

# AfroKen LLM™

## Frontend Design Brief & System

**Project:** Citizen Service Copilot for Inclusive Governance

**Version:** 1.0

**Date:** November 2025

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## 1. DESIGN BRIEF

### 1.1 Project Overview

**AfroKen LLM** is a multilingual, AI-powered government service copilot designed to serve all 53 million Kenyan citizens across 47 counties. The frontend must prioritize **digital inclusion, accessibility, and cultural responsiveness** while delivering conversational, real-time assistance across multiple platforms (WhatsApp, SMS/USSD, Web, Voice).

**Design Challenge:** Create an inclusive interface that serves citizens with varying:

- Language preferences (Swahili, Sheng, English, future vernaculars)
- Device capabilities (smartphones, feature phones, desktop)
- Digital literacy levels (low to high)
- Accessibility needs (visually impaired, hearing impaired, motor disabilities)
- Connectivity speeds (2G/3G/4G/5G)

**Success Metrics:**

- 90%+ user satisfaction across all literacy levels
  - <3 second load times on 3G networks
  - ≥85% task completion rates for first-time users
  - Zero language errors or cultural misinterpretations
  - WCAG 2.1 AA accessibility compliance across all interfaces
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### 1.2 Design Principles

#### 1. Inclusion-First Design

- Multilingual by default (not afterthought)
- Support for feature phones and low-bandwidth users
- Accessibility embedded in every component
- Cultural sensitivity in imagery, iconography, language

## **2. Simplicity Over Complexity**

- Minimize cognitive load for low-literacy users
- Progressive disclosure (show essential info first)
- Clear, jargon-free language (translate Kenyan government acronyms)
- Visual affordances that guide without overwhelming

## **3. Trust & Transparency**

- Every answer grounded in verifiable government sources
- Citation badges showing where information comes from
- Clear explanation of why AI is making recommendations
- Government branding reinforces legitimacy

## **4. Conversational & Natural**

- Chat-first interface mimicking WhatsApp/Telegram patterns (familiar to users)
- Conversational tone: friendly, helpful, non-bureaucratic
- Support code-switching (Swahili/English/Sheng mixing natural to Kenyan youth)
- Voice interaction for the visually impaired and illiterate

## **5. Accessibility-First**

- WCAG 2.1 AA minimum across all interfaces
- Keyboard navigation for all interactive elements
- High contrast color schemes for low-vision users
- Alt text, captions, transcripts for all media
- Screen reader optimized

## **6. Performance & Connectivity**

- Progressive enhancement: works on 2G, optimized for 4G
- Lazy loading, image optimization for low-bandwidth
- Offline capability for USSD-only scenarios
- Real-time feedback even on slow networks

## **7. Data Sovereignty & Privacy**

- Minimal data collection (comply with Kenya Data Protection Act)
- Transparent about what is stored and why

- Local-first processing where possible
- User controls over personal data visibility

## 2. DESIGN SYSTEM

### 2.1 Color Palette

#### Primary Colors

Color Name	Hex	RGB	Usage	Psychology
<b>Kenyan Green</b>	#1B5E20	(27, 94, 32)	Primary buttons, primary actions, trust	Growth, stability, government authority
<b>Kenyan Teal</b>	#00897B	(0, 137, 123)	Secondary actions, highlights, active states	Hope, progress, digital transformation
<b>Kenyan Gold</b>	#FFB300	(255, 179, 0)	Accent, warnings, important notices	Prosperity, sun (East African context)
<b>Kenyan Red</b>	#C41C3B	(196, 28, 59)	Errors, critical alerts, decline actions	Urgency, national flag color, warning

#### Semantic Colors

Role	Hex	Light Mode	Dark Mode	Usage
<b>Success</b>	#2E7D32	Bright Green	Light Green	Successful submissions, confirmations, task completion
<b>Error</b>	#D32F2F	Bright Red	Light Red	Form validation errors, failed actions, critical issues
<b>Warning</b>	#F57F17	Amber	Light Amber	Warnings, pending actions, attention needed
<b>Info</b>	#0288D1	Bright Blue	Light Blue	Informational messages, helpful tips, citations
<b>Neutral</b>	#616161	Dark Gray	Light Gray	Secondary text, disabled states, metadata

#### Grayscale & Accessibility

Level	Hex	Usage	WCAG AAA Contrast
<b>Black</b>	#121212	Primary text, dark mode backgrounds	✓ AAA
<b>Dark Gray</b>	#424242	Secondary text, disabled states	✓ AA
<b>Medium Gray</b>	#9E9E9E	Dividers, subtle borders	✓ AA
<b>Light Gray</b>	#E0E0E0	Backgrounds, form inputs	✓ AA
<b>White</b>	#FFFFFF	Light mode background, card surfaces	✓ AAA

#### Color Accessibility Notes

- Never rely on color alone to convey information (always pair with icons/text)
- Contrast ratio minimum 4.5:1 for normal text (WCAG AA)

- Contrast ratio minimum 7:1 for small text and UI components
  - Avoid red-green combinations (colorblind users)
  - Test with colorblind simulation tools (Coblis, Color Oracle)
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## 2.2 Typography System

### Typeface Selection

Font	Family	Usage	Why
<b>Primary</b>	Inter	UI labels, buttons, navigation	Modern, highly legible, open-source, extensive language support
<b>Body</b>	Roboto	Body text, descriptions, form inputs	Excellent readability on screens, neutral, supports multilingual
<b>Monospace</b>	JetBrains Mono	Code blocks, reference numbers, case IDs	Clarity for critical identifiers, accessibility
<b>Accent</b>	Poppins	Headlines, emphasized text	Contemporary, warmth, cultural appeal

### Type Scale & Hierarchy

Use Case	Font	Size	Weight	Line Height	Letter Spacing	Usage
<b>H1</b>	Poppins	32px	700	1.2	-0.5px	Page titles, hero headings
<b>H2</b>	Poppins	24px	600	1.3	-0.3px	Section headings, conversation topics
<b>H3</b>	Poppins	20px	600	1.4	0px	Subsection headings, form labels
<b>Body</b>	Roboto	16px	400	1.6	0px	Main content, chat messages, paragraphs
<b>Body Small</b>	Roboto	14px	400	1.5	0px	Secondary text, metadata, timestamps
<b>Caption</b>	Roboto	12px	400	1.4	0.4px	Helper text, captions, fine print
<b>Overline</b>	Inter	11px	600	1.5	1px	Labels, badges, section markers
<b>Button</b>	Inter	16px	600	1.5	0.5px	CTA buttons, actionable text

### Multilingual Typography Considerations

- **Swahili:** Uses Latin characters but longer word lengths (10-15% longer than English)
- **Sheng:** Code-switched, may use Latin + Swahili mixed; support variant OpenType features
- **Arabic (Future):** RTL support, consider Arabic-friendly typeface (Al Tarikh, Noto Sans Arabic)
- **Vernacular Scripts (Future):** Plan for Kikuyu, Luo, Kamba if they require special scripts

### Readability Guidelines

- Maximum line length: 60-75 characters for body text
- Minimum font size: 14px for body text (accessibility)

- 1.5-1.6 line height for better readability (especially for dyslexic users)
  - Avoid all caps (harder to read); use sentence case or title case
  - Sufficient whitespace between paragraphs (1.5x line height)
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## 2.3 Spacing & Layout System

### 8px Base Unit Grid

All spacing, sizing, and layout should follow an 8px grid for consistency and scalability.

