present-day examples:

- **Implantable BCIs:** In May 2025, Synchron became the first BCI company to achieve native integration with Apple devices. Users with implanted BCIs can now control iPhones, iPads, and Apple Vision Pro directly with their thoughts—no physical movement required. Synchron sets their BCI through the jugular vein into our brain.
- **Consumer headsets:** Companies like Emotiv sell non-invasive EEG headsets for the price of a smartphone that can measure focus, stress, and attention. Neurable has embedded 12-channel EEG sensors into noise-cancelling headphones that track cognitive states throughout your workday.
- **Workplace monitoring:** Since 2018, Chinese companies have deployed EEG sensors in workers' caps to monitor fatigue and emotional states. Train drivers on the Beijing-Shanghai high-speed line wear devices that detect drowsiness and trigger cabin alarms. The train driver might get sent home if the BCI senses the train driver

  not being alert enough.
- **Assistive technology:** At TED 2023, Christian Bayerlein—who has spinal muscular atrophy—flew a drone over the live audience using only muscle and brain signals captured by OpenBCI's sensors.

Institutional interest:

The U.S. BRAIN Initiative has provided over $3.5 billion in neuroscience funding from 2014-2024, with DARPA investing heavily in BCI research for decades. The UK Police Chief Scientific Adviser's office has identified neurotechnology among emerging trends likely to impact policing in one to ten years.

What is design fiction?



What Is Design Fiction?

Design fiction creates speculative scenarios through designed artifacts to explore possible futures. Rather than predicting what will happen, it asks "what if?" and makes that question tangible. The method makes abstract futures concrete enough to discuss and feel.

Examples

Superflux's (image above) *Mitigation of Shock* (2017) depicts a London apartment in 2050 where climate change has disrupted food supply chains. Visitors step into a home where the living room has become a fogponics farm, recipe books include "roach stir fry," and newspapers report worldwide crop failures. The installation doesn't lecture—it lets you experience what food insecurity might mean for daily life.

Four decades ago Apple's *Knowledge Navigator* video (1987) showed a professor using a tablet with an AI assistant who could search databases and arrange video calls—features that now exist. Jeff Bezos's 2019 Blue Origin presentation used animations depicting rotating space colonies housing millions of people. Whether or not these visions materialise, they make particular futures discussable.

What you are about to read next is also an example of good design fiction.

Lets begin

Now you have a basic understanding of what a brain-computer interface is and what design fiction is. Next, please read my design fiction story and answer the questions.

1. What is your gender? *

Mark only one oval.

- ◯ Man
- ◯ Woman
- ◯ Other

2. How old are you? *

_____

Episode 1a



Episode 1a STORY

Kaino Tuisku, 42, patrol officer in Finland. Two decades of experience. Younger colleague Nikita has learnt to feel safe in Kaino's patrol: "Tuisku senses problems before they happen. It's a skill that can't be taught. It comes from somewhere deep—from the guts," Nikita says.

At home waits Venni – fifteen years together, two children, a mortgage. They go running together. Compete over who gets the better heart rate. Technology has always been part of Kaino's work and free time: radios, smart devices, cameras, and databases. But to him they're just tools. Not missed in the sauna.

At the police station, a department meeting announces a brain-computer interface pilot starting in a month. They say it will improve risk management. In the evening, Venni wraps her arms around Kaino. "What do you think about the brain-computer? Does it really read thoughts?" Kaino sighs. "Not like we have many options. We are not being asked if we want to carry a weapon." Venni presses her lips to Kaino's neck and taps her fingers lightly on his head. Whispers in an inviting tone. Kaino lets out a laugh of relief for the first time that day.

3. How acceptable is mandatory BCI adoption for police officers? *

Mark only one oval.

	1	2	3	4	5	
Not	◯	◯	◯	◯	◯	Rightfully acceptable

Episode 1b



Episode 1b STORY

Training begins, and the first weeks are agony. Kaino is used to making decisions alone, in his own head. Now there's something else in there. But humans adapt. Soon licence plates are visible better than with glasses, suspects' body language is registered immediately, and environmental alerts are heard before Kaino even has time to look. Between calls, Nikita grins: "You've become our turbo-cyborg." "This cyborg makes sure the juniors make it to retirement." Kaino hears himself answer. Nikita giggles.

At the department they're already talking about the next update. "Emotion monitoring," someone says in the break room. "Stress levels, workload, everything in real time. We'll be even more effective."

But in the evening, alone in the car, Kaino thinks about that answer to Nikita. How it came out in such a flirtatious tone. It didn't feel like something he would naturally say. It came too fast. Was that my thought or the system's suggestion? I don't know. Annoying device. How do I distinguish my own emerging thoughts?

4. How do you feel about the brain-computer's ability to surpass police officers' two decades of field experience in a short time? *

5. Do you think this will happen? *

Mark only one oval.

