**Technical Architecture for La Capitolare Fundraising AI**

**MVP Design (For detail application see the cost structure document)**

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| **Backend (.NET Core)**   * **API Layer (.NET Core Web API)**   + RESTful endpoints for all fundraising operations   + JWT authentication for secure access   + Role-based authorization for staff/admin functions * **Business Logic Layer (.NET Core Class Libraries)**   + Donor intelligence service   + Campaign optimization engine   + Personalization algorithms   + ML.NET integration for prediction models * **Data Access Layer (Entity Framework Core)**   + Repository pattern implementation   + Database migrations management   + Efficient query optimization   **Frontend (Angular)**   * **Admin Dashboard**   + Angular Material components for consistent UI   + NgRx for state management   + Interactive visualizations using D3.js or Chart.js   + Responsive design for all device types * **Donor Mapping Module**   + Interactive maps using Angular Google Maps or Leaflet   + Dynamic filtering capabilities   + Real-time data updates * **Campaign Performance Simulator**   + Angular reactive forms for scenario inputs   + Real-time projection calculations   + Visual comparison tools   **Database (SQL Server)**   * **Core Schema**   + Donors (profiles, history, preferences)   + Campaigns (configurations, performance metrics)   + Manuscripts (details, preservation needs, stories)   + Interactions (touchpoints, responses, engagement metrics) * **Analytics Store**   + Denormalized tables optimized for reporting   + Historical performance data   + Temporal tables for trend analysis   **Integration Points**   * **AI/ML Services**   + ML.NET for core prediction algorithms   + Azure Cognitive Services for sentiment analysis and content optimization   + Integration with OpenAI API for content generation * **External Data Sources**   + REST API connectors to public donation databases   + Social media integration for prospect research   + Cultural events calendars for campaign timing   **Implementation Approach**   1. **Database Design & Setup (2 weeks)**    * Design SQL Server schema    * Implement Entity Framework Core models    * Set up initial migrations 2. **.NET Core API Development (4-6 weeks)**    * Build core API endpoints    * Implement business logic    * Create ML.NET prediction models    * Develop integration services 3. **Angular Frontend Development (4-6 weeks)**    * Create dashboard components    * Build visualization modules    * Implement responsive design    * Connect to backend APIs 4. **AI Integration (3-4 weeks)**    * Implement donor scoring algorithms    * Build campaign optimization engine    * Develop content personalization features 5. **Testing & Refinement (2-3 weeks)**    * Unit and integration testing    * Performance optimization    * User acceptance testing |