Spacing Value	Px	Use Case	Examples
XS	4px	Micro-spacing	Icon offset, tight grouping
SM	8px	Small spacing	Padding in small buttons, close elements
MD	16px	Standard spacing	Card padding, section gaps, button padding
LG	24px	Large spacing	Section margins, list item spacing
XL	32px	Extra large spacing	Section blocks, major layout divisions
2XL	48px	Large sections	Page margins, major spacing
3XL	64px	Full sections	Hero spacing, layout columns

### Responsive Breakpoints

Breakpoint	Width	Device	Use Case
XS	320px	Feature phone, small smartphone	USSD-like simple layouts
SM	480px	Smartphone (portrait)	WhatsApp-like conversational UI
MD	768px	Tablet (portrait)	Wider chat with sidebars
LG	1024px	Tablet (landscape), small desktop	Full admin dashboards
XL	1280px	Desktop	Government officer workstations
2XL	1536px	Large desktop	Multi-panel dashboards

### Mobile-First Layout Strategy

- Design for 320px (oldest feature phones) first
  - Progressive enhancement to wider screens
  - Touch targets: minimum 48x48px (44px acceptable with padding)
  - Safe area for notched phones: 16px+ margins on sides
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## 2.4 Component Library

### Buttons

#### Primary Button (Call-to-Action)

Style: Solid fill  
Color: Kenyan Green (#1B5E20)  
Text Color: White  
Padding: 12px 24px (Mobile: 12px 16px)  
Border Radius: 8px  
Font: Inter, 16px, Bold (600)  
Hover: Dark Green (#0D3B15)  
Active: Even darker (#082410)  
Disabled: Light Gray (#BDBDBD)

**Usage:** Main actions (Submit, Continue, Send Message, Book Appointment)

## Secondary Button

Style: Outline/Border  
Color: Kenyan Teal (#00897B)  
Border: 2px solid  
Padding: 10px 22px (accounts for border)  
Font: Inter, 16px, Bold (600)  
Hover: Light background (#E0F2F1)  
Active: Darker text (#004D40)

**Usage:** Alternative actions (Cancel, Skip, Learn More)

## Tertiary Button

Style: Text only (no background)  
Color: Kenyan Teal (#00897B)  
Padding: 8px 16px  
Font: Inter, 16px, Medium (500)  
Hover: Underline  
Active: Darker text (#004D40)

**Usage:** Less important actions (View details, Expand, Read more)

## Icon Button

Style: Square or circular  
Size: 44x44px (minimum touch target)  
Color: Kenyan Green (#1B5E20)  
Hover: Light background (#E8F5E9)

**Usage:** Navigation, icons, micro-interactions

## Accessibility Requirements

- Minimum 48x48px touch target (44px with padding)

- Clear focus indicator (outline or underline)
  - Button text must describe action (not just "Click here")
  - Disabled state clearly differentiated (not color alone)
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## Form Components

### Text Input

Background: White (#FFFFFF)  
Border: 1px solid Light Gray (#E0E0E0)  
Border Radius: 4px  
Padding: 12px 16px  
Font: Roboto, 16px  
Focus: Blue border (#0288D1), outline  
Error: Red border (#D32F2F), error message below  
Placeholder: Medium Gray (#9E9E9E), italic  
Height: 48px (minimum touch target)

### Variants:

- **Default:** Border only
- **Filled:** Light gray background
- **Floating Label:** Label animates above on focus (good for mobile)
- **Readonly:** Disabled styling with gray background
- **Error:** Red border + error message

### Textarea

Similar to text input but:  
Min Height: 120px  
Row-based for multilingual (account for length variations)  
Resize: Vertical only  
Supports markdown hints

### Select Dropdown

Similar to text input  
Icon: Chevron down on right  
Open State: Dropdown panel below  
Options: 44px height each  
Focus: Keyboard navigation (arrow keys)

## Radio Button & Checkbox

Size: 20x20px

Padding around: 12px (44px clickable area)

Color: Kenyan Green (checked state)

Label: Right-aligned, clickable

Focus: Blue outline

## Date Picker

Input: Same as text input

Calendar: Month view

Format: DD/MMM/YYYY (localized)

Accessibility: Manual input also supported

Mobile: Native date input (better UX)

## File Upload

Drag & Drop zone: 200px height, dashed border

Click to upload: Clear button

Accepted formats: PDF, DOC, PNG, JPG

Max file size: 10MB

Preview: Thumbnail + filename

Progress: Upload progress bar

## Form Labels & Helper Text

Label: 14px, Medium (500), above input

Required indicator: Red asterisk (\*)

Helper text: 12px, Gray, below input

Error message: 12px, Red, replaced helper text

Validation: Real-time (keystroke) + on blur

## Chat Message Components

### User Message

Alignment: Right side  
Background: Kenyan Green (#1B5E20)  
Text Color: White  
Border Radius: 16px (left) / 4px (right)  
Padding: 12px 16px  
Max Width: 80% of container  
Font: Roboto, 16px  
Time: 12px, Gray, below message  
Message type indicator: Icon (text, voice, image)

## Bot/Assistant Message

Alignment: Left side  
Background: Light Gray (#F5F5F5)  
Text Color: Black (#121212)  
Border Radius: 4px (left) / 16px (right)  
Padding: 12px 16px  
Avatar: 32x32px circle on left  
Max Width: 80% of container  
Citation badge: Blue badge with source  
Confidence: Optional confidence % below message  
Time: 12px, Gray, below message

## System Message

Center-aligned  
Background: Light Blue (#E3F2FD)  
Text: Teal (#00897B)  
Border: 1px solid Teal  
Padding: 12px 16px  
Border Radius: 4px  
Font: 14px, Medium  
Examples: "Chat started", "Transferred to officer", "Request submitted"

