

TECHNICAL ARCHITECTURE — CONFIDENTIAL

# TokiStorage

## Technical Architecture

No server. No subscription.

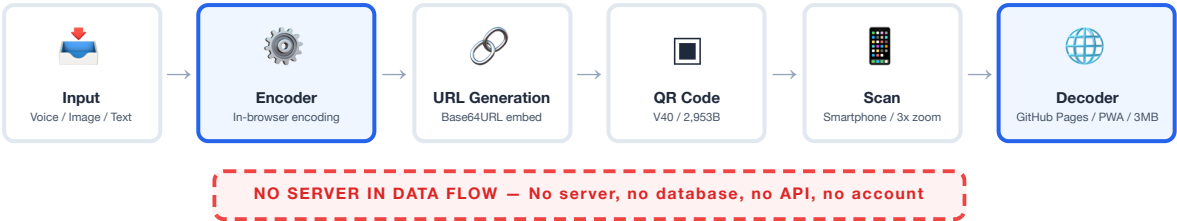
Three-layer distributed storage carrying voice and memory **a thousand years** forward.

INFRASTRUCTURE & SERVICE MAP



Zero fixed monthly costs. Zero proprietary servers — development, delivery, payments, and archiving all run on external services and public institutions. Frontend, GAS, and Cloudflare Workers run on JavaScript / HTML / CSS; generator scripts in Python.

ARCHITECTURE & DATA FLOW

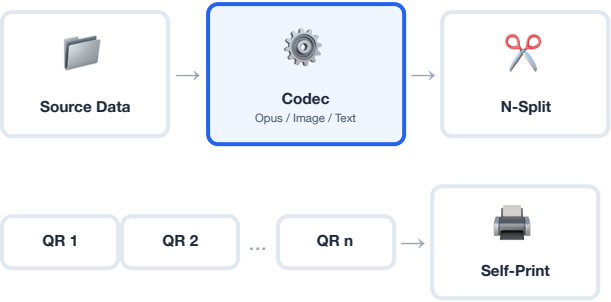


| Data Type | Encoding                                    | Max Capacity      |
|-----------|---------------------------------------------|-------------------|
| Voice     | Codec2 WASM (6 modes: 3200–450 bps)         | ~29 sec (450 bps) |
| Image     | JPEG / WebP — in-browser resize + Base64URL | ~2.2 KB           |
| Text      | UTF-8 — Base64URL                           | ~2,900 chars      |

To eliminate service shutdown risk, servers are completely removed from the data flow. The QR code itself is the storage, and the decoder is just a 3 MB static site. With PWA, fully offline playback is possible. No customer data, personal information, or confidential data is held.

BULK MODE ARCHITECTURE

Supports long audio, high-res images, and long text beyond the single QR's 30-second limit

