Product Requirements Document: Buildo

Version: 1.0
Date: October 26, 2025
Status: Draft for MVP
Owner: Product Management
Stakeholders: Design, Engineering, Content, Marketing

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1. Overview

Buildo is a location-based mobile application that transforms how people discover and learn about historical buildings and architectural landmarks in their surroundings. By combining interactive mapping technology with curated cultural heritage content, Buildo enables users to instantly identify nearby sites of architectural interest, access rich historical narratives, and deepen their appreciation for the built environment around them. Whether exploring a new city or rediscovering their hometown, users gain immediate access to verified architectural information, historical context, and visual documentation that has traditionally been scattered across guidebooks, tourism websites, and academic sources. Buildo addresses the growing demand for accessible, mobile-first cultural experiences by making architectural heritage discovery as intuitive as finding a nearby restaurant.

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2. Problem Statement

Current Challenges:

Despite widespread interest in architecture and urban history, discovering and learning about significant buildings remains frustratingly difficult for most people:

- **Information Fragmentation:** Details about historical buildings are scattered across municipal websites, tourism portals, Wikipedia entries, and physical plaques, requiring users to navigate multiple unreliable sources
- **Lack of Spatial Context:** Users walking past architecturally significant buildings often have no way of knowing what they're looking at or why it matters
- **Poor Mobile Experience:** Existing solutions (guidebooks, heritage websites) are not designed for on-the-go discovery and lack location-aware functionality
- **Quality & Accuracy Issues:** User-generated platforms provide inconsistent information quality, while academic resources are too dense for casual exploration

- **Missed Discovery Opportunities:** Tourists and residents alike miss learning opportunities because they don't know what questions to ask or where significant buildings are located

User Pain Points:

- "I wonder what that beautiful old building is, but searching online gives me nothing relevant"
- "Tourist guides only cover famous landmarks, not the interesting architecture in residential areas"
- "I want to learn about my neighborhood's history but don't know where to start"
- "Information plaques are often faded, vandalized, or only available in one language"
- "I have to piece together information from 5 different websites to understand one building's story"

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3. Goals & Success Metrics

Primary Goals

MVP Goal: Validate that users find value in location-based architectural discovery by achieving consistent weekly engagement from early adopters across at least two pilot cities.

Product Goals:
- Make architectural heritage accessible to non-experts through intuitive, mobile-first exploration
- Provide reliable, curated information that serves both casual tourists and serious enthusiasts
- Create an engaging discovery experience that encourages repeated local exploration
- Build a foundation for scaling content and features in future versions

Success Metrics

Engagement Metrics (Primary KPIs):
- **Buildings Viewed per Session:** Target average of 5+ buildings per active session
- **Session Duration:** Target average of 8+ minutes per session (indicates meaningful engagement)
- **Weekly Active Users (WAU):** Track retention and measure week-over-week growth
- **Repeat Visit Rate:** 40%+ of users return within 7 days of first session

Discovery & Interaction Metrics:
- **Search Utilization Rate:** % of sessions including search activity (target: 30%+)
- **Favorites Added:** Average 2+ favorites per active user
- **Info Page Completion Rate:** % of users who scroll through full building details (target: 60%+)
- **Map Interaction Depth:** Number of pins tapped per session

Acquisition & Retention:
- **7-Day Retention:** Target 25%+ for MVP
- **30-Day Retention:** Target 15%+ for MVP
- **Session Frequency:** Track distribution of daily/weekly/monthly users

Quality Indicators:
- **App Store Rating:** Maintain 4.0+ stars
- **Content Accuracy Feedback:** <2% of buildings flagged for incorrect information
- **Crash Rate:** <1% of sessions

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4. Target Users & Personas

User Segments

Primary Segments:
1. **Cultural Tourists** (35-40% of target audience)
  - Visiting new cities and want authentic cultural experiences beyond typical attractions
  - Age range: 25-55, digitally savvy, value learning while traveling

2. **Local Residents & Urban Explorers** (30-35%)
  - Curious about their own city's history and hidden gems
  - Seek meaningful weekend activities and deeper connection to their environment

3. **Architecture Enthusiasts** (15-20%)
  - Active interest in design, urban planning, or architectural history
  - Range from hobbyists to students and professionals

4. **Students & Educators** (10-15%)
  - Using the app for educational purposes, research, or field trips
  - Need reliable information for academic contexts

User Personas

Persona 1: Sofia, The Curious Tourist

Demographics:
- Age: 32
- Occupation: Marketing Manager
- Location: Traveling from Barcelona, visiting Istanbul for 5 days
- Tech Comfort: High (uses travel apps regularly)

Motivations:
- Wants to experience Istanbul beyond the main tourist sites
- Interested in Ottoman architecture but doesn't know where to look
- Prefers self-guided exploration over organized tours
- Values authentic experiences and learning about local culture

Use Cases:
- Opening Buildo while walking through Kadıköy to discover historic mansions
- Searching for "Art Nouveau" to find lesser-known examples
- Saving buildings to create her own walking route
- Sharing interesting finds with friends back home

Pain Points:
- Generic guidebooks only cover the same 10 famous sites
- Gets lost trying to find buildings mentioned in blog posts
- Wants context without reading lengthy Wikipedia articles

Success Criteria:
- Discovers 3+ buildings she wouldn't have found otherwise per day
- Feels confident exploring neighborhoods independently

