

TECHNICAL SPECIFICATIONS: CYBERBIZ AFRICA DIGITAL PLATFORM

Version: 3.0 (Minimalist Build) **Status:** CONSTRUCTION READY **Target System:** CyberBizOS (Job Board + LMS + CMS) **Client:** Elevate Digital Solutions PLC / CyberBiz Africa

1. ARCHITECTURE & INFRASTRUCTURE

Design Philosophy: "Keep It Simple." No over-engineering. Use managed services to reduce maintenance.

1.1. Technology Stack (Mandatory)

- **Frontend:** Next.js (React) - Deployed on **Vercel**.
 - *Why:* Handles SEO (Server-Side Rendering) out of the box.
- **Backend/Database:** **Supabase** (Managed PostgreSQL + Auth).
 - *Why:* Provides Auth, Database, and File Storage in a single "Backend-as-a-Service" tier. Saves ~40 hours of setup time.
- **Search:** PostgreSQL Native Full-Text Search.
 - *Constraint:* Do NOT implement Elasticsearch or Algolia (Cost saving).

1.2. Core Constraints

- **Performance:** Mobile-first design. All images must use Next.js <Image/> optimization.
- **Localization:** Prices displayed in **ETB**. Dates in standard Gregorian (DD/MM/YYYY).
- **File Security:** CVs and eBooks must be stored in **Private Buckets**, never public folders.

2. DATABASE SCHEMA (SIMPLIFIED)

2.1. Users & Auth (Supabase Auth)

- users (Extends Supabase auth.users)
 - id: UUID (PK)
 - role: Enum (ADMIN, EMPLOYER, SEEKER, LEARNER)
 - full_name: String
 - subscription_tier: Enum (FREE, PRO_EMPLOYER)
 - credits: Integer (For pay-per-post logic)

2.2. Job Board & Search

- jobs
 - id: UUID (PK)
 - employer_id: UUID (FK)
 - title: String

- description_html: Text
 - search_vector: tsvector (**Indexed for High-Speed Search**)
 - status: Enum (DRAFT, PUBLISHED, ARCHIVED)
 - expires_at: Timestamp
- applications
 - id: UUID
 - job_id: UUID
 - seeker_id: UUID
 - cv_url: String (Private Signed URL)

2.3. Monetization (Ads & Content)

- products (Courses, E-books, Webinars)
 - id: UUID
 - type: Enum (COURSE, EBOOK)
 - price_etb: Decimal(10,2)
 - access_url: String (Protected Resource)
- ad_slots (Banner Management)
 - id: Integer
 - position: Enum (HOME_HEADER, SIDEBAR, JOB_DETAIL)
 - image_url: String
 - target_url: String
 - is_active: Boolean
 - impressions: Integer (Simple counter)

2.4. Ledger (Payments)

- transactions
 - id: UUID
 - user_id: UUID
 - gateway: Enum (CHAPA, SANTIM)
 - gateway_ref: String (Critical for reconciliation)
 - amount: Decimal
 - status: Enum (PENDING, SUCCESS, FAILED)

3. CORE LOGIC (THE "BRAIN")

3.1. Payment Reconciliation (Crucial for Ethiopia)

Problem: Webhooks from Chapa/Telebirr sometimes fail. **Solution:** A Scheduled Cron Job (Runs every 30 mins).

```
-- Pseudo-logic for Developer
FOR txn IN SELECT * FROM transactions WHERE status = 'PENDING' AND
created_at < NOW() - INTERVAL '5 minutes':
    response = call_gateway_verify_api(txn.gateway_ref)
    IF response.status == 'success':
        txn.status = 'SUCCESS'
```

```

        grant_user_access(txn.user_id, txn.product_id)
    ELSE IF response.status == 'failed':
        txn.status = 'FAILED'

```

3.2. SEO Implementation (Schema.org)

Constraint: All public pages must render JSON-LD for Google Jobs/Courses.

Job Page Requirement:

```

<script type="application/ld+json">
{
  "@context": "[https://schema.org/](https://schema.org/)",
  "@type": "JobPosting",
  "title": "{job.title}",
  "description": "{job.description_html}",
  "datePosted": "{job.created_at}",
  "hiringOrganization": {
    "@type": "Organization",
    "name": "{employer.company_name}",
    "logo": "{employer.logo_url}"
  }
}
</script>

```

3.3. Search Logic (Zero Cost)

Developer Instruction: Use this SQL query for search functionality.

```

SELECT * FROM jobs
WHERE to_tsvector('english', title || ' ' || description) @@
plainto_tsquery('english', 'user_search_query');

```

4. SECURITY & FILE HANDLING

4.1. CV & E-Book Uploads

- **Storage:** Supabase Storage (S3 compatible).
- **Rules:**
 1. **CVs:** Bucket private-cvs. Only accessible by the *Employer* who posted the job and the *Seeker*.
 2. **E-Books:** Bucket secure-assets. Only accessible via signed URL generated *after* `validate_payment()`.
 3. **Max Size:** 5MB per file.
 4. **Types:** .pdf, .docx only.

5. DELIVERABLES CHECKLIST

Phase 1: Job Board & SEO (Weeks 1-4)

- ☐ Authentication (Email/Password + Google).
- ☐ Employer Dashboard (Post Jobs).
- ☐ Public Job Feed with Postgres Search.
- ☐ CV Upload with S3 Security.
- ☐ SEO JSON-LD injection.

Phase 2: Monetization & CMS (Weeks 5-8)

- ☐ Payment Gateway Integration (Chapa/Santim).
- ☐ Ad Slot Manager (Admin uploads banners).
- ☐ Digital Product Purchase Flow (Buy E-book -> Get Download Link).
- ☐ Simple Blog CMS (Admin posts articles).
- ☐ AI integration (One button: "Generate Summary" using OpenAI API).

6. API ENDPOINTS (MINIMAL SET)

- POST /api/auth/signup
- GET /api/jobs?q=search_term
- POST /api/jobs/apply (Requires Auth)
- POST /api/payment/initiate (Returns Payment Link)
- POST /api/webhook/payment (Gateway Listener)
- GET /api/user/library (Returns purchased content)

<!-- end list -->