

# ZooKeeper Software Project Requirements Summary

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The ZooKeeper software addresses critical zoo management needs through these central use cases:

- Animal Health Monitoring: Wearable devices track vital signs (heart rate, temperature) with real-time alerts to veterinarians when abnormalities are detected.
- Behavior Analysis: AI-powered tracking identifies unusual activity patterns and suggests relevant research articles to staff.
- Dietary Management: Automated meal planning with integrated inventory tracking and low-stock alerts.
- Habitat Control: IoT sensors monitor environmental conditions (temperature, humidity) with automatic maintenance tickets for out-of-range readings.

## Functional Requirements

Key system capabilities include:

1. Real-time health data processing
2. Automated dietary inventory tracking
3. Habitat condition alerts
4. Emergency SMS/push notifications
5. Offline data entry with cloud sync

## Data Management

The system maintains:

- Comprehensive animal profiles (medical history, behavior logs)
- Habitat sensor datasets (temperature, humidity readings)
- Dietary records (feeding schedules, inventory levels)
- Encrypted audit logs (all system transactions)

## Security Protocols

- Role-based access (vets vs. zookeepers vs. visitors - AR01)
- Two-factor authentication for admin accounts (AR02)
- End-to-end data encryption (PR05)
- Tamper-proof audit trails (AR07)

## User Experience

- Intuitive interface (UHR01)
- Multi-language support (PIR01)
- WCAG 2.1 AA compliant (AR01)

- Outdoor-readable displays (EPE01)

### Compliance & Deployment

- Meets USDA/AZA animal welfare standards (CR01)
- Cloud-hosted with optional local installation (PR01)
- Bi-monthly version updates (RR01)
- Cross-platform (Windows/macOS/iOS/Android - AR05)

### Verification

We have 139 acceptance tests to validate all requirements, including:

- AT-01: Wearable device integration
- AT-64: Emergency alert delivery
- AT-96: Data encryption verification
- AT-116: Accessibility compliance audit

This comprehensive system modernizes zoo operations through integrated animal care, staff management, and visitor engagement tools while meeting strict regulatory and performance standards.