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**Letter of Intent - Doctor of Engineering in Engineering Management,  
Spring 2027**

**Proposed Contribution: A bilateral wallet-signed consent protocol (EIP-191 + EIP-712 + HKDF) for decentralized sovereign data governance.**

My older brother EJ and I grew up in an abusive home. From the time I was a child, I needed to understand something that took me decades to be able to name clearly: why would a parent intentionally harm their own children? That question was not academic. It was survival. It drove me into psychology the way hunger drives you toward food - with urgency, with desperation, and with the understanding that the answer mattered more than anything else. I studied human behavior, trauma, and the architecture of the mind informally for decades before I ever pursued a formal credential. I was trying to understand what had happened to us. And I was trying to figure out how to heal it.

EJ left home before me. The day I escaped, he was not there to protect me. I was 15, in 10th grade, and I had no one to call - no family to go to, no friends, because isolation had been part of how we were controlled. I left with nowhere to go and no one expecting me. I did not know from night to night where I would sleep or whether I would be safe. What fear did to me was push me into education. It became my refuge, my structure, the one thing the chaos could not take. I never dropped out. Not once.

I also walked the path that so many of my future clients would walk. I had been on and off psychiatric medication for years - the conventional route, the one the system offers when you show up asking for help. My last appointment with a psychiatrist came after an extended period where I had fallen off - stopped coming, stopped taking the medication, which the office knew because it was distributed there. When I returned, the doctor noted she had not seen me in a while. I told her I was surprised her office had not reached out. She plainly said follow-up was not her responsibility - despite knowing I had been absent, despite my documented history of suicidal ideation, despite the fact that I was a new mother navigating postpartum depression. She had noticed I was gone. She had decided that noticing was enough.

And yet - in that same moment - I found myself agreeing with her. Not because she was right about her obligations, but because she clarified mine. The word doctor comes from the Latin docere: to teach. I had been looking for someone to heal me. What I needed was to learn to heal myself - and then to teach others how to do the same. That is why I stopped seeing doctors and became one. Not the model I had encountered, but a different one - built around the person rather than the appointment, around sovereignty rather than dependency, around teaching rather than managing. I went back to school. I went further than I had planned. And I did not stop.

I never went back. Not to her, and not to that model. What I understood in that moment - and what I have understood more clearly every year since - is that the system is not designed around the patient. It is designed around the appointment. Around the calendar. Around the administrative structure that exists between a person in crisis and the care they need. The gap is not accidental. It is architectural. And I had been living inside it my entire life.

I went a different direction. At the Energetic Health Institute I learned about the connection between food and mood - and for the first time encountered the neurotransmitter systems that would later become central to the platform design of Future Systems Lab (FSL). That led me to the Academy for Addiction and Mental Health Nutrition, where I studied amino acid therapies with a specific clinical focus on anxiety, depression, bipolar disorder, and schizophrenia - studying the foundational work of Linus Pauling, Abram Hoffer, William Walsh, and Albert Mensah. I became Board Certified in Holistic Nutrition (BCHN) and kept going. I enrolled at Kingdom College of Natural Health and obtained my Doctor of Naturopathic Psychology (D.N.Psy.) - applying everything I had learned about biochemistry, amino acid intervention, and nutritional psychiatry in a formal doctoral context. I then completed Medical Neuroscience at Duke University. The more I learned, the more I needed to know. One thing led to the next - driven by genuine curiosity that never stopped.

EJ and I carried what happened to us in that house long after we left. We understood each other in a way only people who survived the same thing can. He made it to 50. He got a promotion. He felt overwhelmed and did what I had done - he asked for help. He went to his doctor. He was put on mental health medication. He noticed it did not feel right and said so. He called the office. He made an appointment. The office cancelled it. And cancelled it again. And cancelled it a third time. While he was on medication that was altering his neurochemistry, in a window of acute vulnerability that required urgency, the system sent him a cancellation notice. Three times.

On October 29, 2023 - six days after his 50th birthday - EJ shot himself.

