ATHENEUM

Product Requirements Document

Version 1.0 · Phase 1 MVP

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Product	Atheneum — Your Reading Brain
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This document defines all functional and non-functional requirements for Atheneum Phase 1. It is the single source of truth for the development team and covers user stories, technical requirements, API specifications, UI/UX requirements, and acceptance criteria.

01 Executive Summary

Atheneum is a reading companion app — not an ebook reader — that uses AI to remove every obstacle standing between a user and the experience of loving a book. The core insight is that most people *want* to read more but have lost the attentional infrastructure to do it, eroded by years of short-form content. Atheneum's mission is cognitive recovery through frictionless, intrinsically motivated reading.

> **North Star:** Remove everything that stands between a user and loving a book. The app should disappear — and the story should take over.

Phase 1 Scope

Phase 1 delivers the core MVP: ebook reading with AI-powered recall, frictionless re-entry, AI explanation, curiosity nudge, and a clean focus mode. This phase targets the lapsed reader — someone who used to love reading but finds they can no longer focus.

P0	Must Have — launch blocker	P1	Should Have — important to core experience	P2	Nice to Have — can ship post-launch

02 User Personas

The Lapsed Reader

Primary Persona

Age 18–35. Educated and self-aware about screen habits. Says 'I used to love reading but I can't focus anymore.' Has unfinished books. Chooses between Atheneum and TikTok — not Atheneum and a bookstore.

- Needs easy re-entry after putting a book down for days or weeks
- Needs comprehension support without breaking flow
- Cannot sustain 30-minute focus sessions at launch — needs gradual scaffolding
- Must feel the app is on their side, not judging them

The Active Physical Reader

Secondary Persona

Prefers tactile experience of physical books but wants the intelligence layer — recall, highlight capture, comprehension — that digital offers. Currently underserved by every major reading app.

- Needs to scan a physical book and get an AI companion instantly
- Needs to photograph and save physical highlights digitally
- Does NOT want to be pushed toward buying ebooks

The Student / Learner

Tertiary Persona

Reading for comprehension and retention. Needs AI explanation tools, note-taking, and the ability to review key concepts after finishing a chapter.

- Needs AI that can explain complex passages in context
- Needs notes and highlights that are searchable and exportable
- Benefits from comprehension questions after chapters

03 Functional Requirements

All Phase 1 functional requirements are detailed below, organized by feature area. Each requirement has a unique ID, priority, and acceptance criteria.

3.1 Ebook Reader Core

ID	Requirement	Description	Priority	Acceptance Criteria
ER-01	**EPUB Support**	App must render EPUB 2 and EPUB 3 files with correct formatting, fonts, images, and chapter structure.	P0	A sample EPUB renders correctly across font sizes on iOS and Android.
ER-02	**PDF Support**	App must render standard PDFs. Text reflow optional for Phase 1 but zoom and scroll must be smooth.	P0	A standard PDF opens and is readable with no crashes.
ER-03	**Page Position Persistence**	Reading position must persist automatically at the paragraph level across app kills, restarts, and device switches.	P0	User closes and reopens app — lands within 2 paragraphs of last position.
ER-04	**Font Customization**	User can adjust font size (small/medium/large/XL), font family (at least 3 options including serif and sans-serif), and line spacing.	P0	Settings persist across sessions. Changes apply instantly without reload.
ER-05	**Night / Day Mode**	Reader switches between light (white bg), sepia (warm bg), and dark (black bg) modes. Follows system preference by default.	P0	Mode switches instantly. User preference persists.
ER-06	**Tap Zone Navigation**	Tapping left third of screen = previous page, right third = next page, center = show/hide UI chrome.	P0	Navigation is consistent and never accidentally triggers AI features.
ER-07	**Highlight & Note**	User selects text to highlight in 3 colors and optionally attach a text note. Highlights render on subsequent reads.	P1	Highlights survive app restart. Notes are editable after creation.
ER-08	**Table of Contents**	All books with chapter structure expose a TOC panel. Tapping a chapter navigates immediately.	P0	TOC opens from menu. Navigation is instant with no flicker.
ER-09	**Search in Book**	Full text search within current book with match highlighting and jump-to navigation.	P1	Search returns results within 2 seconds for a standard novel.