Persona 2: Mehmet, The Local History Buff

Demographics:
- Age: 45
- Occupation: High School Teacher (History)
- Location: Lives in Ankara, born and raised
- Tech Comfort: Moderate (uses smartphone daily but not an early adopter)

Motivations:
- Wants to learn more about his city's architectural evolution
- Enjoys weekend walks with family and wants to add educational value
- Interested in sharing local history with students
- Feels disconnected from the historical context of buildings he passes daily

Use Cases:
- Exploring his own neighborhood on Sunday walks to discover buildings' histories
- Using filters to find buildings from specific eras (Republican era, Ottoman period)
- Saving favorites to create educational content for his students
- Checking Buildo when passing an interesting building during his commute

Pain Points:
- Most historical buildings have no visible information plaques
- Municipal heritage websites are difficult to navigate and out of date
- Can't easily find which buildings near him have historical significance

Success Criteria:
- Learns something new about familiar areas
- Uses the app weekly during regular activities
- Successfully incorporates findings into teaching materials

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5. User Stories

Discovery & Exploration:
- As a **tourist in a new city**, I want to **see historical buildings near my current location on a map**, so that I can **discover interesting sites to visit while walking around**.

- As a **local resident**, I want to **browse buildings by architectural style or historical period**, so that I can **find examples of Art Deco or Ottoman architecture in my area**.

- As an **architecture student**, I want to **search for buildings by architect name**, so that I can **study the works of specific designers in person**.

Learning & Engagement:
- As a **cultural tourist**, I want to **read concise historical information and see photos of each building**, so that I can **understand its significance without needing to research elsewhere**.

- As a **casual explorer**, I want to **save buildings to a favorites list**, so that I can **remember places I want to visit later or share with friends**.

Navigation & Planning:

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- As a **weekend explorer**, I want to **view all buildings in a specific neighborhood**, so that I can **plan a walking route that includes multiple interesting sites**.

- As a **visitor with limited time**, I want to **filter buildings by category (religious, residential, commercial, etc.)**, so that I can **focus on the types of architecture I'm most interested in**.

**Accessibility & Convenience:**
- As a **non-native speaker**, I want to **switch the app language**, so that I can **learn about local heritage in my preferred language** (future enhancement, but important for design).

- As a **user in areas with poor connectivity**, I want to **access previously loaded building information offline**, so that I can **continue exploring without constant internet access**.

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## 6. Feature Scope

### In Scope for MVP

**Core Features:**

**Interactive Map Interface**
- Real-time map showing user's current location
- Building markers (pins) indicating nearby historical/architectural sites
- Clustered pins for dense areas to avoid visual clutter
- Map pan and zoom functionality
- Pin colors or icons indicating building categories (e.g., religious, residential, civic)

**Location-Based Discovery**
- Automatic detection of nearby buildings within radius (e.g., 2km)
- GPS-enabled positioning
- Permission handling for location services

**Building Information Pages**
- Structured content for each building including:
 - Name and alternate names
 - Address and precise location
 - Historical period/year built
 - Architectural style
 - Architect (if known)
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 - Brief historical narrative (200-400 words)
 - Cultural significance
 - Current use/status
 - 2-4 high-quality images
- Image gallery view
- "Get Directions" link to open in maps app

**Search & Filtering**
- Text search by building name, architect, or location
- Filter by:
 - Architectural style (e.g., Ottoman, Byzantine, Art Nouveau, Modernist)
 - Historical period/century
 - Building type (religious, residential, commercial, civic, industrial)
 - Distance from current location
- Combined filter functionality

**Favorites/Saved Buildings**
- Ability to save buildings to personal favorites list
- Access saved buildings from profile/favorites tab
- Visual indicator on map showing saved buildings

**User Profile (Basic)**
- View saved favorites
- App settings (language preference, units, notifications)
- Privacy settings

**Onboarding**
- Brief tutorial on first launch explaining core features
- Location permission request with clear value explanation

**Content Management**
- Initial content for 2-3 pilot cities (e.g., Istanbul, Ankara) with 200-500
buildings each
- Admin backend for content team to add/edit building information (out of user
view)

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### Out of Scope for MVP

**Excluded from Initial Release (Future Considerations):**

- **Augmented Reality (AR) Features:** AR overlays, historical reconstructions, or
navigation
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- **Social Features:** User profiles, comments, ratings, photo sharing, friend connections
- **User-Generated Content:** Ability for users to submit buildings or edit information
- **Ticketing & Reservations:** Integration with museums or paid sites
- **Guided Tours:** Pre-built walking routes or audio guides (may be Phase 2)
- **Gamification:** Badges, achievements, leaderboards, check-ins
- **Multi-Language Content:** MVP launches in one primary language (Turkish or English); infrastructure designed for expansion
- **Offline Maps:** Full offline map download (offline content for previously viewed buildings is in scope)
- **Advanced Navigation:** Turn-by-turn directions within the app
- **3D Building Models:** Three-dimensional visualizations
- **Historical Photos Comparison:** Then-and-now image sliders
- **Community Events:** Integration with heritage events, open house days, or tours
- **Monetization Features:** Premium subscriptions, ads, or in-app purchases

