Product Requirements Document (PRD)

Project Name

SnapRead– Mobile Web app that converts uploaded documents (.pdf, .docx) into swipeable flash-card decks optimised for comprehension and retention on small screens.

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1 | Problem Statement

Heavy, scroll-based documents are hard to read on phones—especially for time-poor and neurodivergent users (e.g. ADHD). Users abandon or skim, losing value. We need a consumption-first experience that surfaces content in bite-sized, focus-friendly units.

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2 | Goals & Success Metrics (MVP)

Objective	KPI	Target (90-day post-GA)
Increase completion	% pages (or cards) consumed per session	**+30 pp vs. mobile PDF baseline**
Improve comprehension	Correct answers in post-read 3-question quiz	**≥15 % lift**
Retention	Weekly active readers	**35 % WAU/MAU**
Conversion	Docs successfully converted → decks	**70 % of uploads**

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3 | Personas

1. **Commuter Learner (CL):** reads reports on transit; wants quick, resumable chunks.
2. **ADHD Professional (AP):** struggles with long texts; needs focus mode & custom pacing.
3. **Student Sprinter (SS):** uploads lecture slides to revise via spaced flashcards.

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4 | User Stories (MVP)

1. *As CL*, I upload a PDF and within 30 sec get a deck of cards so I can start reading on the bus.
2. *As AP*, I toggle dark mode and enlarge text to stay focused.

3. *As SS*, I bookmark tricky cards and review them later.
4. *As any user*, I can resume reading where I left off across devices.

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5 | In-Scope (MVP)

- Upload from **local device only** (drag-and-drop or standard file picker).
- Serverless doc-processing pipeline: extract → smart chunk (≈100–150 words) → headline generation → optional image pull (unsplash) → deck JSON.
- Swipeable card UI: horizontal swipe, progress bar, per-card notes/bookmark, settings panel.
- Typography default: **Lexend Deca, 16 px, lh 1.4**; user-adjustable font size & theme (light, dark, sepia).
- Responsive PWA shell (≤ 600 px width focus).
- Basic spaced-repetition revisit prompt (“Study again tomorrow?”).

VNext (out-of-scope for MVP)

- OCR for scanned PDFs.
- AI summaries per section.
- Auto-quiz generation.
- Collaborative decks sharing / comments.

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6 | Functional Requirements (MVP)

1. **Upload & Import**
   - F1.1 Accept .pdf & .docx ≤ 20 MB.
   - F1.2 Virus scan & MIME validation.
2. **Processing Service**
   - F2.1 Extract plain text & images (libreoffice → HTML for docx; pdf.js for pdf).
   - F2.2 Chunk text by semantic boundaries (headings, sentences) targeting 120 words avg.
   - F2.3 Generate card headline (first heading or GPT-powered summariser fallback ≤ 60 char).
   - F2.4 Store deck JSON (cards[], metadata) in Firestore.
3. **Deck Viewer (PWA)**
   - F3.1 Display one card per viewport; horizontal swipe advance; reverse swipe returns.
   - F3.2 Progress UI (X / N cards, thin bar top).
   - F3.3 Tap to reveal note panel (highlight, bookmark).
   - F3.4 Settings: font size slider (14–22 px), theme toggle, auto-advance (off/5/10 s).
   - F3.5 Resume state via localStorage & user account sync.

4. **Account & Storage**
    - F4.1 **Empty State & Onboarding**
    - Display an illustrated hero graphic plus concise value prop: “Turn any document into swipe-friendly flashcards.”
    - Offer **“Try a Sample”** button that loads a curated sample deck so users can experience the reading flow with zero friction.
    - Surface subtle social proof (usage count or testimonial) to build trust. F4.2 **First-Upload Call-to-Action**
    - Primary CTA: **“Upload your first file”** supporting drag-and-drop and file-picker (PDF/DOCX).
    - Microcopy emphasises privacy: “Conversion happens in-memory; your file is never stored.”
    - If user hesitates > 8 s, nudge with pulsing halo animation around CTA.
5. **Analytics**
    - F5.1 Log upload success, conversion time, card views, completion, dwell per card.

