ADR-Index: Architecture Decision Records Index

Submitters

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Change Log

- approved 2026-02-16

Referenced Use Case(s)

- U-Vote System Requirements
- PROJ I8009 Project Brief

Context

This document serves as the central index for all Architecture Decision Records produced for the U-Vote project, submitted in partial fulfilment of PROJ I8009 at Dundalk Institute of Technology.

Each ADR captures a significant architectural choice made during the design and development of U-Vote, a secure online voting system. The decisions span infrastructure, backend, security, authentication, and frontend concerns. Recording them here provides a traceable history of why the system is built the way it is, and what alternatives were considered and rejected.

Proposed Design

The ADRs are grouped by category below. Each record follows the EdgeX Foundry ADR template and documents the context, options considered, decision taken, and resulting consequences.

Decision Log

ADR	Title	Status	Date	Category
ADR-001	Python FastAPI Backend	Accepted	2026-02-10	Backend Framework
ADR-002	PostgreSQL Database	Accepted	2026-02-10	Database

ADR-003	Kubernetes Platform	Accepted	2026-02-10	Infrastructure
ADR-004	Calico CNI Networking	Accepted	2026-02-11	Networking
ADR-005	Token-Based Voter Authentication	Accepted	2026-02-11	Authentication
ADR-006	JWT Admin Authentication	Accepted	2026-02-11	Authentication
ADR-007	SHA-256 Hash-Chain Audit Logs	Accepted	2026-02-12	Security
ADR-008	Microservices Architecture	Accepted	2026-02-12	Architecture
ADR-009	Server-Side Rendering (Jinja2)	Accepted	2026-02-13	Frontend
ADR-010	Zero-Trust Network Policies	Accepted	2026-02-13	Security
ADR-011	Kubernetes Secrets Management	Accepted	2026-02-14	Security
ADR-012	Kind for Local Development	Accepted	2026-02-14	Infrastructure
ADR-013	Domain-Driven Service Separation	Accepted	2026-02-14	Architecture

ADR-014	Per-Service Database Users	Accepted	2026-02-15	Database
ADR-015	Blind Ballot Token Anonymity	Accepted	2026-02-16	Security

Status Definitions

Status	Meaning
Accepted	Decision has been made and implemented
Proposed	Decision is under consideration
Deprecated	Decision has been replaced by a newer ADR
Superseded	Decision has been replaced (see superseding ADR)

Category Definitions

Category	Scope
Architecture	System-level design patterns and service structure
Authentication	How users prove their identity
Backend Framework	Server-side technology choices
Database	Data storage and access patterns
Frontend	User interface rendering approach
Infrastructure	Deployment platform and orchestration
Networking	Network configuration and CNI
Security	Security controls and threat mitigations

Considerations

All ADRs in this index are currently in an accepted state. No decisions have been deprecated or superseded at this time. The voter-service and election-service (see ADR-008 and ADR-013) remain partially merged in the current implementation; a future ADR may formalise their separation or consolidation based on operational experience in Stage 2.

Decision

All fifteen ADRs listed above are accepted and reflect the architectural state of the U-Vote system as of 2026-02-16. New decisions arising from Stage 2 development will be appended to this index and assigned sequential ADR numbers.

Each ADR follows a consistent structure covering: status, context, options considered, decision, consequences, implementation notes, validation criteria, and references.

Other Related ADRs

- ADR-003: Kubernetes Platform - Foundational infrastructure decision that constrains ADR-004, ADR-010, ADR-011, ADR-012
- ADR-008: Microservices Architecture - Structural pattern that informs ADR-013 and ADR-014
- ADR-015: Blind Ballot Token Anonymity - Core security property that depends on ADR-005, ADR-006, and ADR-007

References

- EdgeX Foundry ADR Template
- PROJ I8009 Project Module, Dundalk Institute of Technology