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7. User Flow

Primary User Journey: First-Time Discovery Session

Step 1: App Launch & Onboarding
- User opens Buildo for the first time
- Brief onboarding carousel appears (3 screens max):
 - Screen 1: "Discover Historical Buildings Around You"
 - Screen 2: "Learn Their Stories"
 - Screen 3: "Save Your Favorites"
- User taps "Get Started"

Step 2: Permissions & Location Setup
- App requests location permission
- Clear explanation: "Buildo needs your location to show nearby historical buildings"
- User grants location access
- Loading indicator appears while fetching location

Step 3: Map View (Home Screen)
- Interactive map loads centered on user's current location
- User's position shown with blue dot
- Building pins appear on map showing nearby sites
- Clustered pins in dense areas expand on zoom
- Filter/search icons visible in top bar
- User sees immediate value: "12 historical buildings within 1 km"

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**Step 4: Exploring the Map**
- User pans and zooms around map to browse buildings
- Tapping on a pin shows building name in a preview card at bottom
- User can tap preview card or "Learn More" to view full details

**Step 5: Viewing Building Details**
- Full-screen building information page slides up
- User sees:
 - Hero image at top
 - Building name and year built
 - Quick facts (architect, style, type)
 - Historical narrative
 - Image gallery (swipeable)
 - "Get Directions" button
 - "Save to Favorites" heart icon
- User scrolls through content

**Step 6: Saving a Favorite**
- User taps heart icon to save building
- Visual feedback: heart fills with color
- Toast message: "Saved to Favorites"
- User can access favorites via bottom navigation

**Step 7: Using Search & Filters**
- User taps search icon
- Can enter text query (e.g., "Art Nouveau") or building name
- Results appear as list and update map
- User taps filter icon to refine:
 - Selects architectural style(s)
 - Selects time period
 - Applies filters
- Map updates to show only matching buildings

**Step 8: Accessing Favorites**
- User navigates to Favorites tab (bottom nav)
- Sees list of all saved buildings
- Can tap any building to view details again
- Can view all favorites on map view
- Can remove buildings from favorites

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### Secondary User Flows
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Returning User (Quick Discovery)
- Open app → Map loads with current location → Browse nearby pins → Tap building → Read info → Close app
- **Duration:** 2-4 minutes

Targeted Search
- Open app → Tap search → Enter architect or style → Review results → Select building → Read details → Save favorite
- **Duration:** 3-5 minutes

Planning a Visit
- Open app → Browse specific neighborhood → Save multiple buildings → View favorites list → Tap "Get Directions" → Switch to maps app
- **Duration:** 5-10 minutes

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8. Acceptance Criteria

Map & Discovery

Map Loading & Performance
- ✓ Map loads within 2 seconds on 4G connection
- ✓ User location is accurate within 10 meters
- ✓ Building pins appear within 3 seconds of map load
- ✓ Map remains responsive during pan/zoom with no lag
- ✓ Pins cluster appropriately when more than 15 buildings visible in viewport
- ✓ Tapping a pin shows preview card within 0.5 seconds

Location Services
- ✓ App gracefully handles denied location permissions with clear message
- ✓ Users can manually search/browse cities without enabling location
- ✓ Map centers on user location when permission granted
- ✓ Location updates as user moves (background location not required for MVP)

Building Pins & Markers
- ✓ All buildings within specified radius (2km) are displayed
- ✓ Pin colors/icons accurately reflect building categories
- ✓ Pin positioning matches actual building coordinates (±20m accuracy)
- ✓ Saved buildings show distinct visual indicator (e.g., filled vs. outline)

Building Information Pages

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**Content Display**
- ✓ All required fields display correctly (name, year, style, architect, description)
- ✓ Missing fields (e.g., unknown architect) show "—" or are hidden gracefully
- ✓ Historical narrative is readable and well-formatted (proper paragraphs, line breaks)
- ✓ All images load within 3 seconds on 4G
- ✓ Image gallery is swipeable with visual indicator of position (e.g., 1/4)
- ✓ Text is legible with appropriate font sizes (minimum 16px body text)

**Functionality**
- ✓ "Get Directions" opens device default maps app with correct coordinates
- ✓ Save/unsave functionality works instantly with visual feedback
- ✓ Users can swipe down or tap back to close detail page
- ✓ Previously viewed building pages load from cache when offline
- ✓ External links (if any) open in external browser

**Content Accuracy**
- ✓ 100% of buildings have been verified by content team before publication
- ✓ Building coordinates match actual locations (validated against official records)
- ✓ Historical dates and facts are cited from reliable sources
- ✓ Images have proper attribution and licensing

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### Search & Filtering

**Search Functionality**
- ✓ Search returns results within 1 second for queries up to 50 characters
- ✓ Search works for building names (exact and partial matches)
- ✓ Search works for architect names
- ✓ Search works for neighborhood/district names
- ✓ Search results display as both list and updated map view
- ✓ "No results" state shows helpful message and suggestions
- ✓ Search handles special characters and diacritics correctly (e.g., Turkish characters)

**Filter Functionality**
- ✓ Users can apply multiple filters simultaneously (e.g., style + period)
- ✓ Filter results update map and list views immediately
- ✓ Active filters are clearly visible with option to remove
- ✓ "Clear all filters" returns to default view
- ✓ Filter counts show number of buildings matching each option
- ✓ Filters persist during session (reset on app restart)
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### Favorites

