

# TECHNICAL PROPOSAL

## AI-Enabled IVR System and Online Feedback Platform for UNICEF Ukraine

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### 1. Executive Summary

This proposal outlines a comprehensive solution to design, develop, secure and maintain a robust **AI-powered Interactive Voice Response (IVR) system** to enhance UNICEF Ukraine's existing "Say it as it is" feedback and complaint mechanism. It blends advanced voice technology with human-centered safeguarding, ensuring every voice—especially children's voices—is safely heard and acted upon.

The solution will create a **multi-channel, user-centric communication platform** accessible via traditional telephony (PSTN), VoIP, web, and mobile apps. Building on the current online platform already operated by our team, this system ensures **continuity of service**, seamless **data migration**, and **enhanced features** without operational disruption.

Leveraging advanced **large language models (LLMs)**, speech recognition technologies, and real-time analytics, the platform will deliver **24/7 availability**, **high scalability**, and **strict security compliance**, supporting rural populations and vulnerable groups. UNICEF will gain a fully integrated toolset to process and respond to high volumes of feedback efficiently while reducing dependency on manual operations.

Key features: on-prem STT, LLM with anonymization, TTS, unified case management (voice + web), automatic safeguarding escalation, dashboards, training, and 12-month maintenance.

Delivery model: FOP Andrii Naida (Lead Contractor) with Adelina Solutions LLC (AI & integration) and Adelina Outsourcing LLC (24/7 operations & continuity).

### 2. Understanding of UNICEF's Requirements

UNICEF needs an accessible, confidential, inclusive channel for feedback/complaints with real-time visibility, safeguarding & GDPR compliance, and seamless integration with the current online platform.

Our approach: automate routine, escalate sensitive, speak empathetically, protect data, and keep people in control.

### 3. System Architecture and Technologies

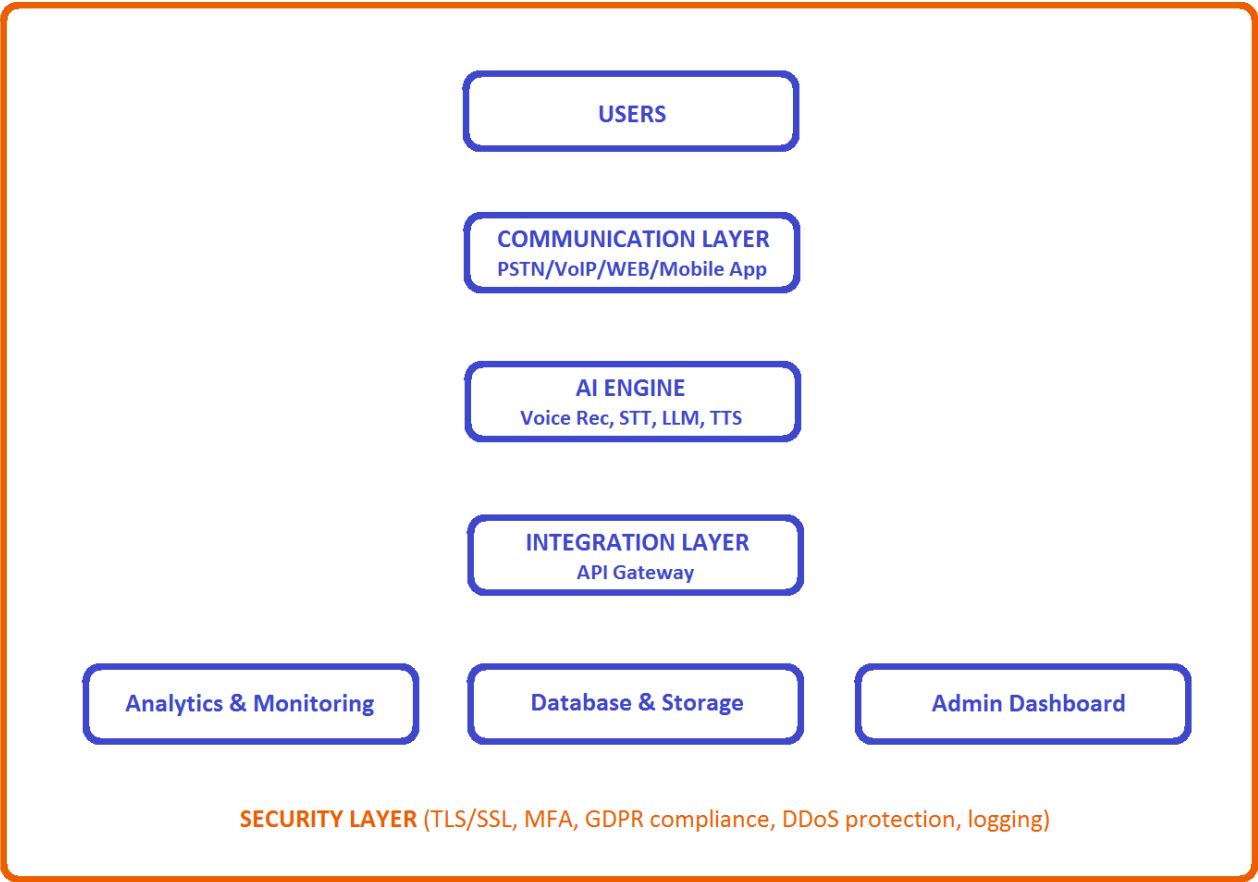
The proposed solution is based on a **microservices architecture**, containerized with Docker and orchestrated via Kubernetes clusters.