I had sat in that psychiatrist's chair and been told my absence was not her responsibility. EJ had made three appointments and been turned away every time. We came from the same house. We fought the same battles. We both reached for the same system. The difference in our outcomes was not effort. It

was not willingness. It was not strength. It was a cancelled appointment. It was a doctor who decided follow-up was not her job.

EJ did not fail the system. The system failed EJ. Specifically, precisely, and preventably. Future Systems Lab was built to close that gap - not for one person at a time, but at scale. Clinical work can only ever reach one person at a time. A system is unlimited. A system can outlive me. People like me and EJ deserve a response at that scale. I believe the universe placed me in charge of building it because I am relentless in purpose - and I have the lived experience, the clinical foundation, and now the technical infrastructure to see it through.

### **The Practitioner: Building the Clinical Foundation**

For thirty years I've worked in clinical care, including as a licensed dental hygienist (RDH). What I learned across those decades is that the dental chair is also a counseling chair. More people than not - even before I had my psychology degree - would open up to me about heavy psychological and emotional disruptions. Grief, anxiety, trauma, the weight of lives people were barely holding together. It is more common than the healthcare system acknowledges, and the connection is not incidental: psychological distress is one of the most consistent drivers of oral health neglect. The mouth tells you what the mind has not yet been given space to say. I listened. And what I kept seeing was the same pattern: people reaching for help and finding a system that was not designed to meet them.

I opened SunCodes Holistic Health. I redesigned the interior of the space myself - because environment matters to healing, and I knew from my own life what it felt like to be in spaces that did not hold me safely. I developed a plant-based CBD wellness line from seed to shelf — formulations organized around how people wanted to feel rather than what they were diagnosed with, built to support neurological regulation. It was the same conviction that now drives HypnoNeuro, FSL's wellness-engagement platform — a person works on how they want to feel, not the label assigned to them — years before the platform existed. I was building an ecosystem of care, not just a practice. Then the pandemic hit. I transitioned online and implemented crypto payments - my first step toward understanding that the financial infrastructure of healthcare was part of the access problem. And then EJ died.

After losing him I enrolled in Johns Hopkins University's Health Informatics program and was awarded a Specialization Certificate. For the first time I had language for what I had been observing across thirty years of clinical work. Healthcare was not just a human problem. It was an information systems problem. I went further - auditing Health Informatics on FHIR at Georgia Institute of Technology, and an INSEAD specialization in Web3 and Blockchain in Global Commerce. I became a Certified Blockchain and Healthcare Professional (CBHP), a Certified Smart Contract Auditor, and earned the SSI Master designation in Self-Sovereign Identity. I completed certifications in IPFS, Filecoin, Merkle DAGs, decentralized content addressing, and libp2p. Within six months of EJ's death I was teaching myself Web3, decentralized systems, and

systems engineering from scratch. No prior software engineering or blockchain development experience. None. What I had was the same relentlessness that had kept me in school when I was homeless. I watched the sun go down and come back up - regularly, for months - determined to figure it out. And I did.

## Basic Qualifications

Academic credentials include: Degrees: D.N.Psy. (Kingdom College of Natural Health); B.S., Management Information Systems & Business Analytics (Colorado State University Global, HLC accredited, awarded July 2026). Certifications & Professional Training: Health Informatics, Specialization Certificate (Johns Hopkins University); Web3 and Blockchain in Global Commerce (INSEAD); Medical Neuroscience (Duke University); Health Informatics on FHIR, Audit (Georgia Institute of Technology).

My career spans three decades of clinical and entrepreneurial leadership - dental hygienist since 1996, Practice Operations Lead at Riccobene Associates (70+ offices, one of the largest DSOs in the Southeast), where I redesigned the hygiene department's clinical workflow during the pandemic and personally produced \$1.4M annually while the system tripled production company-wide. I founded SunCodes Holistic Health (2018-2023) and launched both Future Systems Lab and the Naturopathic Psychology and Hypnosis Center in 2023. The attached CV documents the full record.

## Why I Built Future Systems Lab: Five Problems, One Ecosystem

Future Systems Lab was born from an engineering problem statement: what would a mental wellness delivery system look like if it were designed from the beginning around the person - their privacy, their autonomy, their data sovereignty - rather than around institutional convenience?