**Save/Remove Actions**
- ✓ Tapping heart icon saves building to favorites instantly
- ✓ Toast or visual confirmation appears on save
- ✓ Tapping filled heart removes building from favorites
- ✓ Favorites sync across app views (map, detail page, favorites list)
- ✓ Favorites persist across sessions (stored locally)

**Favorites List View**
- ✓ Favorites tab shows all saved buildings in chronological order (most recent first)
- ✓ Empty state shows helpful message ("No favorites yet—explore and save buildings you love")
- ✓ Each favorite shows thumbnail, name, and basic info
- ✓ Tapping a favorite opens full detail page
- ✓ Swipe-to-delete removes building from favorites

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### Performance & Technical

**App Performance**
- ✓ App launches within 3 seconds (cold start)
- ✓ App resumes instantly from background (warm start)
- ✓ Crash rate remains below 1% of sessions
- ✓ Memory usage stays under 150MB during normal operation
- ✓ Battery drain is not excessive (comparable to other map apps)

**Offline Behavior**
- ✓ Previously viewed buildings are accessible offline
- ✓ App shows clear indicator when offline (banner or message)
- ✓ Map tiles degrade gracefully to cached versions if available
- ✓ Search and filters work on locally cached data
- ✓ Favorites remain accessible offline

**Error Handling**
- ✓ Network errors show user-friendly messages with retry option
- ✓ GPS issues display clear troubleshooting steps
- ✓ Failed image loads show placeholder with retry option
- ✓ API failures don't crash the app
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### User Experience & Accessibility

**Usability**
- ✓ All interactive elements have minimum tap target size of 44x44 points
- ✓ Navigation is intuitive (first-time users complete core flow without
confusion)
- ✓ UI labels and buttons use clear, concise language
- ✓ Bottom navigation allows switching between Map, Search, and Favorites
- ✓ Back navigation works consistently throughout app

**Accessibility**
- ✓ All images have descriptive alt text
- ✓ Text maintains 4.5:1 contrast ratio (WCAG AA standard)
- ✓ App is fully navigable via VoiceOver (iOS) / TalkBack (Android)
- ✓ Font sizes respect system accessibility settings
- ✓ Color is not the only means of conveying information

**Localization (MVP)**
- ✓ All UI text is in primary target language (e.g., English or Turkish)
- ✓ Building content is in same language as UI for MVP
- ✓ Date/distance formats respect regional settings
- ✓ App structure supports future multi-language expansion

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## 9. Dependencies & Risks

### External Dependencies

**Mapping & Location Services**
- **Dependency:** Google Maps SDK (iOS/Android) or Mapbox
 - **Risk Level:** Low-Medium
 - **Impact:** Core functionality
 - **Mitigation:**
   - Choose provider with proven reliability and acceptable terms
   - Understand pricing model and request quotas
   - Build abstraction layer to allow provider switching if needed
 - **Estimated Cost:** $200-500/month for MVP usage levels

**Content & Data Sources**
- **Dependency:** Historical building databases and heritage registries
 - **Sources:** Municipal heritage departments, national monument registries,
UNESCO sites, academic institutions, open data portals
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 - **Risk Level:** Medium-High
 - **Impact:** Content quality and coverage
 - **Mitigation:**
   - Identify and secure partnerships with official heritage organizations early
   - Develop relationships with municipal authorities for data access
   - Build internal content team for curation and verification
   - Create standardized data entry templates
 - **Timeline:** 2-3 months lead time for pilot city data collection

**Image Licensing & Attribution**
- **Dependency:** Rights-cleared photographs of buildings
 - **Sources:** Open databases (Wikimedia Commons), commissioned photography,
municipal archives, Creative Commons content
 - **Risk Level:** Medium
 - **Impact:** Visual appeal and legal compliance
 - **Mitigation:**
   - Work with professional photographer for key buildings
   - Establish clear attribution system
   - Maintain licensing records for all images
   - Consider user-submitted photos in future (with proper releases)

**Cloud Infrastructure**
- **Dependency:** Backend hosting (AWS, Google Cloud, or Azure)
 - **Risk Level:** Low
 - **Impact:** App availability and performance
 - **Mitigation:**
   - Choose provider with >99.9% SLA
   - Implement CDN for image delivery
   - Design for horizontal scaling
 - **Estimated Cost:** $300-800/month for MVP

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### Technical Risks

**Data Accuracy & Quality**
- **Risk:** Incorrect historical information, wrong building locations, or
inconsistent data
- **Impact:** Damages credibility and user trust
- **Mitigation:**
 - Implement multi-step verification process (research → review → fact-check)
 - Partner with historians or architecture experts as advisors
 - Build user feedback mechanism to flag errors
 - Maintain source documentation for all facts
 - Start with smaller number of well-researched buildings rather than quantity
```

```
**Geocoding Accuracy**
- **Risk:** Buildings mapped to incorrect coordinates, especially for historical addresses
- **Impact:** User frustration, navigation failures
- **Mitigation:**
 - Manually verify coordinates for all buildings using satellite imagery
 - Cross-reference multiple sources (official records, maps, site visits)
 - Test GPS accuracy in various urban environments
 - Allow content team to adjust coordinates based on user feedback