ID	Requirement	Description	Priority	Acceptance Criteria
ER-10	**Library Management**	User can import books via Files (iOS) / File Manager (Android), cloud storage, or direct OPDS/Gutenberg integration. Books appear in a clean shelf view.	P0	A user can add a book in under 3 taps. Book appears in library within 5 seconds.

3.2 AI Recall Engine

The recall engine is Atheneum's most critical differentiator for Phase 1. It must feel warm and narrative — not like a plot summary, but like a knowledgeable friend catching you up.

ID	Requirement	Description	Priority	Acceptance Criteria
RC-01	**Automatic Recall Trigger**	When a user opens a book they have not read for 3+ days, Atheneum automatically surfaces a recall card before the page loads.	P0	Recall card appears 100% of the time when gap >= 3 days. Never appears for same-day returns.
RC-02	**Narrative Recall Quality**	Recall must be written in warm, narrative prose (not bullet points). It must accurately cover: key plot developments, active character states, unresolved tensions, and the exact scene where the user left off.	P0	QA review of 20 books shows recall is accurate and tone is warm for all. No spoilers beyond current position.
RC-03	**Recall Length Control**	Default recall is 150–200 words. User can tap 'More detail' for an expanded 400-word version, or 'Quick refresh' for a 2-sentence version.	P1	All three lengths render correctly. User preference is remembered per book.
RC-04	**Recall Generation Speed**	Recall must appear within 4 seconds of triggering. Show a skeleton/loading state immediately.	P0	p95 recall generation time < 4s measured over 100 test calls.
RC-05	**Recall Accuracy — No Spoilers**	AI must use only content up to and including the user's current page position. Content from future pages must never appear in recall.	P0	Test with 5 books: recall at page 50, 100, 150 — zero spoilers in any output.
RC-06	**Manual Recall Access**	User can access the recall card at any time via a persistent button in the reader UI without leaving their page.	P1	Recall accessible from reader in 1 tap. Dismissing recall returns to exact reading position.
RC-07	**Recall for New Books**	For books opened for the first time, show a brief 'what to expect' orientation rather than a recap — genre, tone, narrative style.	P2	Orientation card is shown on first open. Does not appear on subsequent opens.

3.3 Curiosity Nudge

ID	Requirement	Description	Priority	Acceptance Criteria
CN-01	**Pre-Session Prediction Prompt**	After the recall card, Atheneum asks: 'What do you think happens next?' User can type a free-text prediction or skip. Prediction is stored per reading session.	P1	Prompt appears after recall. Skip works in 1 tap. Text input is free-form with no character limit shown.
CN-02	**Post-Session Reflection**	When a user ends a session (closes app or after 30 min of inactivity), a brief card asks: 'Were you right?' with the user's stored prediction shown. User taps Yes / Partly / No.	P1	Reflection card appears 90%+ of sessions with a stored prediction. Tapping any option dismisses the card.
CN-03	**Prediction History**	User can view a log of all past predictions and reflections for each book — presented as a personal reading journal.	P2	History accessible from book detail page. Each entry shows date, prediction, and outcome.
CN-04	**Non-Intrusive Design**	Both prompts must be dismissable in 1 tap and must never interrupt reading flow mid-session.	P0	User study with 5 testers: 0 users find the prompts annoying or intrusive.

3.4 AI Explain

ID	Requirement	Description	Priority	Acceptance Criteria
AE-01	**Text Selection Trigger**	When user selects any text in the reader, the context menu includes an 'Explain' option alongside standard copy/highlight actions.	P0	Explain option appears in selection menu on both iOS and Android within 200ms of selection.
AE-02	**Contextual Explanation**	AI explains the selected text in context of the book — not just a definition, but what it means here, in this scene, for these characters. Includes: word/phrase meaning, character or place context, thematic relevance where applicable.	P0	Explanations tested on 10 diverse passages across 3 genres — all contextually relevant and non-generic.
AE-03	**Explanation Panel**	Explanation appears in a bottom sheet that overlays the reader without navigating away. User can dismiss to return to exact position.	P0	Bottom sheet opens without losing scroll position. Back gesture closes it.