## Message Variations

- **With action buttons:** Cards below message
- **With images:** Thumbnail preview (tap to expand)
- **With suggestions:** Inline quick reply buttons
- **With typing indicator:** Three animated dots

## Cards & Containers

## Service Card (Grid)

Width: 100% (mobile), 48% (tablet), 30% (desktop)

Border: 1px solid Light Gray (#E0E0E0)

Border Radius: 8px

Padding: 16px

Shadow: 0px 1px 3px rgba(0,0,0,0.12)

Hover Shadow: 0px 4px 8px rgba(0,0,0,0.15)

Content:

- Icon: 32x32px, Kenyan Green
- Title: 16px, Bold
- Description: 14px, Gray
- CTA Button: Secondary style

## Status Card

Display service progress

Content:

- Service name
- Current status (color-coded: pending, in progress, completed)
- Timeline
- Next step
- Progress bar (0-100%)

## Citation/Source Card

Background: Light Blue (#E3F2FD)

Border Left: 3px Teal (#0288D1)

Padding: 12px 16px

Content:

- Quote icon
- Source text (truncated)
- "From: Ministry of Interior" label
- Read full source link

Font: 14px, italic

## Navigation Components

### Top Navigation Bar (Web/Desktop)

Height: 64px

Background: White (#FFFFFF)

Border Bottom: 1px Light Gray (#E0E0E0)

Content:

- Logo (left): 40px height, "AfroKen" text
- Nav links (center): 16px, Medium, Kenyan Teal
- User menu (right): Avatar + dropdown
- Language selector: Dropdown (En, Sw, Sheng)

Sticky: Yes, shadow on scroll

## Bottom Navigation Bar (Mobile)

Height: 56px

Background: White (#FFFFFF)

Border Top: 1px Light Gray (#E0E0E0)

Items: 4-5 icons max

Active item: Kenyan Green

Inactive item: Medium Gray

Font: 12px, centered below icon

Safe area padding: Respects notches

Sticky: Always visible

## Side Navigation (Desktop)

Width: 280px (collapsible to 64px)

Background: #F5F5F5

Items:

- Icon + label (expanded)
- Icon only (collapsed)

Active: Green background, white text

Hover: Light green background

Font: 14px, Medium

## Alert & Status Components

### Alert/Toast Message

Position: Bottom-right (desktop), bottom (mobile)  
Width: 380px (desktop), 100% (mobile, with margin)  
Padding: 16px  
Border Radius: 4px  
Font: 14px  
Dismiss: X button on right  
Duration: 5 seconds auto-dismiss (or manual)

Variants:

Success: Green border left, white bg  
Error: Red border left, white bg  
Warning: Amber border left, white bg  
Info: Blue border left, white bg

## Badge

Background: Kenyan Green (#1B5E20)

Text Color: White

Padding: 4px 12px

Border Radius: 16px

Font: 11px, Bold

Status badge (small dot + label):

- Success: Green dot
- Pending: Amber dot
- Error: Red dot

## 2.5 Icon System

### Icon Library

Use open-source icon set (Feather Icons or Material Design Icons) customized with Kenyan context.

Icon	Usage	Style	Color
	Government services	24x24px	Kenyan Green
	Chat/Messages	24x24px	Kenyan Teal
	Documents/Forms	24x24px	Neutral Gray
	Success/Completion	24x24px	Success Green
	Warning/Alert	24x24px	Warning Amber
	Information/Help	24x24px	Info Blue
	Search	24x24px	Neutral Gray
	Location/Map	24x24px	Kenyan Green
	User/Profile	24x24px	Neutral Gray
	Security/Privacy	24x24px	Kenyan Green
	Voice/Audio	24x24px	Kenyan Teal
	Language/Translation	24x24px	Neutral Gray

## Icon Accessibility

- All icons paired with text labels (not icon-only, except standard controls)
- High contrast with background (4.5:1 minimum)
- Consistent sizing: 24x24px (standard), 32x32px (large), 16x16px (small)
- Stroke width: 2px for clarity on small screens

## 2.6 Imagery & Photography

### Photography Style

- **Authentic Kenyan contexts:** Real people, real government spaces (Huduma Centres, county offices)
- **Diverse representation:** Age, gender, ability, ethnicity balanced
- **Warm, approachable:** People smiling, helpful expressions
- **Action-oriented:** Show people completing tasks, not posed

