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# ZAMACE USSD — Financial Services on Feature Phones

ZAMACE (via Afrocentec)

3-4 weeks

## Financial inclusion via feature phones

**21%**

Internet Access Gap

**2**

Portals Served

**1,000+**

Target Users

### The Challenge

Only 21% of Zambia's population has reliable internet access, with data costs averaging \$12 per GB. Existing ZAMACE and Tradis portal users lacked affordable access alternatives for critical financial services like balance inquiries and transaction history.

Feature phone users — the majority of the population — were completely excluded from the platform, despite being significant participants in the agricultural commodity market.

### Our Approach

Built a Laravel-based USSD middleware connecting Africa's Talking gateway to the existing ZAMACE and Tradis platforms.

Multi-Portal Architecture: Single USSD shortcode serving both ZAMACE and Tradis users with portal selection at the welcome menu. State machine approach using Sparrows/laravel-ussd maps cleanly to USSD's inherently stateful interaction model.

Financial-Grade Security: Username/account number authentication with 4-digit PIN and 3-attempt lockout policy. All PINs encrypted, never logged in plain text. Phone numbers partially masked (last 4 digits only). 90-day audit log retention for financial compliance.

Resilience: Circuit breaker pattern ensures graceful degradation when internal APIs experience issues — users see friendly error messages rather than cryptic failures.

## Outcomes

USSD gateway extending ZAMACE platform access to feature phone users across all Zambian networks — bridging the 79% internet access gap.

Secure account balance inquiries and transaction history (last 5 transactions) accessible from any GSM phone.

Multi-portal architecture serving both ZAMACE and Tradis from a single gateway with comprehensive audit logging meeting financial services compliance requirements.

PIN management with full verification workflow. Circuit breaker pattern ensuring 99.5%+ availability target during business hours.

## Technology Stack

Laravel / PHP 8.2

Redis

PostgreSQL

Africa's Talking

Docker