ID	Requirement	Description	Priority	Acceptance Criteria
AE-04	**Explanation Speed**	AI explanation must appear within 3 seconds. Show a loading indicator immediately.	P0	p95 explain response time < 3s over 100 test calls.
AE-05	**Save Explanation**	User can save an explanation alongside the source highlight for future reference.	P1	Save button in explanation panel. Saved explanation appears in highlights list with source passage.
AE-06	**Ask Follow-Up**	User can type a follow-up question from within the explanation panel without re-selecting text.	P2	Follow-up input field in panel. Response maintains context of original selection.

3.5 Focus Mode

ID	Requirement	Description	Priority	Acceptance Criteria
FM-01	**Distraction-Free UI**	Focus Mode hides all navigation chrome: no status bar, no toolbar, no progress bar. Only text and a minimal swipe-up gesture to access controls.	P0	UI chrome fully hidden in Focus Mode. Swipe-up from bottom edge reveals controls.
FM-02	**Notification Suppression**	During a Focus Mode session, push notifications are suppressed at the app level. A subtle 'Focus Active' indicator is shown.	P1	No push notifications interrupt a Focus Mode session. Indicator visible but unobtrusive.
FM-03	**Session Timer**	User can optionally set a reading session goal (15 / 25 / 45 minutes). At completion, a minimal, satisfying animation marks the achievement — no sound unless enabled.	P1	Timer runs accurately. Completion animation plays without interrupting reading position.
FM-04	**Reading Ambience**	Optional: user can enable a soft ambient sound (rain, cafe, forest, silence). Single toggle, no per-scene automation in Phase 1.	P2	Audio plays at low volume without affecting device media volume. Stops when app is backgrounded.
FM-05	**Smooth Typography**	Focus Mode applies optimized typography: slightly larger font, increased line height, justified text, and a warm-tinted background by default.	P0	Typography settings apply instantly in Focus Mode. User can override.

3.6 Onboarding

ID	Requirement	Description	Priority	Acceptance Criteria
OB-01	**First Launch Flow**	On first launch: (1) Brief 3-screen explanation of Atheneum's mission in warm, human language. (2) Ask reading goal: 'How much do you want to read?' with humble options (5 pages/day, 10 pages/day, 'I just want to finish one book'). (3) Add first book.	P0	Onboarding completes in under 2 minutes. User reaches library screen with at least one book.
OB-02	**No Account Required at Launch**	Phase 1 allows full access without account creation. Account creation is optional and prompted only for cloud sync features.	P0	App fully functional from first launch with no sign-up gate.
OB-03	**Permission Requests — Minimal**	Only request permissions that are immediately necessary. No camera permission at launch (Phase 2). Notifications permission requested only when user sets a reading goal.	P0	No unnecessary permission prompts on first launch.

ID	Requirement	Description	Priority	Acceptance Criteria
OB-04	**Sample Book**	Onboarding includes an optional 'Try it with a sample' that loads a short public domain excerpt so the user can experience recall and explain before adding their own books.	P1	Sample loads within 3 seconds. All Phase 1 AI features work on the sample.