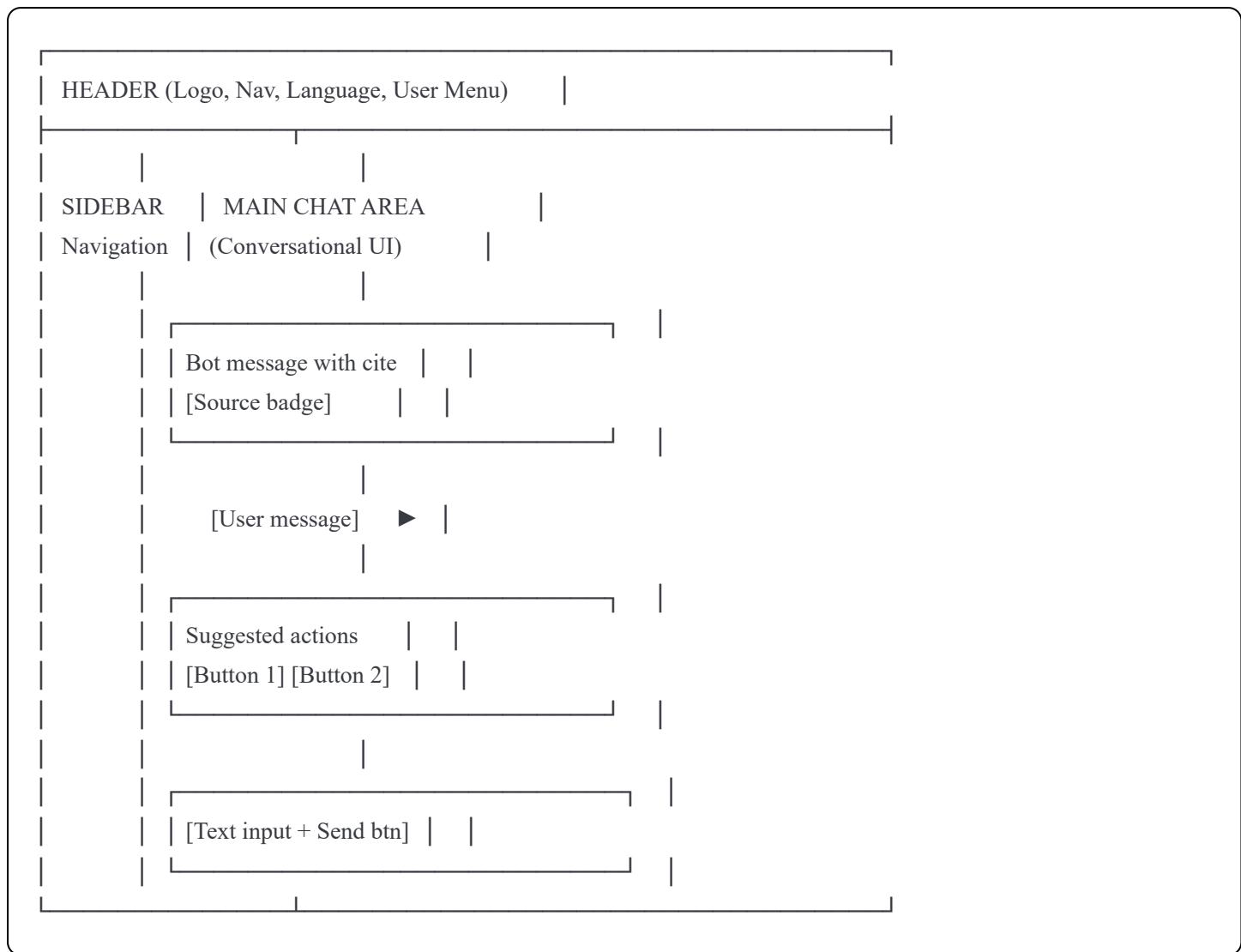
### Image Optimization

- Responsive images: srcset for different resolutions
- WebP format with JPEG fallback
- Compression: <100KB for hero, <50KB for thumbnails
- Lazy loading for below-fold content
- Alt text: Descriptive, action-oriented (not "image of person")