The five problems I set out to solve are the same five that made EJ's path so hard:

**Stigma** - FSL does not use diagnostic language. HypnoNeuro, FSL's wellness-engagement platform, is organized around neurotransmitter systems (serotonin, dopamine, GABA, endorphins, endocannabinoid) rather than diagnostic categories. A person selects what they want to work on, not what label applies to them.

**Shame** - The platform is wallet-gated. There is no username tied to an email address, no insurance card, no referral form. You connect with your wallet and you are sovereign from the moment you arrive.

**Access** - Decentralized architecture removes geographic and insurance gatekeeping. A person in rural North Carolina and a person in Sao Paulo have the same front door.

**Privacy** - A consent-first architecture means your health data does not move without your cryptographic permission. SovereignLedger is the governance layer that ensures this is not a policy promise - it is an on-chain guarantee.

**Autonomy** - Participants own their session history, their wellness journey, and their earned tokens. The AlchemistForge module allows users to record personal transformation on-chain. This is not a metaphor. It is a technical commitment.

FSL's Phase 1 infrastructure is operationally deployed. It is a functioning, multi-platform Web3 sovereign wellness ecosystem encompassing four interconnected applications: EncryptHealth, HypnoNeuro, SovereignLedger, and AlchemistForge. Nine smart contracts are deployed and verified on Ethereum Sepolia testnet. A multi-agent orchestration pipeline runs on self-hosted infrastructure. Two USPTO trademark applications are on file (Serial No. 99533250, Class 42, filed December 2025; Serial No. 99821948, Class 35, filed May 2026) and U.S. Provisional Patent Nos. 64/063,037 (May 2026, single-signer consent) and 64/106,748 (July 2026, bilateral dual-signature with HKDF) were filed, covering the consent architecture. The platform has been built, governed, and managed entirely under my technical and strategic leadership, and is staged for mainnet deployment following the completion of Phase 5.

### **Why Arizona State University - and Who I Want to Work With**

I came looking for three specific people whose work maps directly onto the three pillars of FSL's architecture.

**Dr. Dragan Boscovic (ASU Blockchain Research Lab - School of Computing and Augmented Intelligence)** is the primary advisor for this project, and the faculty member whose work is the most direct mirror of FSL's applied project. His lab has been researching blockchain for healthcare data sovereignty since 2019 - specifically the question of how patients can maintain ownership of their medical data and share it only on a need-to-know basis. Dr. Boscovic's expertise in tokenomics, smart contract verification, and trustless information systems for health data would bring exactly the formal rigor this applied project needs to become publishable, fundable research.

**Dr. Gail-Joon Ahn (School of Computing and Augmented Intelligence - SEFCOM Laboratory)** is the co-advisor whose formal security expertise is essential to this project. IEEE Fellow. Director of ASU's Center for Cybersecurity and Trusted Foundations. His research foci - identity management, access control architecture for distributed systems, privacy-aware collaborative data sharing, and formal models for computer security - are the exact theoretical foundation for FSL's consent-gate protocol, wallet-gated authentication architecture, and SovereignLedger governance model. The unsolved doctoral contribution at the center of this work - a sequential, bilateral commitment protocol in which each party (the Participant and the Sovereign Guide) produces two wallet signatures: an EIP-191 signature over a plain-language consent document and an EIP-712 signature over a structured session attestation; the Guide's EIP-712 signature embeds the Participant's EIP-712 signature, and the session key is derived via HKDF from both EIP-712 session signatures, so no single party - including the infrastructure operator - can decrypt participant data unilaterally - sits squarely within his lab's expertise. His formal-methods

expertise is precisely what this applied project needs to prove the security properties of the bilateral consent primitive and establish them as defensible, publishable research.

**Dr. Hassan Ghasemzadeh (College of Health Solutions - Biomedical Informatics & Data Science)** is the co-advisor this project requires on the health informatics side. His lab's work on digital health systems, health data analytics, clinical informatics, and AI-driven behavioral health intervention sits precisely at the intersection of what FSL is building and what the DEng applied project needs to formalize. His research on counterfactual modeling for health intervention design, wearable biosensors for real-world behavioral monitoring, and personalized treatment adherence is the academic literature I have been building toward in practice.

