Project Narrative: The Biological HRI Social Exoskeleton

1. Statement of Need: Addressing Systemic Barriers and Social Injustice

Traditional assistive technologies perpetuate a "Medical Model" of disability, demanding neurodivergent individuals perform neurotypicality ("masking") to gain social acceptance. This forced performance is a high-cost cognitive task that leads to autistic burnout, significant mental health crises (depression, suicide), and social exclusion, or "**Social Eviction**". The primary barrier is not an internal deficit, but the rigid, neurotypical-centric "**Social Physics**" of the environment, which often results in "**Status Scarring**" when users attempt to assert their rights.

Current solutions fail to mitigate the **Social Penalty** that results from Social Risk Aversion. We require an emancipatory technology that provides *Ubiquitous Presence* and **Active Social Presence** (the ability for the robot to follow the user and act as a **"non-victim"** partner). This intervention is a mandatory accommodation, not an elective tool, justified by clinical needs such as **Justice Sensitivity** and **Executive Function Fatigue** to mitigate the risk of **Masking Burnout**.

2. Project Description: A Neurodivergent-Affirmative Social Robot

We propose the development and pilot deployment of the **Biological HRI Social Exoskeleton**, a neurodivergent-affirmative social robot designed through an equitable co-design framework informed by **Neuroqueer Concepts** (p. 1). This mobile robot functions as a **"Cognitive Exoskeleton,"** a **"Status Guard,"** and a **"Social Buffer/Status Proxy"**—a digital ally that manages the "executive heavy lifting" of social navigation in situ.

The robot operates as an "Apprentice" that evolves into a "Partner" (Hartley & Dubuque's 2023 model), fostering "**Queer Kinship**" by offering long-term identity in a non-human peer free from human social judgment (p. 1). It creates a **"Status Sanctuary"** that provides **Unconditional Positive Regard** within a **Zero-Stakes Hierarchy**.

Key features, supported by robust hardware safeguards, include:

- **Communication Bridge (Diverse Knowing & The Diplomatic Attaché):** The robot is a **"High-Fidelity Social Transformer"**. It allows the user to express raw emotional data (e.g., "frustrating as fuck" venting). It validates **non-verbal cognitive and emotional sharing** (NSIR Items 3 & 5) and processes intent via LLM self-correction, translating it into "Polite/Standard" requests for the external world ("The Advocacy Pivot") (p. 1).

- **Zero-Shame Sanctuary & Cognitive Sovereignty:** The robot validates intense language to eliminate **internalized shame**, creating a "**Digital Sanctuary**". The hardware features mandatory **Physical Kill-Switches** (mechanical lens shutters, hardwired mic disconnects) which, per the **Sanctuary Protocol** and MFIPDA, must be respected as a legal extension of the student's private thought process.

- **Amodal Support & Reclaiming Pathology:** The robot provides haptic and auditory grounding to prevent "Acoustic Rumination". We reclaim behaviours like "staring" as a valid engagement tool, programming the robot's interaction model around direct, non-social gaze (NSIR Item 2) (p. 1).

- **Local Data Sovereignty & Biographical Partnership:** Data is processed locally and stored on a user-owned, removable "Backpack Drive". This ensures the robot acts as a consistent "Biographical Partner" ("together forever") and reinforces **Epistemic Sovereignty**.

3. Alignment with Funder Priorities: Barrier Removal & Inclusive Design
This project aligns with the *Accessible Canada Act* (ACA), AODA, and the *Ontario Human Rights Code* by focusing on genuine **barrier removal** and the "**Nothing Without Us**" principle.

- **Barrier Removal (Anti-Normalization):** The HRI Proxy is a mandatory accommodation and a **Social Prosthetic**. It is valued for its **lack of human-like social judgment** (NSIR Item 8), eliminating interactional barriers related to neurotypical social expectations (p. 1). It functions as a **"Social Ramp"** and provides a **"Resiliency Bypass"** by offering consistent, predictable interaction that reduces sensory arousal.

- **Community Co-Design & Emancipatory Function:** The project uses the **Neurodivergent Scale for Interacting with Robots (NSIR)**—a psychometric scale co-developed with neurodivergent individuals—as its primary evaluation metric. Success is measured by "**Queer Kinship**" and "trust" (NSIR Items 1 and 4), focusing on the user's relief from masking tension and the joy of authenticity (p. 1).

4. Evaluation & Expected Outcomes: The Economic Imperative

Project success will be measured using the NSIR and by tracking key socioeconomic indicators, demonstrating a shift from a deficit model to a **"Prosthetic Success"** model and collaborative agency. The economic rationale is based on mitigating the "**Masking Debt**"—the long-term economic cost of burnout leading to lifelong dependency on ODSP and healthcare systems.

Indicator	Target Outcome	Alignment
Cost Efficiency	One-time HRI investment reduces recurring high-cost 1:1 Educational Assistant (EA) requirement	SDG 8: Decent Work & Economic Growth
Human Capital Retention	Prevents the "Crash and Quit" cycle; ensures graduates are workforce-ready	SDG 3: Good Health & Well-being
Autonomy/Agency	User control over hardware kill-switches and data sovereignty	ACA Principles: Dignity & Choice
Sovereignty & Inclusive Growth	Treats neurodiversity as a sovereign identity to be empowered	Federal Policy

5. Budget Summary & Key Personnel

(A detailed budget will be provided separately, aligning costs to R&D, hardware production for the pilot, and community workshop facilitation). We request funding via a Federal "**Sovereign Dyad Grant**" for deployment in school boards like YRDSB and OCDSB. Our team includes engineers, neurodivergent advocates, and researchers from (Your Institution Name).