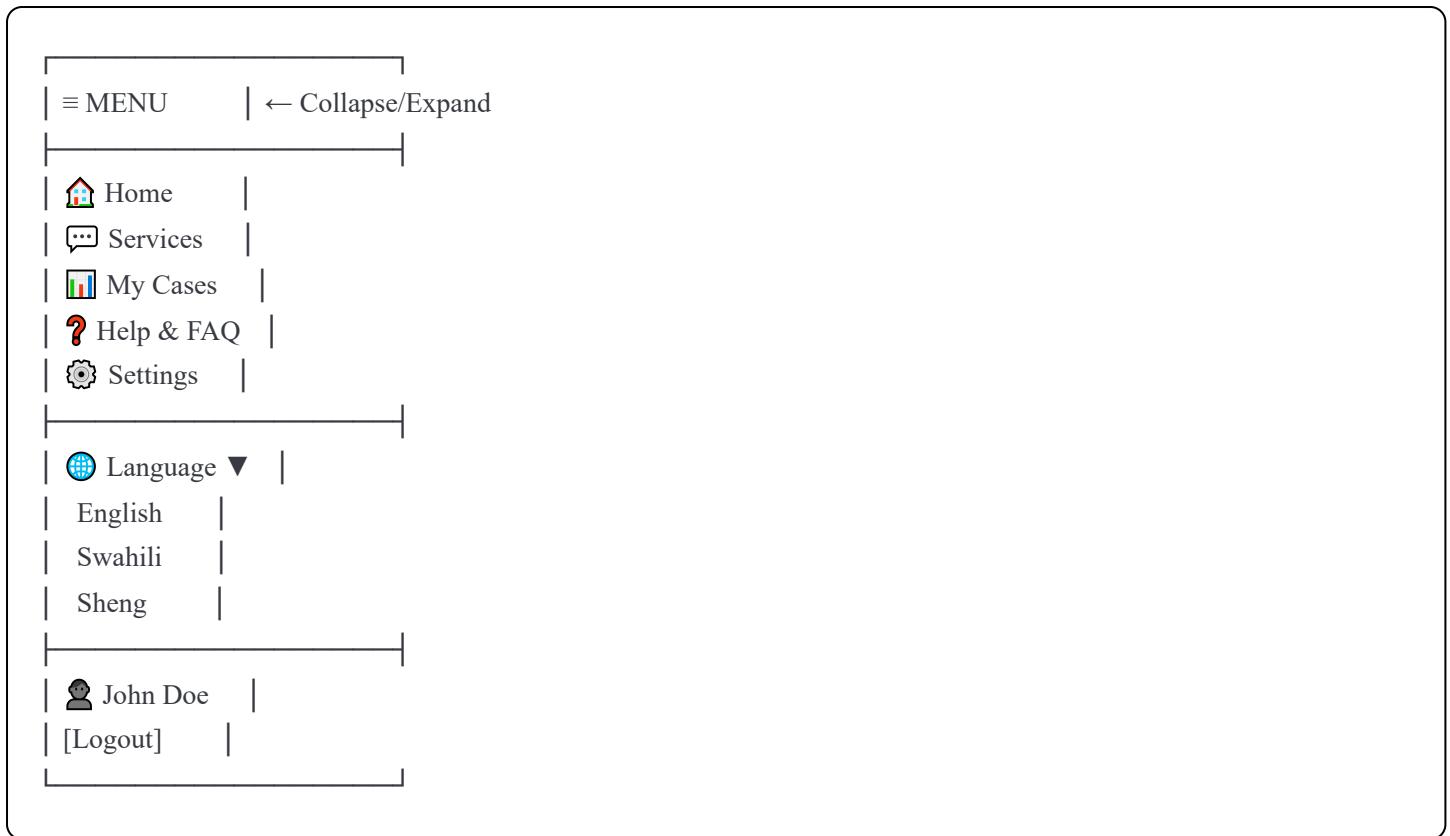
### 3. INTERFACE DESIGNS

#### 3.1 Web/Desktop Interface

##### Layout Structure



##### Sidebar Navigation



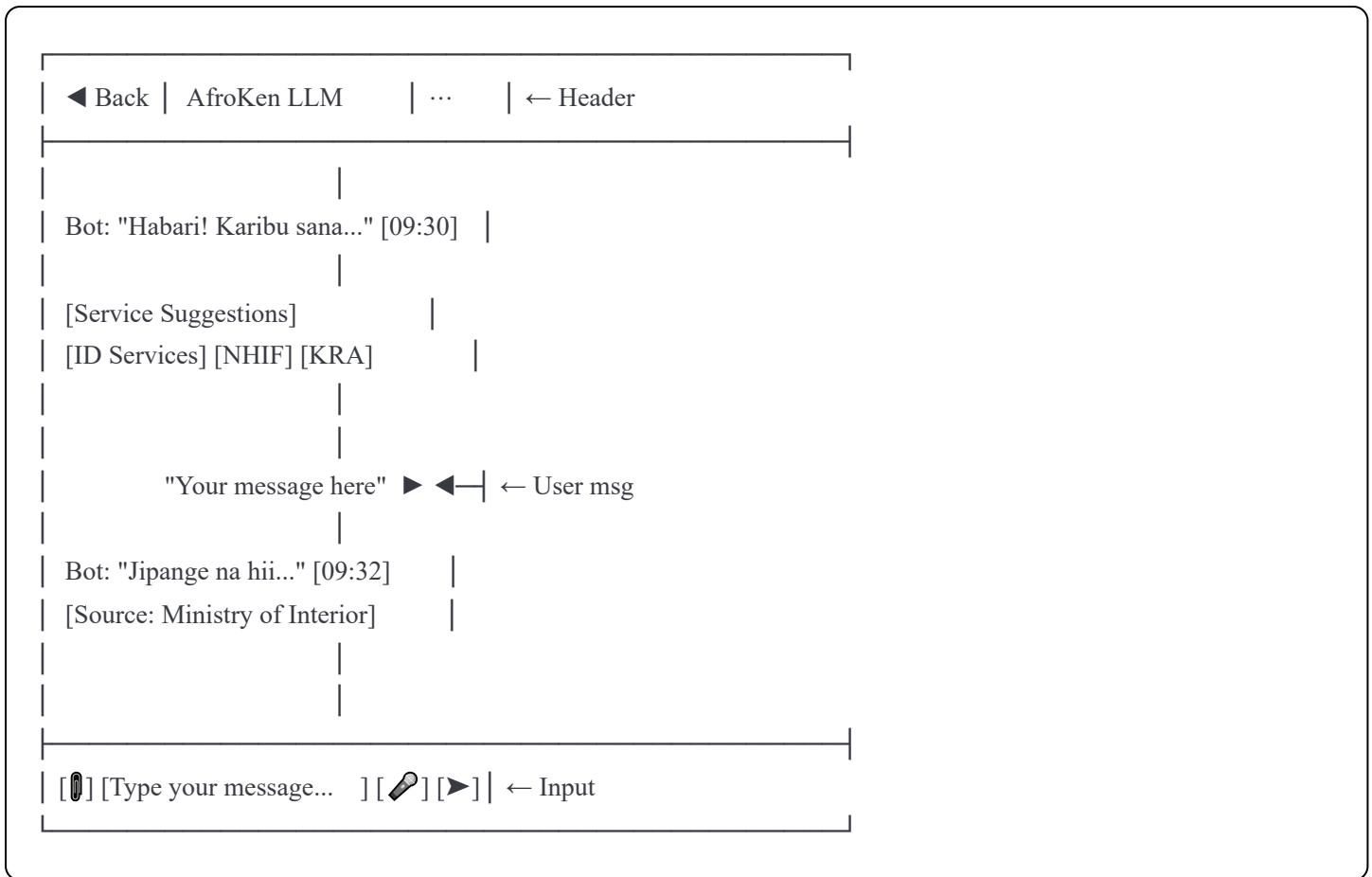
## Chat Area Features

- **Scrollable history:** Infinite scroll up to previous conversations
- **Timestamps:** Show message time (relative: "2 mins ago" or absolute: "14:32")
- **Read receipts:** Double checkmark for sent, single for read
- **Typing indicator:** "AfroKen is typing..." with animated dots
- **Message reactions:** Emoji quick reactions to bot responses
- **Search:** Search within conversation history

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## 3.2 Mobile/WhatsApp-like Interface

### Full Screen Chat



## Input Area

- **Text input:** Multiline, grows with text (max 5 lines)
- **Attachment:** Clip icon → Photo, Document, Location
- **Voice:** Microphone icon → Record, send audio
- **Send button:** Right-aligned arrow button
- **Emoji picker:** Optional, accessible

## 3.3 USSD/SMS Interface (Feature Phone)

### Simple Menu Structure

## MAIN MENU

---

1. Government Services
2. Track My Application
3. Emergency Help
4. Settings

Enter choice: \_

---

Dial: \*384\*96#

Calls cost as per plan

## Service Navigation

### GOVERNMENT SERVICES

---

1. National ID
2. NHIF Health
3. KRA Taxes
4. Business License
5. Birth Certificate
6. More...

Enter choice: 1

---

You selected: National ID

1. How to apply
2. Renewal
3. Status check
4. Back

Enter choice: \_

## Information Display

## NATIONAL ID - HOW TO APPLY

Requirements:

- Birth certificate
- Age 18+

Where: Huduma Centre

Fee: Free

Next step: Visit [huduma.go.ke](http://huduma.go.ke)

1. Continue

0. Back

Enter choice: \_

## 3.4 Voice Interface

### Voice UX Flow

User: "Habari, nataka kujua process ya kupata ID"



System: "Asante! Nlikuona unataka kufahamu process  
ya kupata national ID. Niko tayari kusaidia."



User: "Ndiyo"



System: "Hatua ya kwanza: Taka birth certificate..."



User: "Nimeishindwa kusikia"



System: "[Speaks slower, clearer] HA-TU-A YA KWA-N-ZA..."

## 4. RESPONSIVE DESIGN PATTERNS

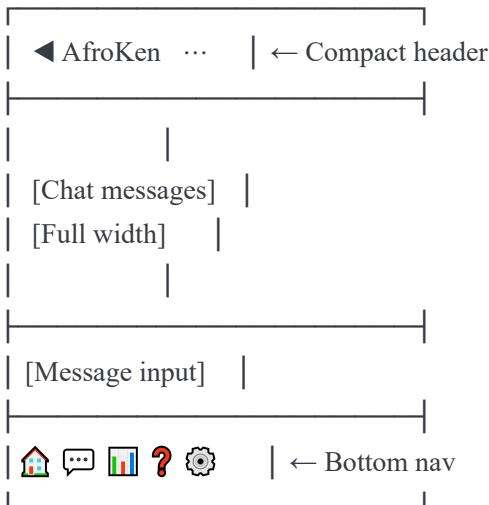
### 4.1 Mobile (320px - 480px)

#### Key Principles:

- Full-width chat interface
- Bottom navigation bar (4-5 items)
- Single column layout
- Stacked form fields