#### Key features:

- **Hybrid Cloud Model:** Multi-zone deployments ensuring 99.9% uptime and disaster recovery objectives within 4 hours.
- **Voice Processing Layer:** Handles inbound/outbound calls, transcription, and speech recognition.
- **AI Conversation Engine:** LLM-powered, customized for UNICEF-specific terminology and complaint workflows.
- **Integration Layer:** Bi-directional synchronization with the "Say it as it is" platform.
- **Analytics & Monitoring:** Prometheus, Grafana, and ELK Stack for system monitoring; Power BI/Tableau for insights.
- **Security Layer:** RBAC, MFA, AES-256 encryption, ISO 27001 and GDPR compliance.

Layer	Purpose	Technologies
Telephony Gateway	PSTN/SIP connection & routing	Asterisk / Kamailio / SIP
STT (On-Prem)	Secure transcription on GPU	Whisper Large-v3 / NVIDIA Riva ASR
Anonymization	Redact PII before LLM	Custom NER/regex pipelines
LLM Layer (API)	Intent, routing, response	GPT-5 / Claude / Gemini
TTS	Natural, supportive voice	Azure Neural / ElevenLabs / Coqui
Case Management	Unified voice+web tickets	Django / PostgreSQL
Monitoring & Analytics	Trends, QA, audit	Grafana / Power BI

AI-enabled IVR System Architecture  
(for UNICEF Project)



4. AI-Enabled IVR System

The AI-driven IVR enables **natural, conversational voice interactions**:

- Intent and sentiment detection to route calls intelligently.
- Automatic escalation of complex issues to human agents.
- Support for **100+ concurrent calls** with low latency.
- Accurate recognition of **Ukrainian, Russian, and dialects (Surzhyk)**.
- Automated updates and case references for transparency.

## 5. Integration with Existing Platform

Adelina Solutions currently maintains the **“Say it as it is” platform**, providing unmatched knowledge for seamless integration:

- Unified database for all voice and web cases.
- Real-time synchronization for consistent case management.
- Single admin dashboard for UNICEF staff.
- Future-proof API layer for new integrations (e.g., messaging apps).

## 6. Transcription and Search

- High-accuracy automated transcription with manual correction.
- Full-text search and filtering by user, topic, time, and sentiment.
- Sentiment analytics to flag emergencies or dissatisfaction patterns.
- Export capabilities in .txt, .csv, .pdf.