**Performance at Scale**
- **Risk:** Map performance degrades with hundreds of pins in dense urban areas
- **Impact:** Poor user experience, app crashes
- **Mitigation:**
 - Implement clustering from day one
 - Load buildings progressively based on zoom level
 - Use viewport-based queries (only load visible buildings)
 - Conduct performance testing with maximum expected dataset

**Platform Fragmentation**
- **Risk:** Inconsistent experience across different devices, OS versions, screen sizes
- **Impact:** Negative reviews, increased support burden
- **Mitigation:**
 - Define minimum supported OS versions (iOS 14+, Android 8+)
 - Test on diverse device matrix (small screens, tablets, older devices)
 - Use responsive design patterns
 - Prioritize one platform initially if resources limited (suggest iOS first for MVP)

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### Business & Operational Risks

**Content Creation Bottleneck**
- **Risk:** Cannot scale to new cities quickly due to research/writing time
- **Impact:** Limits growth and geographic expansion
- **Mitigation:**
 - Develop standardized content templates and workflows
 - Build content team capacity early
 - Explore partnerships with universities or heritage organizations
 - Consider phased city rollouts (launch with 100 buildings, add weekly)
 - Document and streamline research process
```

```
**Data Licensing & Copyright**
- **Risk:** Unclear or restricted licensing for heritage database content
- **Impact:** Legal exposure, need to remove content
- **Mitigation:**
 - Consult with legal counsel on data usage rights
 - Prioritize public domain and open data sources
 - Obtain written permissions for proprietary data
 - Ensure all image licenses are documented
 - Create original content where necessary

**User Privacy & Location Data**
- **Risk:** Mishandling user location data could violate privacy regulations (GDPR, CCPA)
- **Impact:** Legal penalties, loss of user trust
- **Mitigation:**
 - Collect minimal location data (no persistent tracking)
 - Clear privacy policy and permission prompts
 - Don't store user location history
 - Allow full app functionality without account creation
 - Conduct privacy audit before launch

**Market Fit & Engagement**
- **Risk:** Users find the app interesting but don't use it repeatedly
- **Impact:** Low retention, difficulty achieving product-market fit
- **Mitigation:**
 - Focus MVP on high-frequency use cases (locals rediscovering neighborhoods)
 - Test with real users in beta before full launch
 - Monitor retention metrics closely and iterate quickly
 - Build feedback channels to understand drop-off reasons
 - Consider notification strategy to re-engage users

**Competitive Response**
- **Risk:** Major travel apps (TripAdvisor, Google) add similar features
- **Impact:** Harder to differentiate and acquire users
- **Mitigation:**
 - Focus on depth and quality over breadth
 - Build strong relationships with heritage community
 - Differentiate through superior UX and curated content
 - Move quickly to establish brand in niche market

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### Resource Risks

**Team Capacity**
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- **Risk:** Content creation, app development, and QA require significant resources
- **Impact:** Delayed launch, quality compromises
- **Mitigation:**
 - Start with limited pilot cities (2-3)
 - Hire or contract specialized roles early (content writers, historians)
 - Use agile methodology to deliver iteratively
 - Consider outsourcing specific components (design, backend)

Budget Constraints
- **Risk:** Ongoing costs (APIs, hosting, content) exceed available budget
- **Impact:** Service degradation or shutdown
- **Mitigation:**
 - Model costs across different user volume scenarios
 - Negotiate favorable terms with service providers
 - Design architecture for cost efficiency (caching, compression)
 - Plan monetization strategy for sustainability (post-MVP)

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10. Analytics & Tracking Plan

Implementation Approach

Analytics Stack:
- Primary: Google Analytics for Firebase (mobile) or Mixpanel
- Supplementary: Custom backend logging for critical events
- Crash Reporting: Firebase Crashlytics or Sentry
- Performance Monitoring: Firebase Performance or New Relic

Privacy Considerations:
- No personally identifiable information (PII) in event properties
- Location data aggregated to city/neighborhood level only
- Anonymous user IDs
- Clear opt-out mechanism in app settings

Core Events to Track

App Lifecycle
```
Event: app_launched
Properties: is_first_launch (bool), app_version, os_version, device_model

Event: onboarding_completed
```

```
Properties: onboarding_duration (seconds), skipped (bool)

Event: permission_requested
Properties: permission_type (location/notifications), granted (bool)

Event: session_start
Properties: session_source (push_notification/organic/deep_link)

Event: session_end
Properties: session_duration (seconds), buildings_viewed (int)
```

Map Interactions
```
Event: map_loaded
Properties: load_time (ms), buildings_count (int), user_location_city

Event: map_panned
Properties: distance_moved (meters), final_viewport_center

Event: map_zoomed
Properties: zoom_level_start, zoom_level_end

Event: pin_tapped
Properties: building_id, building_name, building_type, architectural_style,
distance_from_user (meters)

Event: pin_cluster_expanded
Properties: cluster_size (int)
```

Building Detail Pages
```
Event: building_viewed
Properties:
 - building_id
 - building_name
 - building_type (residential/religious/civic/etc)
 - architectural_style
 - year_built
 - source (map_pin/search/favorites)
 - distance_from_user (meters)

Event: building_image_viewed
Properties: building_id, image_index, viewing_duration (seconds)
```

```
Event: building_detail_scrolled
Properties: building_id, scroll_depth_percentage (25/50/75/100)

Event: get_directions_tapped
Properties: building_id, user_distance_from_building (meters)
```