- Large touch targets (48x48px minimum)
- Minimize scrolling (above-the-fold priority)

Mobile Layout:



## 4.2 Tablet (768px - 1024px)

**Key Changes:**

- Sidebar visible (collapsed to icons if needed)
- Two-column layout (sidebar + chat)
- Larger cards and buttons
- Form fields: 2-column grid

## 4.3 Desktop (1280px+)

**Key Features:**

- Full sidebar navigation
- Wide chat area with services panel on right
- Multi-panel dashboards (for officers)
- Form fields: 3+ column grid
- Wider content width: 1024px max for readability

## 5. ACCESSIBILITY REQUIREMENTS

### 5.1 WCAG 2.1 AA Compliance Checklist

- Perceivable**
- All images have alt text
- Captions for video content
- Color not sole means of information

Sufficient contrast (4.5:1 normal text, 3:1 large text)

Text can be resized up to 200%

#### **Operable**

All functionality available via keyboard

Focus indicator visible on all interactive elements

No keyboard traps

Touch targets at least 44x44px (with padding)

No flashing/blinking content (< 3 Hz)

Bypass blocks (skip to content link)

#### **Understandable**

Page language declared (html lang="en")

Form labels associated with inputs

Form submission requires confirmation

Page titles are descriptive

Consistent navigation

Jargon explained or translated

#### **Robust**

Valid HTML/CSS

ARIA attributes used correctly

Screen reader compatible

Works across browsers

Mobile screen reader support (NVDA, JAWS, VoiceOver)

## **5.2 Accessibility Features for AfroKen**

### **For Visually Impaired Users:**

- High contrast mode (toggle in settings)
- Larger font sizes (adjustable up to 200%)
- Screen reader optimized (semantic HTML, ARIA labels)
- Voice interface (listen instead of read)

### **For Hearing Impaired Users:**

- Captions for all video content
- Transcripts for voice responses
- Visual indicators for alerts
- No information conveyed by sound alone

### **For Motor Impaired Users:**

- Full keyboard navigation

- Large touch targets (48x48px minimum)
- Predictable tab order
- No drag-and-drop dependencies
- Speech input as alternative to typing

### **For Cognitive/Low Literacy Users:**

- Simple, plain language (Flesch-Kincaid grade 6-8)
- Short sentences and paragraphs
- Icons paired with text labels
- Consistent terminology (not synonyms)
- Progressive disclosure (minimize initial load)
- Clear error messages with solutions

### **For Color Blind Users:**

- Never rely on color alone
  - Use patterns, icons, and text in addition to color
  - Sufficient contrast (4.5:1 minimum)
  - Tested with color blind simulation tools
- 

## **6. INTERACTION PATTERNS**

### **6.1 Form Validation**

#### **Real-Time Validation (as user types)**

Field: National ID Number  
 Input: "12345678"  
 Error: "ID must be 8 digits, no spaces"  
 State: Red border, error icon  
 Fix: User continues typing correctly  
 Result: "12345678" → Green checkmark ✓

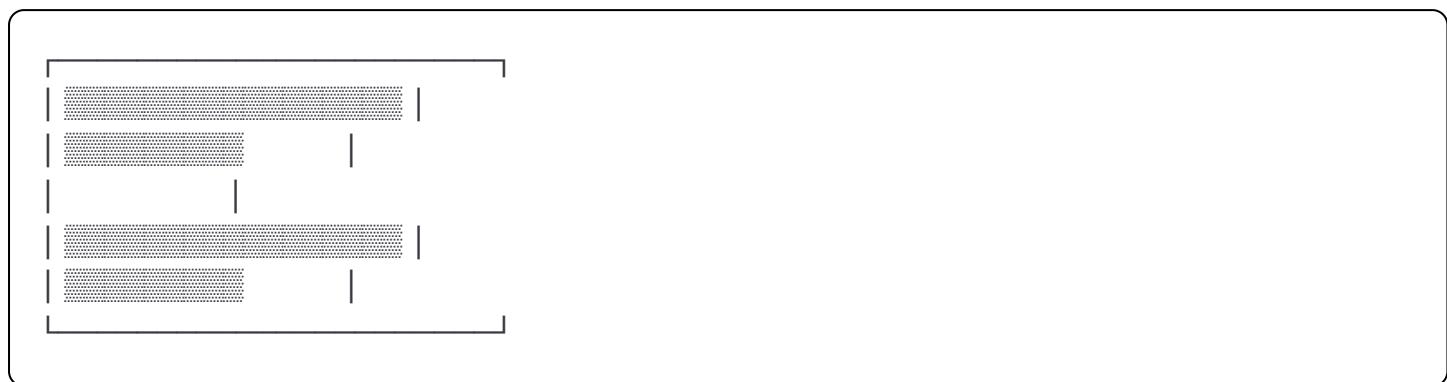
#### **On-Submit Validation**

- All errors highlighted at once
- Scroll to first error
- Clear error message + suggestion
- Inline help text visible

## 6.2 Loading States

### Skeleton Screens

Instead of spinners, show placeholder content:

