QAI-HaLoS™ Proposal Document

# Title

QAI-HaLoS™: A Quantum-AI Powered Framework for Human-Aligned Life, Operations, and Safety

# Executive Summary

QAI-HaLoS™ is a role-centric, ethically grounded framework designed to improve the safety, autonomy, and quality of human life across domestic, industrial, and remote environments. It integrates pure quantum sensing, artificial intelligence (AI), and hybrid QAI modules to address real-world risks such as fire, fall detection, disease onset, and mobility issues, among others. The framework supports legal, ethical, and compliance-ready operations while being scalable across domains like homes, offices, factories, remote areas, and public spaces.

# 1. Objectives

- Enhance safety and wellbeing across personal and industrial domains.  
- Use quantum sensing to detect physical anomalies beyond human perception.  
- Leverage AI to make real-time intelligent decisions.  
- Employ hybrid QAI for context-aware and ethically sound actions.  
- Comply with industry standards and ethical regulations.

# 2. Core Features

# 3. Sample Use Case: Fall Detection for Elderly

Scenario: An elderly person falls in the bathroom due to a wet floor.  
  
System Workflow:  
- Sensors: Quantum pressure + humidity + motion sensors detect static posture and wetness.  
- Quantum Logic: Quantum random walk simulates unpredictable mobility behavior.  
- AI Logic: Decision tree classifies risk as "High".  
- Ethical Engine: Balances false alarm rate vs urgency. Chooses to notify emergency services and family.  
- Actuators: Dryer activated. Alerts sent.  
  
Code Summary: Implemented in Python for Colab, showcasing:  
- Quantum anomaly simulator  
- AI model using decision trees  
- Hybrid ethical decision logic  
- Output via actuator & alert simulation

# 4. Technology Layers

# 5. Product Mapping

# 6. Benefits

- Improved safety and health outcomes in home/office/remote settings.  
- Proactive detection of emergencies using quantum-class sensors.  
- Adaptive AI for personalized decision-making.  
- Compliant with legal frameworks, ethics, and cybersecurity standards.  
- Extendable for judges, factory managers, travelers, and more.

# 7. Future Work

- Visual dashboard interface with real-time analytics.  
- Federated learning for privacy-preserving training.  
- Integration with emergency services and EHR systems.  
- Multi-agent QAI coordination across domains.

# 8. Conclusion

QAI-HaLoS™ provides a flexible, standards-aligned, and ethically driven architecture for deploying QAI in real-life scenarios. It can be scaled for both domestic and industrial deployments, helping reduce risk, automate response, and enhance the safety net around individuals through quantum and AI synergy.

# Prepared for Stakeholder Review / Technical Evaluation