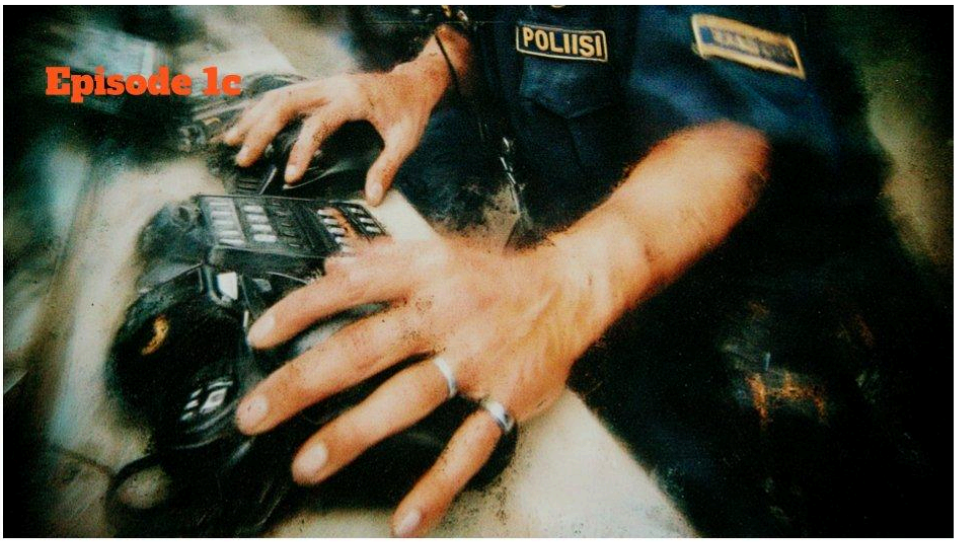
- ◯ Yes
- ◯ No

6. How disturbing for you is Kaino's uncertainty about the origin of thought? *

Mark only one oval.

	1	2	3	4	5	
Not	◯	◯	◯	◯	◯	Highly disturbing

Episode 1c



Episode 1c STORY

At the grocery store, Kaino expects price data to arrive in his consciousness. The data doesn't arrive. It's the weekend. Kaino is off duty, the device is charging at the station. Kaino was supposed to feel relieved – finally in his own space, own head, and own thoughts. Why then this longing?

On Sunday he and Nikita are called in for an extra shift. No brain-computers were available at the station. So they handle the day as "organic cops", one colleague jokes. In a routine situation in a parking garage, Kaino hesitates a moment too long. Nothing serious; the situation dissolves. But he feels it. Feels how Nikita looks at him. Neither says anything.

At home, Venni tells about her day and interrupts herself when she notices Kaino isn't listening. "Hello! Over here." Kaino nods. Later alone, lying on his back in the sauna, eyes on the ceiling, Kaino wants to know if this sauna temperature is optimal for him. "Where's the machine when you need it!" Then it dawns on him! That hesitation in front of Nikita. And now in the sauna! "Have I lost my own self-confidence?" He gets no answer. "My critical thinking?" No one—nothing answers.

7. What does Kaino's hesitation in the parking garage suggest about the technology? *

8. Do you think BCI will be more addictive technology to humans than what smartphones and AI are? *

Mark only one oval.

- Yes
- No

Episode 2a



Episode 2a STORY

The emotion monitoring update is deployed. The department calls it "The Wellness Tool". "Stress levels, workload in real time. Burnout prevention," the supervisor explains, "This protects you." "What if burnout happens anyway?" asks Tuisku, who slept poorly. "Don't worry, we'll put you in the equipment warehouse washing cars if your head starts overheating," the supervisor answers. Some colleagues chuckle. Others stay serious.

Later, during a patrol break, Nikita is quiet for a long time. "Has something happened to our communication? Before, I could sense from you when a tough call was coming. Now you just operate. Efficiently. But—it feels like I'm sometimes alone in our patrol." Kaino doesn't know what to say. He doesn't know if he has changed or if Nikita has changed or if the device between them has changed something neither can name.

In the evening at home, Venni rejects Kaino's advance.

9. How justified is monitoring officers' emotional states? *

Mark only one oval.

	1	2	3	4	5	
Not	◯	◯	◯	◯	◯	Rightfully justified

10. Do you think brain-computer interfaces, while on active use, will make police officers more empathetic toward the subject? *

Mark only one oval.

	1	2	3	4	5	
No,	◯	◯	◯	◯	◯	Yes, they will be more empathic

Episode 2b



Episode 2b STORY

A major police operation. The National Bureau of Investigation leads, and Kaino's unit supports. Border guards are also involved. In Kaino's view, everything goes well. In the locker room after the operation, officers remove their gear. Nikita sits on the bench, rubbing his face. He gets up, mutters something, and leaves. Kaino's gaze lingers on the departing Nikita. On how she moves. Nikita has a beautiful strong body. Good posture and a light, cheerful step that can still be heard even when she's no longer visible. "Tuisku!" Kaino turns. The supervisor is standing there. The others have left. They're alone. "I was in the leadership meeting. Central field command raised your data. You've been producing emotion-laden data during operations for a couple of weeks now. It usually happens when you're with Nikita. They recommend a partner change. I said I'd talk to you first." The supervisor continues about support services, options, normal procedure. The message passes by Kaino. He only hears his own screaming thoughts: “The system has seen something I haven't admitted even to myself. Idiot!”