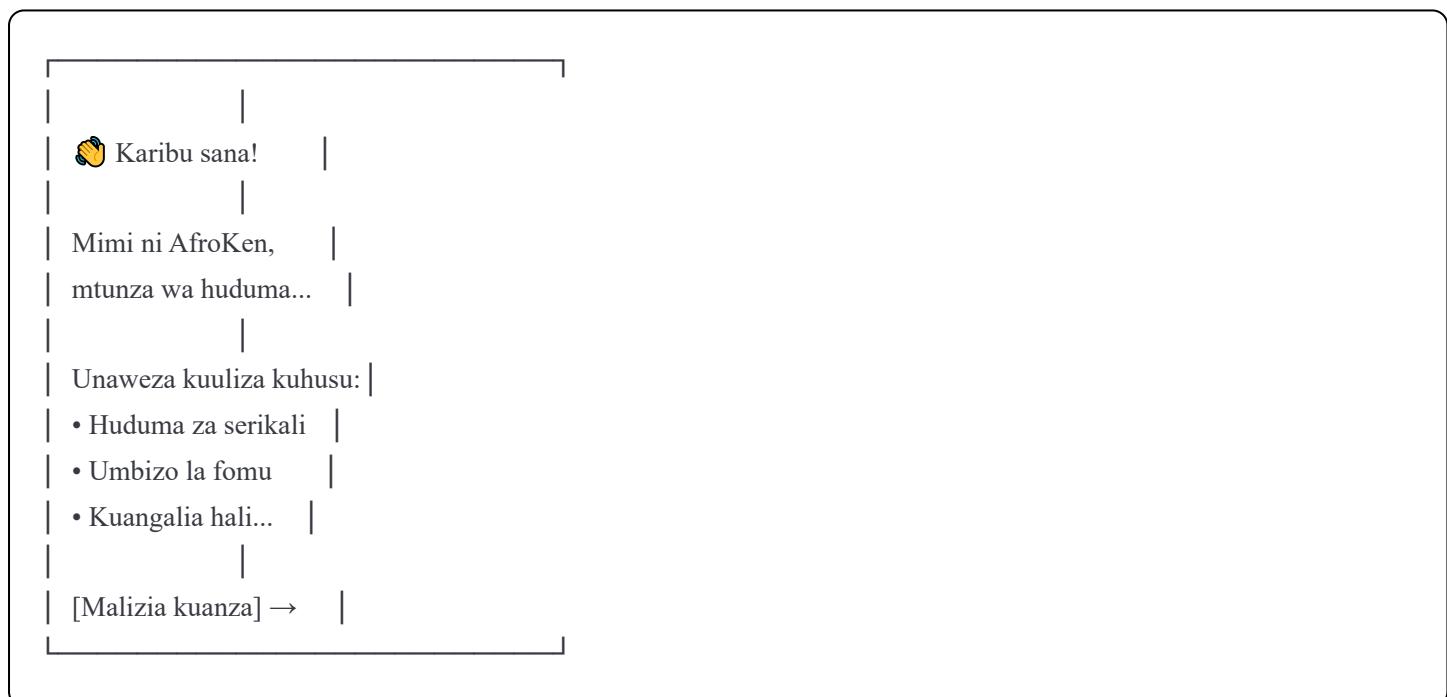


### Progress Indicators

- Linear progress bar for uploads/processing
- Circular progress for indeterminate states
- Percentage complete when available
- Estimated time remaining when possible

## 6.3 Empty States

### First-Time User



### No Results

 Hakuna matokeo

Jaribu:

- Badili neno jinga
- Gumiza jumla ndefu

[← Rudi nyuma]

## 6.4 Confirmation Patterns

### Destructive Actions (e.g., Clear Chat)

Fanya uhakikisho

Je, unakubali kufuta chat?

Hatuwezi kupata muradi.

[Sitaki] [Futa]

### Success Confirmation

✓ Jambo lilifikia!

Ombi lako limepokelewa.

Namba ya kesi: REF-2025-123

Tutakukubali kwa email.

[Karibu] [Angalia hali]

## 7. DARK MODE SUPPORT

### 7.1 Dark Mode Palette

Element	Light	Dark	Notes
Background	<input type="color" value="#FFFFFF"/>	<input checked="" type="color" value="#121212"/>	Avoid pure black (causes eye strain)
Text (Primary)	<input checked="" type="color" value="#121212"/>	<input type="color" value="#FFFFFF"/>	High contrast

Element	Light	Dark	Notes
Text (Secondary)	<span style="color: #616161;">#616161</span>	<span style="color: #BDBDBD;">#BDBDBD</span>	Medium contrast
Chat Bot	<span style="color: #F5F5F5;">#F5F5F5</span>	<span style="color: #262626;">#262626</span>	Slightly lighter than bg
Chat User	<span style="color: #1B5E20;">#1B5E20</span>	<span style="color: #2E7D32;">#2E7D32</span>	Lighter green in dark mode
Input field	<span style="background-color: #FFFFFF;">#FFFFFF</span>	<span style="background-color: #1E1E1E;">#1E1E1E</span>	Subtle elevation
Border	<span style="border: 1px solid #E0E0E0;">#E0E0E0</span>	<span style="border: 1px solid #404040;">#404040</span>	Low contrast dividers

## 7.2 Implementation

- Respect system preference (prefers-color-scheme)
- Manual toggle in settings
- Smooth transition (no flash)
- Test contrast in both modes
- Images: Optional darker filters

## 8. INTERNATIONALIZATION (i18n)

### 8.1 Language Support Matrix

Language	Status	Script	RTL	Notes
English	Live	Latin	No	Official language
Swahili	Live	Latin	No	70% of population
Sheng	Live	Latin	No	Youth slang, code-switched
Kikuyu	Q1 2026	Latin	No	Central region
Luo	Q1 2026	Latin	No	Western region
Kamba	Q2 2026	Latin	No	Coast region
Samburu	Q2 2026	Latin	No	Pastoral communities
Maasai	Q3 2026	Latin	No	Pastoral communities

### 8.2 Localization Considerations

#### Language Switching:

- User preference persistent (localStorage + server)
- Language selector in header + settings
- Flag icons + language codes (not just flags)
- Relevant to context (show Kenyan languages first)

#### Content Translation:

- Professional translation by Kenyan linguists

- Not machine-translated
- Cultural adaptation (not literal translation)
- Regional dialect variations tested

## Date/Time Format:

- Long format: "14 Novemba 2025" (Swahili)
- Short format: "14/11/2025" (localized order)
- Time: 24-hour format (14:32, not 2:32 PM)
- Timezone: EAT (East Africa Time)

## Number Formatting:

- Decimal separator: "." or "," (locale-dependent)
- Thousand separator: "," or " "
- Currency: KES 1,234.56

## 9. PERFORMANCE TARGETS

### 9.1 Core Web Vitals

Metric	Target	Status	Tool
LCP (Largest Contentful Paint)	<2.5s	-	PageSpeed Insights
FID (First Input Delay)	<100ms	-	Web Vitals JS
CLS (Cumulative Layout Shift)	<0.1	-	Chrome DevTools
TTL (Time to Interactive)	<3.5s	-	Lighthouse
FCP (First Contentful Paint)	<1.8s	-	PageSpeed Insights

### 9.2 Optimization Strategies

#### Network:

- Minify CSS/JS
- Gzip compression
- CDN for static assets
- Service Worker for offline
- Lazy load images below fold

#### Rendering:

- Critical CSS inline
- Defer non-critical JS

- Preload key fonts
- Optimize images (WebP)
- Avoid layout shifts

#### **Code:**

- React code splitting
- Dynamic imports
- Tree shaking
- Remove unused code
- Optimize dependencies

#### **Monitoring:**

- Real User Monitoring (RUM)
- Synthetic monitoring
- Error tracking
- Performance budgets
- CI/CD checks