Search & Discovery
```
Event: search_initiated
Properties: source (search_bar/voice)

Event: search_completed
Properties:
 - query_text
 - results_count
 - query_length (characters)
 - search_duration (ms)

Event: search_result_tapped
Properties: query_text, result_position (int), building_id

Event: search_no_results
Properties: query_text
```

Filtering
```
Event: filter_applied
Properties:
 - filter_type (style/period/type/distance)
 - filter_value
 - results_count
 - combined_with_other_filters (bool)

Event: filter_cleared
Properties: filters_that_were_active (array)
```

Favorites
```
Event: favorite_added
Properties:
 - building_id
```

```
 - building_type
 - source (detail_page/map_preview)
 - user_favorites_count (total after this action)

Event: favorite_removed
Properties: building_id, removal_source (detail_page/favorites_list)

Event: favorites_viewed
Properties: favorites_count
```

Content Engagement
```
Event: time_on_building_page
Properties: building_id, duration (seconds), scrolled_to_end (bool)

Event: image_gallery_swiped
Properties: building_id, images_viewed_count, gallery_completion_rate (%)
```

Key Metrics Dashboard

Daily Active Metrics:
- Daily Active Users (DAU)
- Daily Active Sessions
- Average session duration
- Average buildings viewed per session
- Crashes per session

Weekly Trends:
- Weekly Active Users (WAU)
- DAU/WAU ratio (stickiness)
- New user registrations (if account system implemented)
- Week-over-week growth rates

Engagement Funnels:

Discovery Funnel:
1. App opened → 100%
2. Map loaded → target 98%
3. Pin tapped → target 70%
4. Building details viewed → target 65%
5. Scrolled through full details → target 45%

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6. Favorite added or directions requested → target 25%

**Search Funnel:**
1. Search initiated → 100%
2. Results returned → target 85%
3. Result tapped → target 60%
4. Building details viewed → target 55%

**Retention Cohorts:**
- Day 1, 3, 7, 14, 30 retention by install cohort
- Segment by acquisition source, location, device type

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### Product Health Indicators

**Technical Health:**
- App crash rate (target: <1%)
- ANR (Application Not Responding) rate (target: <0.5%)
- API response time p50/p95/p99
- Image load success rate (target: >98%)
- Map load time p50/p95

**Content Quality:**
- Buildings flagged for incorrect info (target: <2%)
- User feedback submission rate
- Content update frequency

**Engagement Quality:**
- % of sessions with 0 buildings viewed (target: <10%)
- % of users who add at least 1 favorite (target: >40%)
- Average repeat visit count per user

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### Custom Reports & Insights

**Geographic Analysis:**
- Most viewed buildings by city
- Heatmap of user activity (which areas get most exploration)
- Building coverage vs. demand (areas with high traffic but few buildings
cataloged)

**Content Performance:**
- Top buildings by views
```

```
- Architectural styles most explored
- Time periods most popular
- Completion rate by building (correlate with content length/quality)

**User Segmentation:**
- Tourists vs. locals (infer from movement patterns)
- Power users (>10 buildings viewed) vs. casual browsers
- Search-heavy vs. browse-heavy users

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### A/B Testing Framework

**Planned Experiments:**
- Onboarding variations (length, content, style)
- Pin design and clustering thresholds
- Building detail page layout
- Filter UI placement and design
- Search algorithm variations

**Testing Process:**
- Minimum 1,000 users per variant
- Minimum 7-day test duration
- Primary metrics: retention, buildings viewed, session duration

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## 11. Non-Functional Requirements

### Performance

**Response Time:**
- App launch (cold start): <3 seconds
- App resume (warm start): <1 second
- Map initial load: <2 seconds on 4G
- Building detail page load: <1.5 seconds
- Search results: <1 second for queries under 50 characters
- Image loading: <3 seconds for primary image, progressive loading for galleries

**Scalability:**
- Support 10,000+ concurrent users without degradation
- Database design supports 10,000+ buildings per city
- Map rendering handles 500+ pins in viewport with clustering
- Backend API handles 100 requests/second minimum
- Plan for 10x growth in first year post-launch
```

```
**Reliability:**
- App uptime: 99.5% (excluding planned maintenance)
- Crash-free rate: >99%
- API uptime: 99.9%
- Graceful degradation when backend unavailable (cached content remains accessible)

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### Security

**Data Protection:**
- All API communications over HTTPS/TLS 1.3
- No storage of user location history
- Secure storage of user preferences using platform keychains
- Regular security audits of codebase and dependencies

**Privacy Compliance:**
- GDPR compliant (if launching in EU markets)
- CCPA compliant (if targeting California users)
- Clear, accessible privacy policy
- User consent for data collection
- Easy data deletion mechanism
- No sale of user data to third parties

**API Security:**
- Authentication tokens for all API requests
- Rate limiting to prevent abuse (e.g., 100 requests/minute per device)
- Input validation on all user-submitted data
- No exposed API keys in client code

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### Accessibility

**Compliance Standards:**
- WCAG 2.1 Level AA compliance minimum
- Platform-specific guidelines (Apple HIG, Material Design)