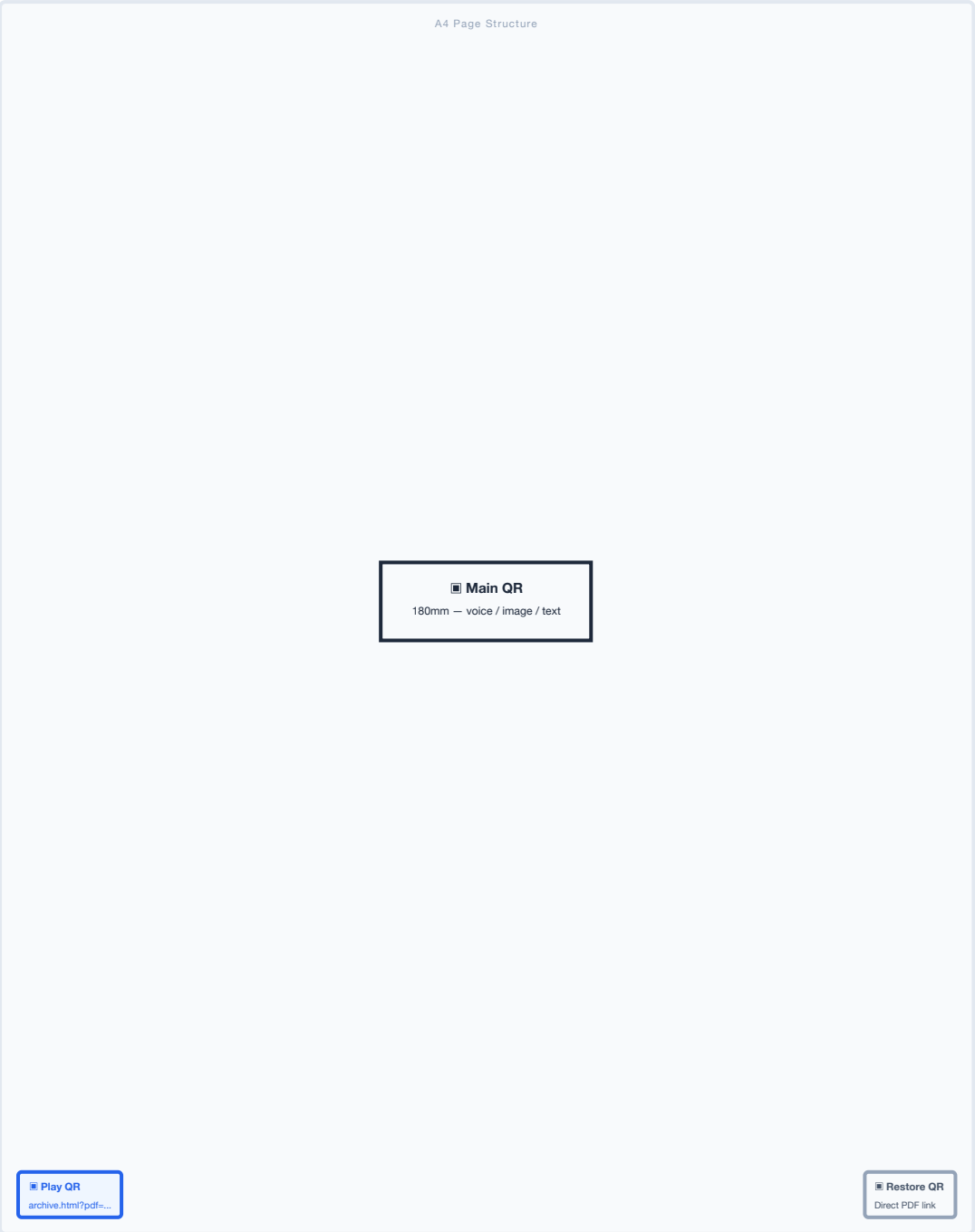


The server cannot see balances, revoke credits, or recover lost ones. This asymmetry is intentional by design.

Prepaid Credits

- ¥150 / 1 code (\$1)
- IndexedDB (browser storage)
- No account required
- No personal info required
- No expiry
- Purchase via Wise transfer

MULTI-LAYER RESTORATION ARCHITECTURE



| Path           | Entry Point              | Action                            |
|----------------|--------------------------|-----------------------------------|
| A. Play QR     | Page bottom-left (blue)  | Scan → auto-decode → instant play |
| B. Restore QR  | Page bottom-right (grey) | Scan → fetch PDF → save           |
| C. PDF Link    | Inside PDF viewer        | Click → browser navigation        |
| D. Play Button | Newsletter               | ▶ → auto-decode → instant play    |
| E. Manual Scan | Page main QR             | Scan one by one (works offline)   |

| Storage Layer | Medium                       | Durability |
|---------------|------------------------------|------------|
| Physical      | Quartz glass / UV laminate   | 1,000 yr+  |
| Public        | NDL deposit (newsletter PDF) | Permanent  |
| Private       | GitHub + PWA offline         | Immediate  |

MIGRATION ROADMAP

| Component                                                                                                                                                   | Current                              | Migration Candidate           | Trigger                          | Phase       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------|----------------------------------|-------------|
| Email Delivery                                                                                                                                              | GAS + Gmail (100/day)                | Amazon SES (62,000/mo)        | Orders > 100/day                 | Phase 2     |
| Production                                                                                                                                                  | Manual (print, laminate, pack, ship) | Domestic outsource (turnkey)  | Orders > 50/day                  | Phase 2     |
| Partner Payouts                                                                                                                                             | Wise manual (monthly batch)          | CSV batch → API automation    | Volume increase                  | Phased      |
| Voice Codec                                                                                                                                                 | Codec2 WASM (450 bps)                | Next-gen low-bitrate codec    | QR capacity up or quality demand | 10-yr audit |
| QR Standard                                                                                                                                                 | Version 40, ECC-L (2,953B)           | rMQR / JAB Code / next-gen 2D | ISO update & reader adoption     | 10-yr audit |
| Playback Stack                                                                                                                                              | WebAudio API + WASM                  | Successor browser APIs        | API deprecation notice           | 10-yr audit |
| Design seams in advance; act before crisis. Swapping a single sendEmail() migrates GAS to SES. Every component is independently replaceable — zero lock-in. |                                      |                               |                                  |             |