---

## **10. DESIGN TOKENS & CODE**

### **10.1 CSS Variables (for developers)**

```
css
```

```
/* Colors */
--color-primary: #1B5E20;
--color-secondary: #00897B;
--color-accent: #FFB300;
--color-error: #D32F2F;
--color-success: #2E7D32;
--color-warning: #F57F17;
--color-info: #0288D1;

/* Typography */
--font-primary: 'Inter', sans-serif;
--font-body: 'Roboto', sans-serif;
--font-mono: 'JetBrains Mono', monospace;

--font-size-h1: 32px;
--font-size-h2: 24px;
--font-size-body: 16px;
--font-weight-bold: 700;
--font-weight-medium: 600;

/* Spacing */
--spacing-xs: 4px;
--spacing-sm: 8px;
--spacing-md: 16px;
--spacing-lg: 24px;
--spacing-xl: 32px;

/* Border Radius */
--radius-sm: 4px;
--radius-md: 8px;
--radius-lg: 16px;
--radius-full: 999px;

/* Shadows */
--shadow-sm: 0px 1px 3px rgba(0,0,0,0.12);
--shadow-md: 0px 4px 8px rgba(0,0,0,0.15);
--shadow-lg: 0px 8px 16px rgba(0,0,0,0.2);

/* Breakpoints */
--breakpoint-sm: 480px;
--breakpoint-md: 768px;
--breakpoint-lg: 1024px;
--breakpoint-xl: 1280px;
```

## 10.2 Component Documentation

Each component should have:

- Visual specs (size, color, spacing)
  - Interaction states (default, hover, active, disabled, error)
  - Accessibility notes (ARIA, keyboard)
  - Usage examples (do's and don'ts)
  - Code snippet (HTML/React/Vue)
  - Mobile considerations
- 

## 11. TESTING & QA

### 11.1 Design Review Checklist

- Visual hierarchy clear and intuitive
- Color contrast accessible (AA minimum)
- Typography consistent and readable
- Spacing follows 8px grid
- Icons have alt text and labels
- Focus states visible
- Responsive on all breakpoints
- Touch targets 44x48px minimum
- Error messages helpful
- Loading states clear
- Empty states friendly
- Confirmation needed before destructive actions
- Multilingual text fits (20% longer for Swahili)
- Dark mode contrast verified
- Tested with screen readers

### 11.2 Browser & Device Testing

#### Browsers:

- Chrome (latest + 2 versions)
- Firefox (latest)
- Safari (latest)
- Edge (latest)
- Mobile browsers (Safari iOS, Chrome Android)

#### Devices:

- iPhone 12, 13, 14 (iOS)
- Samsung Galaxy S20, S21, S22 (Android)

- iPad (tablets)
- Desktop (1024px, 1280px, 1920px)

## Connectivity:

- 3G (1.5Mbps)
  - 4G (4Mbps)
  - WiFi (20Mbps)
  - Offline (service worker)
- 

# 12. DESIGN HANDOFF

## 12.1 Design System Deliverables

### 1. Figma File:

- Complete component library
- Color styles
  - Text styles
  - Components with variants
  - Responsive layout grids
  - Interactive prototypes

### 2. Documentation:

- This design brief
- Component specifications
- Usage guidelines
- Accessibility checklist
- Performance budget

### 3. Assets:

- Icon SVG library
- Font files (WOFF2)
- Image guidelines
- Photography style guide

### 4. Code:

- CSS custom properties
- Storybook components

- React component library
- SCSS/CSS structure

## 12.2 Developer Handoff

### Before Development:

- Design review meeting with engineers
- Clarify interaction details
- Performance constraints
- Browser compatibility
- Mobile vs desktop priorities

### During Development:

- Weekly design QA checks
- Component approval process
- A/B testing coordination
- Accessibility validation

### After Launch:

- Collect user feedback
  - Iterate based on usage data
  - Monitor accessibility issues
  - Update design system
- 

## 13. FUTURE ENHANCEMENTS

### 13.1 Phase 2 (Q2 2026)

- Dark mode refinement
- Additional languages (Kikuyu, Luo)
- Animation guidelines
- Micro-interactions
- Haptic feedback (mobile)

### 13.2 Phase 3 (Q3 2026)

- AR features (e.g., AR ID photo capture)
- Offline-first UI updates

- Progressive web app
- Voice-first interface
- Biometric integration

### 13.3 Phase 4 (2027)

- AI-generated illustrations (culturally relevant)
  - Adaptive UI (based on user preferences)
  - Multi-device synchronization
  - Advanced analytics dashboard
  - Officer mobile app
- 

## Appendices

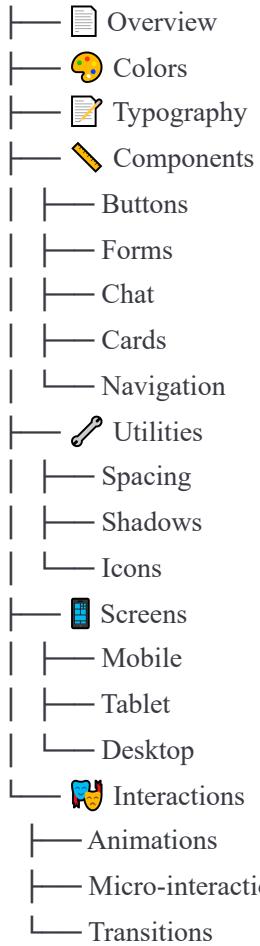
### Appendix A: Design System Changelog

Version	Date	Changes
1.0	2025-11-26	Initial release

### Appendix B: Design Tool Setup

#### Figma File Structure:

## AfroKen LLM Design System



## Appendix C: Accessibility Testing Tools

- **Contrast:** WebAIM Contrast Checker, Polypane
- **Accessibility:** axe DevTools, Lighthouse, Wave
- **Screen Readers:** NVDA (Windows), JAWS, VoiceOver (Mac/iOS)
- **Mobile:** Chrome DevTools Mobile, Xcode Simulator
- **Color Blindness:** Coblis, Color Oracle, Daltonize
- **Keyboard:** Tab through entire site, no traps

## Appendix D: Performance Tools

- **Monitoring:** Google PageSpeed Insights, WebPageTest
- **Real User:** Google Analytics, Sentry RUM
- **Synthetic:** Lighthouse CI, SpeedCurve, Databox
- **Profiling:** Chrome DevTools, Firefox DevTools
- **Budget:** Bundlephobia, Import Cost (VS Code)

**Document Version:** 1.0

**Last Updated:** November 26, 2025

**Design System Owner:** AfroKen UX Team

**Maintenance:** Quarterly review, ongoing updates

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*For questions or feedback on this design system, please contact the AfroKen design team.*