**Visual Accessibility:**
- Minimum text size: 16pt for body text, 14pt for secondary
- Color contrast ratio: 4.5:1 for normal text, 3:1 for large text
- Support for Dynamic Type (iOS) / Font Scaling (Android)
- Color is never the only indicator (use icons, labels, patterns)
- Support for Dark Mode (system setting)
```

```
**Screen Reader Support:**
- All interactive elements labeled for VoiceOver/TalkBack
- Logical focus order through interface
- Meaningful announcements for state changes (e.g., "Building saved to favorites")
- Image alt text for all photos

**Motor & Cognitive:**
- Minimum tap target size: 44×44 points (iOS) / 48×48 dp (Android)
- No time-based interactions required
- Clear, simple language throughout (reading level: 8th grade)
- Consistent navigation patterns

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### Usability

**Learnability:**
- New users complete first building discovery flow without external help
- Core features discoverable through clear UI affordances
- Onboarding takes <60 seconds
- Tooltips for non-obvious features (dismissible)

**Efficiency:**
- Frequent tasks (browse nearby, search, view favorite) accessible within 2 taps
- Common flows optimized for minimal steps
- Quick access to recently viewed buildings

**Error Prevention & Recovery:**
- Confirmations for destructive actions (if any)
- Clear error messages with actionable recovery steps
- Undo capability where appropriate (e.g., removing from favorites)

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### Compatibility

**Platform Support:**

**iOS:**
- Minimum version: iOS 14.0
- Target devices: iPhone (all screen sizes), iPad (optimized layout)
- Orientation: Portrait primary, landscape supported

