

# ElderTech Voice Assistant – Scrum Storyboard

**Time-box:** Two-week sprints (10 working days) \ **Definition of Done:** Story demoed, tests passing, accessibility checked, merged to `main`, deployed to staging, docs updated.

## Epic 1 – Core Voice Interaction (MVP)

ID	User Story	Acceptance Criteria	Tasks	Technical Tips
1.1	<b>As an elder user, I want to press a large “Hold to Talk” button so I can ask my question easily.</b>	Button $\geq 44 \times 44$ px, ARIA-labelled, records audio when held, shows visual timer.	<ul style="list-style-type: none"><li>• Design MicButton component</li><li>• Implement WebRTC mic capture</li><li>• Add live waveform animation</li><li>• Unit-test state transitions</li></ul>	Use MediaRecorder API ( <code>audio/webm; codecs=opus</code> ) for smaller payloads.
1.2	<b>As a user, I want my speech transcribed accurately in &lt; 1 s after release.</b>	$\geq 90\%$ accuracy on sample set; transcription appears in subtitle area; retry on failure.	<ul style="list-style-type: none"><li>• WebSocket stream to <code>/whisper</code></li><li>• Whisper API call</li><li>• Return partial &amp; final results</li><li>• E2E latency test</li></ul>	Chunk audio every 0.8 s; send in 16-kHz PCM; enable Whisper <code>temperature=0</code> to reduce hallucinations.
1.3	<b>As a user, I want a clear, spoken answer with readable captions.</b>	Audio plays automatically; captions $\geq 24$ pt; Replay & Slower controls work.	<ul style="list-style-type: none"><li>• GPT-4o prompt design</li><li>• ElevenLabs TTS call</li><li>• AudioPlayer with captions &amp; controls</li><li>• A11y audit</li></ul>	Cache TTS MP3 in S3 + signed URLs to avoid per-request cost; split captions by sentence for sync.

## Epic 2 – Knowledge & Learning

ID	User Story	Acceptance Criteria	Tasks	Technical Tips
2.1	<b>As a frequent user, I want common answers to be instant so I'm not waiting.</b>	FAQ hits return in < 300 ms; accuracy parity with GPT.	• Nightly clustering script • Build FAISS index • Add <code>/faq/search</code> route • Write unit tests	Embed Q&A with <code>text-embedding-3-small</code> ; FAISS <code>nprobe=8</code> for speed/recall balance.
2.2	<b>As a product owner, I want logs of every Q&amp;A so we can improve content.</b>	Messages collection stores full trace; admin can export CSV.	• Add <code>messages</code> persistence • Build admin export script • GDPR data-deletion routine	Use BSON <code>Decimal128</code> for latency metrics; anonymize PII fields.

## Epic 3 – Onboarding & Help Center

ID	User Story	Acceptance Criteria	Tasks
3.1	<b>As a first-time user, I want a guided tutorial so I understand how to use the assistant.</b>	Carousel with voice narration; "Skip" always available; analytics event logged.	• Illustrations & copy • Onboarding.tsx component • LocalStorage flag • A/B test instrumentation
3.2	<b>As a user, I want to browse help by topic when I'm not sure what to ask.</b>	HelpCenter grid grouped by tags; search bar filters FAQs.	• Build <code>/faqs</code> endpoint • Client search & filter • Large-font card UI

## Epic 4 – Family Portal (Optional)

ID	User Story	Acceptance Criteria	Tasks
4.1	<b>As a family member, I want to preload tips so my parent sees personalized help.</b>	Auth0 login; CRUD on FAQ; changes live within 5 min.	• Portal scaffold (Next.js route group) • Form validation • Webhook to invalidate RAG cache

## Epic 5 – DevOps & Quality

ID	User Story	Acceptance Criteria	Tasks
5.1	<b>As a developer, I want CI/CD so new code ships safely.</b>	PR triggers lint, type-check, unit + Playwright tests; auto-deploy to staging.	• GitHub Actions YAML • Playwright basic flow • Render deploy hook
5.2	<b>As an SRE, I need monitoring and alerts.</b>	99 % uptime SLA; alert on p95 latency > 2 s.	• Prometheus scrape config • Grafana dashboard • PagerDuty integration

## Sprint 1 – MVP Goal

**Duration:** 2 weeks \ **Stories committed:** 1.1 → 1.3, 2.2, 3.1, 5.1

### Sprint Backlog Tasks

- Story 1.1 tasks (MicButton, WebRTC, tests)
- Story 1.2 tasks (WS stream, Whisper lambda, latency harness)
- Story 1.3 tasks (GPT prompt, TTS client, caption sync)
- Story 2.2 tasks (logging schema, export script)
- Story 3.1 tasks (onboarding UX, narration files)
- Story 5.1 tasks (CI pipeline)

### Sprint Review Definition

- Live demo from laptop: ask “What’s an app?” and hear answer  $\leq 5$  s.
- Unit & e2e tests pass in CI.
- Onboarding plays with narration.
- Messages visible in Mongo shell.

## Follow-Up Steps (Post-Sprint Roadmap)

1. **Scale**
2. Add CDN + Signed URLs for TTS files.
3. Migrate Whisper to GPU auto-scaling group; benchmark cost vs latency.
4. **Refine AI Responses**
5. Fine-tune GPT system prompt with real transcripts.
6. Introduce guardrails (JSON schema tool calls, profanity filter).
7. **Extend Channels**
8. Enable SMS fallback via Twilio.
9. Explore adding *optional* video avatar (D-ID Talk) behind a feature flag; cache MP4 alongside MP3.
10. **Accessibility Upgrades**

11. Contrast mode toggle.
12. Switch-control friendly focus order tests with real assistive hardware.
13. **Internationalisation**
14. Interface strings in i18n JSON.
15. Whisper language-auto-detect; ElevenLabs multi-voice rollout.
16. **Analytics & Feedback Loop**
17. Blend qualitative user satisfaction survey at session end.
18. Dashboard of top failure intents.