

TECHNICAL TERMS OF REFERENCE

Design, Development and Implementation of an AI-Powered Call and Chat Center System

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1. GENERAL DESCRIPTION

The purpose of this technical specification is to engage an organization for the design, development, and implementation of an artificial intelligence (AI)-powered call center system for services provided by state and local government bodies. The system will include a chatbot in Armenian and English, a voice agent, a live agent management environment, and an administrative module—ensuring the delivery of automated, accurate, and controllable responses to citizen inquiries. An example of such a system is Estonia's <https://www.kratid.ee/en/burokratt> platform.

The system must operate exclusively on the basis of officially approved information and ensure a high level of reliability and manageability. The solution must be modular and reusable to enable rapid deployment and configuration across different government websites and platforms with minimal effort. The system must provide accessible and effective use for all citizens, including people with disabilities, elderly users, those with limited literacy or digital skills, as well as diaspora and foreign residents.

2. PURPOSE OF CREATING THE SYSTEM

The purpose of implementing the AI-powered call and chat center system is to:

- Improve the efficiency of citizen service and data accessibility by providing a unified system for all public services
- Reduce the workload on service staff (live agents) and public service call centers
- Improve response times and service accessibility by ensuring continuous (24/7) availability
- Ensure consistency and controllability of responses and eliminate the use of unverified information
- Implement modern digital and artificial intelligence solutions in the delivery of state and public services, while ensuring compliance with the Republic of Armenia's data protection and cybersecurity legislative requirements

3. SCOPE OF WORK

The organization is responsible for handling all the necessary work throughout the platform's design, development, deployment, and operational maintenance. Based on the results of market sounding, the Client will decide on the business model whether to acquire the system outright or enter into a service delivery contract with a potential supplier.

3.1 System Design and Architecture

The system architecture must ensure:

- Modular and scalable structure with the capability for future expansion
- Availability of RESTful APIs for interaction with external systems
- Integration with the following systems and platforms:
 - State and public service knowledge bases
 - E-governance platforms
 - CRM or application/ticket management systems (when necessary)

3.2 Artificial Intelligence and Natural Language Processing (AI/NLP)

The system needs to be smart and flexible in how it handles user interactions:

- Accept user questions and inputs in both text and voice formats – however people want to communicate
- Understand what users are actually asking for by classifying their intent and picking up on key details and entities in their questions
- Handle complex, multi-turn conversations while keeping track of context throughout the entire discussion
- Respond naturally through both text and synthesized speech that sounds human
- Keep learning and improving based on anonymized user interactions over time
- Know when to hand off to a human – when queries are too complex or fall outside standard scenarios, the system should smoothly transfer users to live agents

3.3 Mandatory AI Response Rules

Information Sources and Accuracy

- The AI must rely only on officially approved sources and must not invent information, make assumptions, or use external knowledge.
- If the requested information is not available in the official sources, the AI must clearly state this and offer to connect the user with a specialist (e.g., “Information regarding this question is not available on example.am. I can connect you with a specialist.”).
- The AI must summarize and present only what is explicitly stated in the available documents with no interpretation, extrapolation, or speculation is permitted.

Tone and Style

- Use clear, plain language that is easy for anyone to understand.
- Get straight to the point and avoid long or complicated explanations.
- Do not use technical terms unless they are necessary.
- If a technical term must be used, explain it in simple words so non-technical users can understand it.

Format

- Provide practical help by giving users links, downloadable forms, and clear step-by-step explanations of procedures
- If the user’s input is not a question or request, respond with: "Please formulate your question"

Sensitive Topics and Limitations

- In case of political questions provide only factual, neutral information that's available in the official example.am database. Don't offer political opinions or party positions that aren't part of official information
- Regarding religious topics share only what's in the official example.am database (like the list of public holidays or religious organization registration procedures). Don't provide guidance on personal faith, religious positions, or philosophical matters
- For legal advice stick to general information from example.am only. Make it clear: "This is general information. For legal advice, please consult a specialist"
- Do not provide any medical advice
- Never ask for or process sensitive personal data (passport details, etc.)