**Android:**
```

- Minimum version: Android 8.0 (API 26)
- Target devices: Phones and tablets from major manufacturers
- Orientation: Portrait primary, landscape supported
- Screen densities: mdpi through xxxhdpi

Testing Matrix:
- iPhone SE (small screen)
- iPhone 14 (standard)
- iPhone 14 Pro Max (large screen)
- iPad (tablet)
- Samsung Galaxy S21 (Android standard)
- Google Pixel 6 (Android reference)
- Budget Android device (e.g., Xiaomi Redmi)

Offline Support

Offline Capabilities:
- Previously viewed buildings remain accessible
- Favorites list fully functional
- Cached images available
- Map tiles cached for recent areas (if feasible)
- Graceful degradation with clear "offline" indicator

Sync Behavior:
- Favorites sync when connection restored
- No loss of offline actions (favorites added offline sync when online)

Storage Management:
- Cached content managed automatically (LRU eviction)
- User can clear cache in settings
- Maximum cache size: 500MB

Localization & Internationalization

MVP Language Support:
- Launch in one primary language (e.g., Turkish or English)
- Infrastructure designed for multi-language expansion

Future Localization (Post-MVP):
- UI translatable to at least 10 languages
- Building content supports multiple language versions

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- Right-to-left (RTL) layout support for Arabic, Hebrew, etc.
- Locale-appropriate formatting:
 - Dates (MM/DD/YYYY vs DD/MM/YYYY)
 - Units (meters vs feet, kilometers vs miles)
 - Currency (if monetization added)

**Cultural Considerations:**
- Image selections appropriate for all markets
- Content tone respectful of local sensitivities
- Support for region-specific architectural terminology

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### Monitoring & Observability

**Logging:**
- Structured logs for all critical operations
- Error logs with stack traces
- Performance logs (API latency, render times)
- Log retention: 30 days minimum

**Monitoring:**
- Real-time alerting for crashes, API failures, elevated error rates
- Dashboard for key metrics (DAU, crash rate, API health)
- Uptime monitoring with geographic distribution
- Performance monitoring (track regressions)

**Feedback Mechanisms:**
- In-app feedback form (bug reports, suggestions)
- Prompt for app store review after positive experiences
- Email support channel
- Response SLA: 48 hours for user inquiries

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### Maintainability

**Code Quality:**
- Clean architecture with separation of concerns
- Minimum 70% unit test coverage for business logic
- Integration tests for critical user flows
- Documented codebase (inline comments for complex logic)
- Consistent code style (enforced via linters)

**Development Practices:**
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- Version control (Git) with clear branching strategy
- Code reviews required for all changes
- Automated CI/CD pipeline
- Staging environment for testing before production
- Feature flags for gradual rollouts

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12. Future Opportunities

Phase 2 Enhancements (6-12 Months Post-MVP)

Guided Walking Tours
- Curated routes connecting multiple buildings by theme (e.g., "Ottoman Architecture in Beyoğlu," "Modernist Ankara")
- Estimated walking time and distance
- Turn-by-turn navigation within app
- Audio narration for tours (optional)
- Offline download of tour content
- **Value:** Increases session duration, attracts tourists planning visits, potential monetization through premium tours

User-Generated Content (Curated)
- Allow users to submit photos of buildings (moderated before publishing)
- User notes/personal stories about buildings (private or shared)
- "I've been here" check-ins or visited markers
- Community ratings and reviews (carefully moderated)
- **Value:** Richer content, increased engagement, community building

Social Features
- Share favorite buildings or custom maps with friends
- Social media integration (share discoveries to Instagram, Twitter)
- Follow friends and see their favorites/visits
- Collaborative favorite lists (e.g., "Our Istanbul Walking Guide")
- **Value:** Viral growth, social proof, retention through social ties

Enhanced Search & Recommendations
- "Buildings similar to this one" recommendations
- Personalized suggestions based on viewing history
- "Complete the collection" (e.g., "You've seen 8/12 Art Deco buildings in this area")
- Trending buildings (most viewed this week)
- **Value:** Increased discovery, longer sessions, personalization

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### Phase 3 Innovations (12-24 Months)

**Augmented Reality (AR) Features**
- Point phone at building to see overlay with name and key facts
- Historical reconstruction overlays (see building in original state)
- AR navigation arrows to guide to nearby buildings
- "X-ray" view showing interior layouts or architectural elements
- **Value:** Wow factor, media coverage, differentiation from competitors

**Time Travel / Historical Layers**
- Toggle map to see historical boundaries and old buildings
- Compare current street view with historical photos
- Timeline slider showing neighborhood evolution
- Stories of demolished buildings and urban change
- **Value:** Deep engagement, unique educational content, storytelling

**Multi-Language Content & Global Expansion**
- UI and building content in 10+ languages
- Expand beyond initial pilot cities to major global destinations
- Partnerships with tourism boards and heritage organizations
- Local expert network for content creation at scale
- **Value:** Massive market expansion, international user base

**Integration with Cultural Institutions**
- Partner with museums for extended content (virtual exhibitions)
- Link to museum collections featuring building artifacts or artwork
- Event integration (open house days, architecture festivals, heritage events)
- Ticketing integration for buildings open to public (museums, historic houses)
- **Value:** Institutional legitimacy, content partnerships, revenue opportunities

**Advanced Analytics for Users**
- Personal statistics (buildings visited, cities explored, favorite eras)
- Achievement system ("You've explored 50 buildings!")
- Yearly recap (like Spotify Wrapped for architecture)
- Shareable visualizations of exploration patterns
- **Value:** Gamification, social sharing, engagement loops

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### Monetization Opportunities (Post Product-Market Fit)

**Freemium Model**
- Free: Core map, search, basic building info
- Premium: Audio tours, AR features, offline city packs, exclusive content
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- Pricing: $4.99/month or $39.99/year
- **Revenue Potential:** If 5% of 100K users convert = $20K MRR

Partnership Revenue
- Tourism boards pay for featured city content
- Hotels/restaurants sponsor "nearby" recommendations
- Architecture firms sponsor architect profile pages
- Walking tour companies integrate their offerings
- **Revenue Potential:** $5K-20K per partnership

B2B / Educational Licensing
- School/university licenses for educational use
- Tour guide companies use Buildo for their operations
- Real estate agencies use for property historical context
- **Revenue Potential:** $1K-10K per enterprise customer

In-App Purchases
- Premium city guides (one-time purchase per city)
- Ad-free experience
- Advanced filters and tools
- Exclusive historical photo collections
- **Revenue Potential:** Variable based on user base

Long-Term Vision (2-5 Years)

Platform Expansion
- Web version for trip planning
- Smart city integrations (IoT, smart tourism initiatives)
- VR experiences (explore historical buildings remotely)
- Educational curriculum partnerships (K-12, universities)

Content Diversification
- Expand beyond buildings to bridges, monuments, urban planning
- Parks, gardens, and landscape architecture
- Industrial heritage and infrastructure
- Contemporary architecture (new buildings)

Community & Ecosystem
- Ambassador program (local experts in each city)
- Contributor network (historians, photographers, writers)
- API for third-party integrations
- White-label version for heritage organizations

Impact & Mission
- Advocacy for heritage preservation
- Crowdfunding for endangered buildings
- Educational foundation or nonprofit arm
- Research partnerships studying urban change

Conclusion

Buildo's MVP focuses on delivering a polished, reliable, and engaging location-based discovery experience that makes architectural heritage accessible to everyone. By prioritizing quality over quantity—starting with deep content in 2-3 pilot cities, ensuring data accuracy, and crafting an intuitive user experience—we create a foundation for sustainable growth.

The success of this MVP depends on three critical elements:
1. **Content Excellence:** Accurate, engaging historical narratives that respect both casual learners and enthusiasts
2. **Technical Reliability:** Seamless map performance, fast loading, and offline resilience
3. **User Delight:** Intuitive navigation, beautiful design, and meaningful discovery moments

If we achieve our core metrics—40% 7-day retention, 5+ buildings viewed per session, and consistent weekly engagement—we will have validated product-market fit and positioned Buildo for expansion into new cities, features, and eventually, sustainable monetization.

The future opportunities outlined above provide a clear roadmap, but our immediate focus remains laser-focused on the MVP: proving that people want to discover and learn about the buildings around them, and that Buildo is the best way to do it.

Next Steps:
1. **Design Phase:** Create wireframes and high-fidelity mockups based on this PRD (2 weeks)
2. **Content Planning:** Select pilot cities and begin building database (ongoing, 8-10 weeks)
3. **Technical Architecture:** Finalize tech stack, set up infrastructure, begin development (12-14 weeks)
4. **Beta Testing:** Limited release to 100-500 users for feedback (2 weeks)
5. **Launch:** Public release in pilot cities with marketing push

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**Questions & Feedback:**
This PRD is a living document. Please share feedback, questions, or concerns with the Product team. Key discussion topics for review meeting:
- Pilot city selection criteria
- Resource allocation (content team size)
- Platform prioritization (iOS first vs. simultaneous launch)
- Content licensing strategy
```