04 Non-Functional Requirements

4.1 Performance

ID	Requirement	Description	Priority	Acceptance Criteria
PF-01	**App Launch Time**	Cold start to library screen must be under 2.5 seconds on a mid-range device (iPhone 12 / Pixel 6 equivalent).	P0	Measured cold start < 2.5s on 3 test devices.
PF-02	**Page Turn Latency**	Page turns must feel instantaneous. Target < 100ms for pre-rendered pages, < 300ms for new page render.	P0	No perceptible lag on standard EPUB during rapid page-turn testing.
PF-03	**AI Response Caching**	Recall cards and explanations for the same passage must be cached locally for 24 hours to avoid redundant API calls.	P0	Second request for same recall returns cached result in < 200ms.
PF-04	**Offline Reading**	Sideloaded books must be fully readable offline. AI features gracefully degrade with a clear offline message.	P0	Reading works with airplane mode on. AI features show 'requires connection' message — no crashes.
PF-05	**Battery Usage**	App must not consume more than 8% battery per hour of active reading (screen-on, no AI features active).	P1	1-hour reading session on full charge consumes < 8% on test devices.

4.2 AI & LLM Requirements

ID	Requirement	Description	Priority	Acceptance Criteria
AI-01	**Model Selection**	Use a frontier LLM (GPT-4o or Claude Sonnet equivalent) for recall and explain features. Model must support long context (minimum 100k tokens) to process full book content.	P0	LLM correctly processes a 300-page novel for recall without truncation artifacts.
AI-02	**Prompt Design — Tone**	All AI prompts must be engineered to produce warm, narrative, non-clinical output. No bullet points in recall. Explain must read like a knowledgeable friend, not a textbook.	P0	Tone review: 10 outputs reviewed by 3 people — all rated 'warm and readable'.
AI-03	**Context Window Management**	System must efficiently chunk and summarize long books to fit within context limits while preserving narrative accuracy for recall.	P0	Recall tested on books > 400 pages — no hallucinations or narrative drift.

ID	Requirement	Description	Priority	Acceptance Criteria
AI-04	**Hallucination Guardrails**	AI must only reference characters, events, and places that exist in the book. No extrapolation or invention. Implement with explicit system prompt constraints and output validation.	P0	Zero hallucinated character names or invented plot points in QA test set of 15 books.
AI-05	**User Data Privacy in AI Calls**	Book content sent to LLM API must be anonymized — no user ID, device ID, or personal data included in API payloads.	P0	API payload audit shows zero PII in any LLM request.
AI-06	**Cost Management**	Implement token budgets per feature: Recall < 3,000 input tokens per call, Explain < 800 input tokens per call. Optimize prompts to minimize cost.	P1	API cost per active user per month < $0.15 at expected usage patterns.

4.3 Security & Privacy

ID	Requirement	Description	Priority	Acceptance Criteria
SP-01	**Local Book Storage**	All sideloaded books stored locally on device in app sandbox. No books uploaded to server without explicit user consent.	P0	Security audit confirms books not transmitted without consent.
SP-02	**Data Encryption at Rest**	User highlights, notes, predictions, and preferences stored with AES-256 encryption on device.	P0	Encryption verified in security review.
SP-03	**API Key Security**	LLM API keys must never be embedded in the client app. All AI calls routed through Atheneum's backend proxy.	P0	Binary analysis of app confirms no embedded API keys.
SP-04	**Privacy Policy**	Clear, plain-language privacy policy accessible before any data collection. GDPR and CCPA compliant.	P0	Legal review of privacy policy completed before App Store submission.
SP-05	**Analytics — Minimal & Anonymous**	Only anonymous, aggregated analytics collected (session length, feature usage, crash reports). No reading content or book titles in analytics payloads.	P0	Analytics payload audit confirms no PII or book data.

4.4 Platform & Compatibility

ID	Requirement	Description	Priority	Acceptance Criteria
PC-01	**iOS Support**	iOS 16.0 and above. Tested on iPhone 12, iPhone 14, iPhone 15 Pro, and iPad (latest).	P0	App passes TestFlight on all 4 devices with zero P0 bugs.
PC-02	**Android Support**	Android 10 (API 29) and above. Tested on Pixel 6, Samsung Galaxy S22, and a mid-range device (Moto G).	P0	App passes internal QA on all 3 Android test devices.
PC-03	**Tablet Optimization**	iPad and Android tablet layouts use a two-column reading mode with navigation in sidebar.	P1	Tablet layout renders correctly in both portrait and landscape.
PC-04	**Accessibility**	Full VoiceOver (iOS) and TalkBack (Android) support. Minimum text contrast ratio of 4.5:1. Dynamic text size support.	P0	Accessibility audit passes WCAG 2.1 AA for all core reading flows.