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7 | Non-Functional Requirements

- **Perf:** First card interactive ≤ 4 s on 3G; next card < 100 ms swipe latency.
- **Security & Privacy:** docs deleted from server after 24 h or on user delete; HTTPS only.
- **Accessibility:** WCAG 2.2 AA; keyboard nav; aria-labels; high-contrast theme.
- **Scalability:** Handle 5k concurrent conversions; autoscale Cloud Functions.

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8 | Design Principles

1. **Focus first:** one idea, zero clutter per card.
2. **Readable defaults:** Lexend Deca 16 px, line-height 1.4, 40–60 char/line.
3. **Delightful motion:** subtle card slide (200 ms) with easing; respects OS-level ‘reduce motion’.
4. **Progress motivates:** show deck length early; celebrate completion with confetti burst.

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9 | Metrics & Instrumentation

- Google Analytics (GA4) + BigQuery export for funnel.
- Custom events: `upload_start`, `upload_success`, `deck_generated`, `card_swiped`, `deck_complete`.
- A/B: Flashcard vs. scroll PDF for comprehension quiz; success when p-value ≤ 0.05 & ≥ 15 % lift.

10 | Dependencies & Risks

- **Text extraction libs** accuracy (tables, math) → risk of malformed cards.
- **AI headline service** latency / cost.
- User privacy when sending docs to 3rd-party AI → ensure regional data controls.
- Lexend webfont load time → will self-host & preload.

11 | Milestones (tentative)

Phase	Deliverable	Owner	Date
0	Tech spike: pdf.js extraction POC	Eng	Wk 1
1	Processing API (doc → JSON)	Eng	Wk 4
2	Deck viewer MVP + settings	Eng/UI	Wk 6
3	Closed alpha (20 users)	PM	Wk 8
4	Beta + telemetry	Eng	Wk 10
5	Public GA	PM	Wk 14

12 | Open Questions

1. Will we support multi-language chunking Day 1?
2. How will we price or limit heavy usage (rate-limit?)
3. Should per-deck spaced repetition be adaptive or fixed intervals?

13 | Appendix

- Font licence: Lexend Deca (SIL OFL).
- Research summary & citations available in separate doc.

6.1 | Enhanced Interaction Controls (MVP Update)

The following interaction controls are **added to MVP scope** to increase agency, comprehension, and personalised pacing.

6.1.1 Card-Count Slider (replaces dedicated font-size slider)

Attribute	Spec
Default cards/deck	**20 cards** (≈ 2.5 min total read @ 7–8 sec/card). Derived from micro-learning research showing 2–5 min segments maximise retention and completion.
Slider range	5–50 cards (step = 5).
Location	Settings panel.
Rationale	Pacing/segment size has larger impact on comprehension than small font tweaks (users already have OS-level Dynamic Type). Letting users coarsely resize deck length tailors cognitive load while preserving typography guidelines.

Implementation logic: Processing service chunks full text, then groups chunks into `N` cards where `N` = slider value. If fewer natural chunks exist than selected, cards are padded with QA/summary items; if more, long cards are split (max 150 words). Slider change triggers re-segmentation on the fly (debounced).

6.1.2 Dive Deeper Button

Per-card expansion control

- Reveals a modal (or flips card) with full paragraph(s) immediately before/after the chunk plus any embedded images.
- Keeps deck flow intact; returning collapses view.

6.1.3 Jump to Source Button

Opens original document at first occurrence of the chunk.

- Conversion pipeline stores start byte offset & page # for every chunk.
- Clicking the icon opens an in-app PDF/Docx viewer and scrolls to that anchor with a highlight.
- If doc is > 5 MB, preload surrounding ±1 page to keep latency < 500 ms.

6.1.4 Ask AI Button

Contextual Q&A drawer

- Sends current chunk **plus preceding & following chunk** to LLM endpoint (`gpt-4o` with 8k context).
- System prompt: *"You are a helpful assistant answering questions strictly from the provided excerpt; if uncertain, suggest user opens Jump-to-Source."*
- Streaming response shown in bottom sheet; user can pin answer to deck notes.

6.1.5 Font Size Handling Post-Change

- Dedicated font-size slider is removed from settings to reduce control clutter.

- App honours OS font scaling (Android `sp`, iOS Dynamic Type) and offers **one tap** ‘Large Text’ toggle (+2 px). Research shows most users stick with platform controls for type and gain more from pacing personalisation.