## 7. Security and Data Privacy

- **Encryption:** TLS/SSL in transit, AES-256 at rest.
- **Access Controls:** RBAC, least-privilege, 2FA for admins
- **DDoS Protection:** Cloudflare/Azure protection.
- **Compliance:** ISO 27001, GDPR standards, PSEA: anonymization, user rights, safeguarding by design
- **Audit Logs:** Full activity logging for accountability, periodic reviews, pen-tests
- **AI Ethics:** Explainability, human-in-the-loop, bias monitoring

## 8. Analytics and Reporting

- Real-time dashboards with system health metrics.
- Predictive analytics for demand forecasting.
- Automated case categorization and sentiment tagging.
- Configurable reporting templates for UNICEF stakeholders.

## 9. Scalability and Reliability

- Horizontal scaling with Kubernetes clusters.
- Load balancing for peak performance.
- Redundant systems for regional outages.
- CDN integration for low-latency web access.

Capability	Description
Kubernetes Orchestration	Horizontal scale, auto-healing
GPU Elasticity	Dynamic STT capacity
Uptime Target	99.9% SLA (monitoring & alerts)
Failover	Auto-routing to live operators
Backups	Hourly snapshots + offsite encrypted copies

Even during outages/emergencies, hotline continuity is maintained — *every voice can still be heard*.

## 10. Maintenance and Technical Support

- 24/7 monitoring and SLA-driven response times.
- Regular updates and automated deployment pipelines.
- Quarterly security audits and optimization reviews.
- Continuous improvement of AI models.

Priority	SLA Response	Examples
P1 Critical	< 2h	IVR outage / calls failing
P2 High	< 6h	STT degradation / high latency
P3 Medium	< 12h	Minor defects / UI issues
P4 Low	< 48h	Cosmetic changes / suggestions

## 11. Training and Handover

- **Workshops:** Hands-on training for administrators, operators, and IT staff.
- **Comprehensive Documentation:** Manuals, FAQs, and workflow guides.
- **Knowledge Transfer:** Full capability handover for UNICEF autonomy.

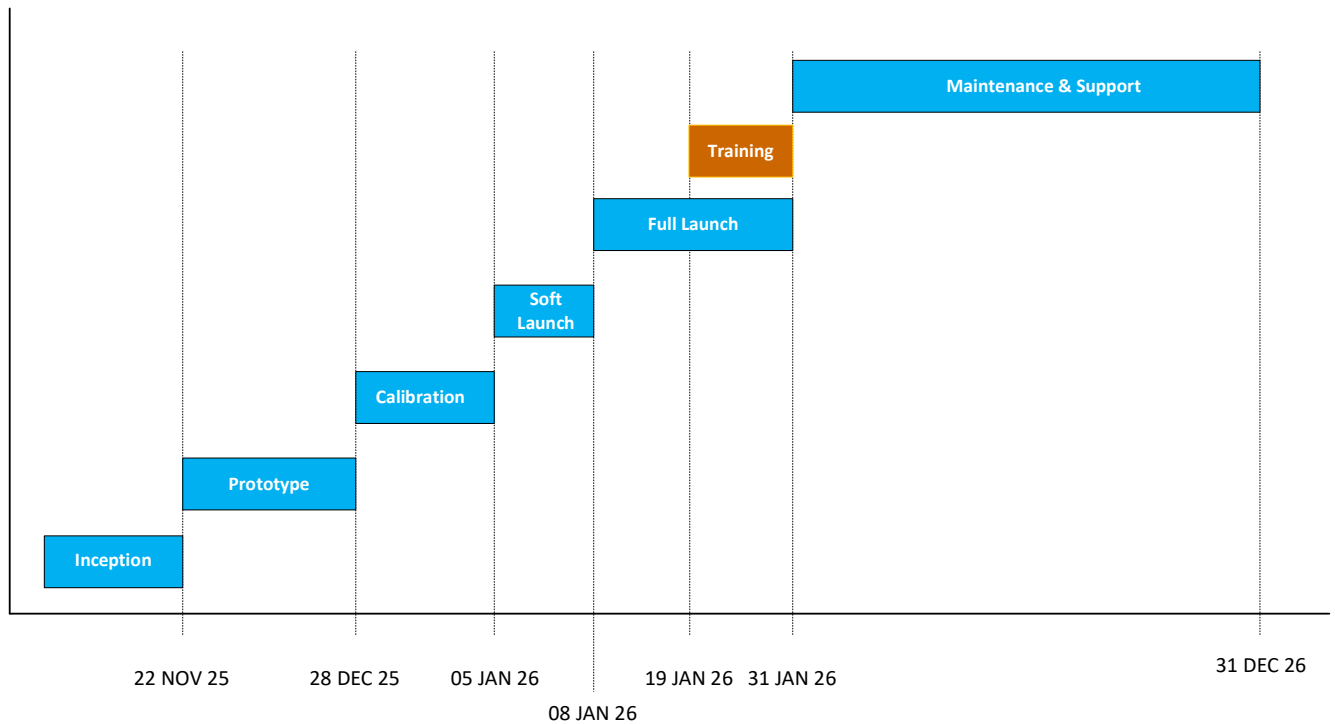
Module	Objective	Format
System Administration	Manage cases, roles, reports	Online workshop
Safeguarding & Escalation	Handle sensitive calls	Onsite (Kyiv)
Analytics & Monitoring	Use dashboards & KPIs	Online
Maintenance & Updates	Retraining, configs	Hybrid (online + docs)