4.5 Reliability

ID	Requirement	Description	Priority	Acceptance Criteria
RL-01	**Crash Rate**	App crash rate must be below 0.5% of sessions in production.	P0	Measured via Crashlytics or equivalent for first 30 days post-launch.
RL-02	**AI Feature Uptime**	AI features (recall, explain) must have 99.5% uptime. Graceful degradation when AI backend is unavailable.	P0	Degraded mode tested: app functional for reading, AI features show offline message.
RL-03	**Reading Position Integrity**	Reading position must never be lost due to app update, device restore, or data migration.	P0	Position integrity tested across app update and device restore scenarios.

05 Technical Architecture Overview

This section outlines the high-level technical architecture for Phase 1. Detailed system design documents should be produced by the engineering team based on these requirements.

Layer	Technology / Approach	Notes
Mobile Client	React Native or Flutter	Cross-platform. Native modules for ebook rendering.
Ebook Rendering	FolioReader (iOS) / Foliant (Android) or custom EPUB.js wrapper	Must support EPUB 2/3 and PDF. Test on 20+ books before finalizing.
AI Backend	Node.js or Python FastAPI on serverless (AWS Lambda / Vercel)	Handles LLM proxying, caching, and token management.
LLM Provider	OpenAI GPT-4o or Anthropic Claude Sonnet	Evaluate both on cost, speed, and output quality. Phase 1 pick one.
Book Storage	Local device filesystem (sandboxed)	No cloud upload in Phase 1. iCloud/Google Drive sync in Phase 2.
User Data	SQLite (local) via Realm or Expo SQLite	Highlights, notes, predictions, preferences, reading position.
Analytics	PostHog (self-hosted) or Mixpanel	Anonymous events only. No PII in event properties.
Crash Reporting	Sentry or Firebase Crashlytics	Real-time alerts for P0 crashes.
CI/CD	GitHub Actions + Fastlane	Automated builds to TestFlight and Google Play Internal.

5.1 AI Pipeline — Recall Engine Detail

The recall engine is the most technically complex feature in Phase 1. The pipeline must handle books up to 150,000 words within LLM context limits.

Step 1	**Book Ingestion**	On first AI feature use, extract full text from EPUB/PDF. Chunk into segments of ~2,000 tokens with 200-token overlap. Store chunk index with page/position mapping.
Step 2	**Position Mapping**	User's current page/position maps to a chunk index. System knows exactly which chunks have been read.

Step 3	**Progressive Summarization**	For books > 50,000 words, generate rolling chapter summaries as user progresses. These summaries + recent raw chunks form the context for recall.
Step 4	**Recall Prompt**	System prompt instructs: narrative tone, no spoilers past current position, cover characters/plot/tensions. User's current position and summaries fed as context.
Step 5	**Output Validation**	Response validated for: length within range, no character names not in book, no future events. If validation fails, retry once with adjusted prompt.
Step 6	**Caching**	Valid recall cached locally keyed to book ID + position. Cache invalidates when user reads 5+ pages further.

06 UI / UX Requirements

Atheneum's design philosophy: the interface must feel warmer and calmer than any other app on the user's phone. It should feel like picking up a book — not opening an app.

6.1 Design Principles

Warmth over efficiency: Use warm typography, generous whitespace, and muted earth tones. Never feel clinical or productivity-app-like.

Invisible chrome: Navigation, progress indicators, and AI triggers should surface only when needed and retreat completely when reading.

Delight without distraction: Micro-animations (page turns, recall card appearance, session completion) should feel satisfying but never flashy. Zero autoplay motion.

Consistent calm: No aggressive onboarding pop-ups, no permission walls, no rating prompts in the first 7 days. Earn trust before asking for anything.

Intrinsic over extrinsic: Never frame features as rewards, points, or streaks. Frame everything around the reader's growth and the book's world.