Kaino walks home. Past the bus stop. Past a couple walking their dog. Past the shopping centre, on whose side the liquor store sign beckons like the North Star. Kaino rubs his temple. "A real hellish wellness tool!" He turns toward the store.

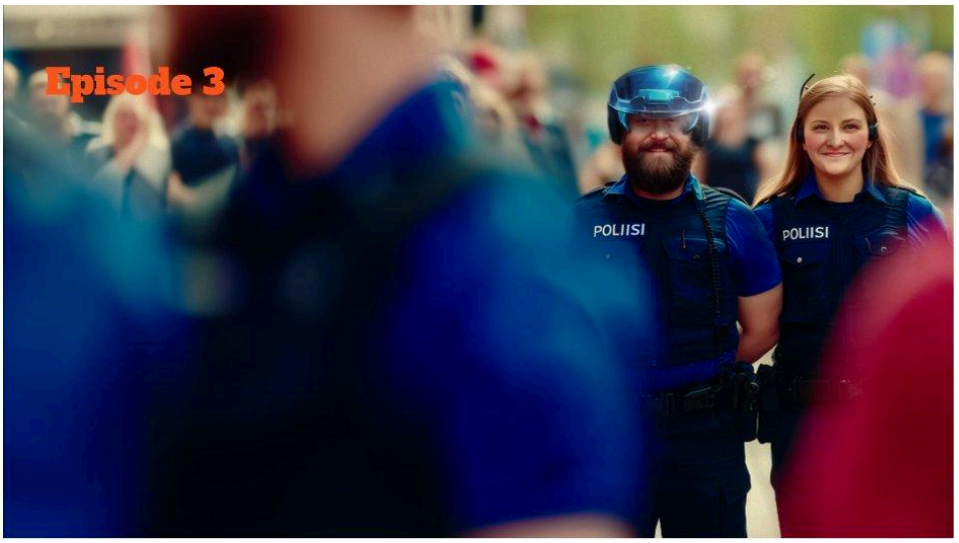
11. Do you think it is beneficial for the police organisation to monitor officers' emotional data? *

Mark only one oval.

- ◯ Yes
- ◯ No

12. What benefits and concerns do you see for monitoring officers' emotions? *

Episode 3



Episode 3 STORY

Months later, the brain-computer has received several updates. The system has evolved. Now, for one- or two-word messages, communication is possible through thought transmission. It works surprisingly well! Tomorrow they'll demonstrate a robot dog that's promised to hear our thoughts as commands. Kaino has also evolved: certain thoughts are on the surface, certain ones are buried deeper, where the system can't reach. An internal filter. A second self that guards the first self.

In the car, Nikita breaks the silence: "I had a rough time back then—my unit change was a shit idea. I just wanted to say that. Sorry. I like working with you." Kaino feels something. Buries it quickly and answers, "Good to have you back. Don't worry!" Later at the station, Kaino checks the day's data levels. Everything is normal. Good!

Friday morning, Kaino puts on the uniform. Looks in the mirror. The man looking back appears the same as before. Venni comes up behind and kisses his cheek. "My cyborg cop remembers to take the kids to Grandma's after work. See you at the airport. Amsterdam is promised 27 degrees all weekend."

Outside the house, Nikita waits. "Ready?" "Ready." Police patrol Kaino and Nikita drive into the beginning workday. Kaino understands now. He has become a person who has learnt to hide part of himself from the machine. It's not a victory. But survival and exploitation of the machine. Adaptation that restored his status among colleagues and was the only possible way to pay the mortgage, take care of the children, spouse, and friends, and still someday make it to retirement.

13. Would you feel safe or less safe living in your city if you knew that the local police had started to use brain-computer interfaces? *

Mark only one oval.

	1	2	3	4	5	
I wo	◯	◯	◯	◯	◯	I would feel very safe

14. How has this story changed your view of brain-computer interfaces? *

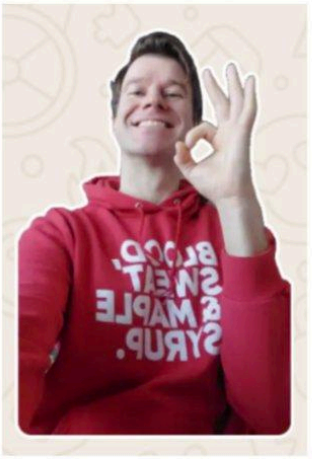
15. Do you see yourself using BCI technology in the next decade?

Mark only one oval.

- ◯ Yes
- ◯ No

Thank you,

That you help understand the world! 🙏🍇



Thank you for completing my study on how we receive brain-computer interfaces!
If you are from Prolific here is your return link: https://app.prolific.com/submissions/complete?cc=C19WHZII and your code: C19WHZII.

Do you like to connect with me? Yes, that is possible on instagram.com/konstantin.nikkari or https://www.tiktok.com/@konstantin.nikkari

or, feel free to follow my human enhancement studies at Human Enhancement With Konstantin Nikkari channel:

youtube.com/@HEWKN

All the best to you,

Konstantin Nikkari

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