Together – Dr. Boscovic as primary advisor, Dr. Ahn and Dr. Ghasemzadeh as co-advisors – these three represent the complete advisory architecture for an applied project that is simultaneously a health systems design problem, a security and privacy engineering problem, and a blockchain infrastructure problem.

### **The Applied Project: Bilateral Wallet-Signed Consent: A Custom Signature Protocol for Decentralized Sovereign Data Governance, with Behavioral Health as Proving Ground**

My proposed applied project formalizes the engineering research contribution at the center of Future Systems Lab: a novel bilateral consent architecture for sovereign health data governance using wallet-signed session attestation and HKDF-derived client-side encryption.

Phase 1 of FSL's SovereignSession architecture is deployed on Ethereum Sepolia testnet; Phases 2-4 are scaffolded and specified: wallet-gated participant authentication, EIP-191 session signing, on-chain attestation, and IPFS-based session storage. These phases establish the infrastructure foundation and are documented in the attached CV and evidence site.

Phase 5 is the unsolved engineering problem that constitutes the doctoral contribution: a sequential, bilateral commitment protocol in which each party (the Participant and the Sovereign Guide) produces two wallet signatures: an EIP-191 signature over a plain-language consent document and an EIP-712 signature over a structured session attestation; the Guide's EIP-712 signature embeds the Participant's EIP-712 signature, and the session key is derived via HKDF from both EIP-712 session signatures, so no single party – including the infrastructure operator – can decrypt participant data unilaterally. This bilateral, temporally-bound, on-chain consent pattern has no deployed precedent in behavioral health infrastructure. Existing cryptographic primitives do not cover this combination: EIP-191 is single-signer by design; EIP-4361 (Sign-In with Ethereum) provides session authentication but not bilateral consent binding; EIP-1271 validates a single contract-account signature, not two independent EOA signatures bound together; and multi-sig wallet architectures (Safe, etc.)

solve n-of-m transaction authorization, not temporally-bound bilateral session consent. Formalizing, implementing, and validating Phase 5 is the research gap this doctoral project will close.

The project will address four engineering research questions. First: what HKDF key-derivation scheme is optimal for producing the shared session key from the two interdependent EIP-712 session-attestation signatures – the Participant’s and the Guide’s – in a behavioral-health consent context? Second: what are the engineering trade-offs between cryptographic guarantee and clinical usability when implementing wallet-signed bilateral consent for non-technical participants? Third: how does a zero-PHI, consent-first architecture compare to compliance-driven centralized architectures (HIPAA, GDPR) in terms of security guarantees, operational complexity, and participant autonomy? Fourth: what does a replicable deployment framework look like for this architecture in medically underserved communities where digital identity infrastructure is limited? Beyond these four questions, the project will also define two extensions the bilateral model leaves open: participant-initiated consent revocation, by which a Participant can withdraw consent and detach from a session after the fact, and independent participant access to one’s own encrypted records — both of which extend the joint-key design toward fuller participant sovereignty.

The platform to be studied already exists and is operational. The DEng applied project produces what comes next: the peer-reviewed documentation of Phase 5, the formal engineering analysis of the bilateral consent problem, the validated implementation, and the institutional-grade research output that positions this infrastructure for NIH grant applications, academic partnerships, and community deployment beyond the current platform footprint.

While FSL uses behavioral health as its proving ground, the architecture it demonstrates is not healthcare-bound. A bilateral, wallet-signed, HKDF-encrypted consent architecture with on-chain auditability is a generalizable infrastructure model. Healthcare is where the human cost of getting this wrong is highest and most visible - which is precisely why it is the right domain to stress-test and formalize this architecture. The documentation and framework this project produces will be applicable to any domain where data sovereignty, verifiable bilateral consent, and trustless governance are design requirements.

I welcome the opportunity to work with Arizona State University and am deeply grateful for the consideration. I am looking to align with people who share this vision - to help scale and bring this ecosystem to those who need it most: people like me and EJ.

Warm regards,

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*AI disclosure: Claude (Anthropic) was used for drafting assistance and structure refinement. All ideas, lived experience, and framing are the author's own.*