6.2 Key Screens — Requirements

Library Screen

- Clean grid or list view of books with cover art
- Last-read book prominently featured at top
- Reading progress shown as a subtle underline fill — no percentage numbers by default
- Add book button always visible without scrolling
- No ads, no 'discover' feed, no social pressure

Reader Screen

- Text is the only focus — no permanent UI elements while reading
- Tap center to toggle minimal header (book title, chapter) and bottom bar (progress, AI button)
- AI button (bottom right): single tap opens AI menu with Recall and Explain options
- Swipe from left edge: chapter navigation
- Swipe from right edge: bookmarks / highlights

Recall Card

- Full-screen overlay with a soft blurred background of the book cover
- Narrative text in a comfortable reading font — not a summary widget
- Three length options (Quick / Standard / Detailed) as subtle tabs
- Single 'Resume Reading' CTA — warm label, not 'Close' or 'Dismiss'

Explain Panel

- Bottom sheet, 60% screen height by default, expandable
- Source passage shown at top in a soft highlight box
- Explanation below in body text — no headers, no bullet points
- Optional: 'Ask a follow-up' input field at bottom (Phase 1: can be simplified)

Onboarding Screens

- 3 screens max
- Illustration-led, minimal text
- No sign-up screen in Phase 1
- Warm, first-person copy: 'You used to love reading. Let\'s get that back.'

07 Pre-Launch Checklist

All P0 items must be complete and passing before App Store / Play Store submission. P1 items should be complete. P2 items are optional for launch.

App Store Requirements

■	All P0 functional requirements implemented and QA tested	P0
■	App Store screenshots prepared for iPhone, iPad, and Android	P0
■	Privacy policy live at a public URL	P0
■	App Store description written — lead with mission, not features	P0
■	All permissions justified in App Store review notes	P0
■	TestFlight beta with 20+ external testers, 0 P0 crashes	P0

AI Quality Gate

■	Recall tested on 20 books across 5 genres — accuracy review passed	P0
■	Explain tested on 50 diverse passages — tone and relevance reviewed	P0
■	Zero hallucination incidents in QA test set	P0
■	p95 recall latency < 4s confirmed	P0
■	p95 explain latency < 3s confirmed	P0
■	API cost per user modeled and within budget	P1

Security & Privacy

■	Security audit completed — no API keys in binary	P0
■	Analytics payload confirmed PII-free	P0
■	Book data confirmed not transmitted without consent	P0
■	Encryption at rest verified	P0

Performance

■	Cold start < 2.5s on all target devices	P0
■	Page turn latency < 100ms on standard EPUB	P0
■	Offline reading confirmed working	P0

■	Crash rate < 0.5% in beta period	P0

Accessibility

■	VoiceOver / TalkBack tested on all core flows	P0
■	WCAG 2.1 AA contrast ratios met	P0
■	Dynamic text sizing tested at all system sizes	P0

08 Phase 2 Preview (Out of Scope for MVP)

The following features are confirmed for Phase 2 and should be considered during Phase 1 architecture decisions to avoid costly refactors.

Feature	Description
Physical Book Companion	Scan book cover/spine to activate AI companion for physical books. No ebook required.
Passage Camera Capture	Photograph any physical page passage — OCR converts to digital highlight.
Shelf Scanner	Scan entire physical bookshelf to map collection and get personalized next-read recommendations.
Shared Margins	Asynchronous social reading — pin voice notes and reactions to specific pages for shared reading.
Cloud Sync	iCloud and Google Drive sync for highlights, notes, and reading position across devices.
Account System	Optional user accounts enabling sync, social features, and reading history backup.
Spaced Repetition	Flashcard system for non-fiction — key concepts from highlights reviewed at optimal intervals.

Remember the mission: Atheneum is not competing with Kindle or with physical books. It is competing with the doom scroll. Every technical and design decision should be tested against one question: does this make reading feel better than scrolling?

Document maintained by the Atheneum product team. Update version number on any substantive change to requirements.