## 12. Competitive Advantages

- **Proven Expertise:** Existing “Say it as it is” development and support team.
- **Cutting-Edge AI:** Integration of GPT-5, Claude 4, Gemini 2.5.
- **Cultural Context:** Dialect and linguistic nuances of Ukraine supported.
- **Security-First:** Alignment with UNICEF’s highest security standards.
- **Agile Delivery:** Fast implementation with no quality compromise.

## 13. Deliverables and Timeline

Milestone	Deliverable	Deadline
Inception Phase	Technical design, system architecture, risk strategy	22 NOV 2025
Prototype Development	Functional prototype, sample voice flows	28 DEC 2025
Calibration	Voice tuning, anonymization QA	05 JAN 2026
Soft Launch (5–10%)	Controlled rollout	08 JAN 2026
Training & Handover	User manuals, training sessions	19 JAN 2026
Full Launch (100%)	Integrated system with IVR and platform features	31 JAN 2026
Maintenance & Support	Ongoing bug fixes, optimization	31 DEC 2026



## 14. Project Team

Role	Expertise
Project Manager	AI/IVR project oversight, stakeholder communication.
Lead System Architect	High-level design, integration strategy, security compliance.
Microservices & DevOps Specialist	CI/CD pipelines, container orchestration, scalability.
AI/NLP Lead	LLM fine-tuning, complaint workflows, intent detection.
Speech Recognition Specialist	Dialect support, transcription accuracy.
Backend & Frontend Developers	IVR logic, platform integration, dashboard design.
QA  Prompt Engineers	Manual and automated testing, usability verification.
Trainer/Documentation Specialist	Training programs, manuals, knowledge transfer.
Support Specialists	24/7 monitoring, maintenance, incident resolution.

*Team CVs attached*

## 15. Requirements Traceability Matrix (RTM)

Requirement	Solution	Comment
Microservices, Docker/Kubernetes	Cloud-based microservices architecture	Scalable CI/CD via API
Language Models & NLP	GPT-5, Claude 4, Gemini 2.5	Flexible selection per use case
Accent & Dialect Support	Ukrainian, Russian, Surzhyk	Inclusive communication
Voice Routing	SIP/VoIP, low-latency	Seamless escalation
Integration with “Say it as it is”	API/Webhooks	Unified backend
Transcription	Automated + manual correction	Flexible QA
Security & Privacy	ISO 27001, GDPR, AES-256, MFA	Certified infrastructure
Monitoring	Prometheus, Grafana, ELK	SLA tracking, centralized logs
Analytics	Power BI, Tableau	Rich visualization and reporting

## 16. Summary

The **Adelina Solutions AI Virtual Agent Platform** fully meets UNICEF’s requirements, offering:

- Advanced multilingual ASR and NLP tuned for Ukrainian context.
- High scalability, reliability, and security compliance.
- Seamless integration with UNICEF’s online platform.
- Flexible infrastructure for future growth.

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