- Don't engage with offensive, aggressive, or inappropriate queries. Simply respond: "Please communicate respectfully"

Unclear Situations

- If the question isn't related to example.am services: "I can only help with questions related to example.am services"
- If the question is unclear: "Please formulate your question more clearly"
- If the question requires human judgment: "For this question, you'll need to connect with a specialist"

3.4 Voice Capabilities

The system needs to fully support language processing and voice features with the following requirements:

Language Support

- Complete Natural Language Processing (NLP) and Text-to-Speech (TTS) capabilities for:
 - Armenian (Eastern Armenian) as the primary language
 - English as the secondary language

Voice Quality

- High-quality, natural-sounding voice output that's appropriate for public service delivery and should sound human, not robotic
- Support for both male and female voice options to give users a choice
- Clear and accurate pronunciation of Armenian legal and administrative terms, getting those technical terms right matters
- Seamless language switching during conversations without losing context or disrupting the flow

Performance

- Low latency responses on averaging 1-2 seconds, so conversations feel natural and don't leave users waiting
- Flexible deployment options whether it would be cloud-based or hybrid architecture, depending on what works best

3.5 Live Operator and Administrative Module

The system needs to support live operators and administrators effectively with the following capabilities:

- A unified management dashboard for live agents that handles both chat and voice communication channels in one place
- Full visibility and monitoring of AI-conducted conversations for operators to see what's happening in real-time
- Technical oversight and intervention options for live operators to jump in when needed to guide or take over conversations
- User, role, and access rights management for controlling who can do what within the system
- Analytics and reporting tools to track performance, identify trends, and generate insights

3.6 Vector Database and Knowledge Management

The system needs to include the following tools and capabilities:

- Content collection, extraction, and structured organization from websites and other sources to properly gather and organize all information
- Vector representation (embedding) and indexing of content to enable fast and efficient searches, which enables the AI to quickly locate relevant information
- Data re-indexing and periodic update mechanisms to maintain a current and up-to-date knowledge base
- Traceability of information sources to ensure that every answer can be traced back to its source for verification and oversight purposes

- Storage of user interaction and query history to preserve a record of conversations and questions asked

3.7 Channels and Platforms

The chatbot and voice agent system must be capable of integration on the following channels and platforms:

- Official web portals of state and local government bodies
- Mobile-friendly web interfaces for mobile devices
- Mobile applications (Android and iOS, when necessary)

Additionally, the solution must be designed with the capability for future expansion, including:

- Integration with Interactive Voice Response (IVR) systems for call centers
- Integration with other messaging and communication platforms according to the Client's requirements

3.8 Training and Knowledge Transfer

The organization is required to provide the necessary training and knowledge transfer to the Client's relevant personnel to ensure effective operation of the system.

Within the framework of training and knowledge transfer, the following must be provided:

- Implementation of training courses for administrators and live operators
- Provision of detailed technical documentation regarding the system's operation, management, and monitoring
- Provision of User Guides in Armenian and English languages
- Implementation of knowledge transfer workshops to ensure the capability for future independent maintenance of the system

3.9 Support & Maintenance

The organization is required to provide technical support and maintenance for at least 12 months following the system's launch.

Within the framework of support and maintenance, the following must be provided:

- Ensuring uninterrupted operation of the system and elimination of any disruptions that occur
- Implementation of security updates and bug fixes
- Service Level Agreement (SLA) with clear timeframes for response and recovery
- Upon the Client's request, the possibility of entering into a long-term maintenance contract

4. ANALYTICS AND MONITORING

The selected organization must design and implement an integrated analytics and monitoring module that provides comprehensive insights into the performance and quality of both live operator interactions and AI-supported interactions.

The analytics module must include `

4.1 AI Performance Analytics

- Overall view of the volume of citizen applications and queries processed through artificial intelligence
- Assessment of the effectiveness and quality of responses provided by the AI based on their relevance and usefulness
- Analysis of cases when the system transfers queries to live operators
- Detection of information gaps, specifically cases where the system cannot find relevant data in the existing database (Vector Store)
- Assessment of citizen satisfaction levels based on feedback, ratings, and reviews
- Identification of complaints and grievances for the purpose of system improvement and service quality enhancement

4.2 Live Agent Performance Analytics

The system must enable evaluation of the efficiency and quality of live operators' work by ensuring the collection and analysis of the following indicators:

- Number of chats handled and calls serviced
- Average duration for providing responses and resolving queries
- Escalation rate of conversations from AI to live operators
- Summary of conversation outcomes
- Statistics on user feedback and complaints by live operator (in applicable cases)

4.3 Analytics and Reporting

The system must ensure data collection, analysis, and administrative presentation for the purpose of continuous assessment of system effectiveness, quality, and usage.

Specifically, the system must provide:

- Collection of statistical data on system usage (visits, queries, activity)
- Identification of the most frequently asked questions and unmet needs
- Analysis of language usage indicators (Armenian / English)
- Monitoring of system performance and response times
- Availability of administrative dashboards for different roles

Additionally, the system must ensure:

- Data viewing both in real-time and in historical perspective
- Report generation and export capability in CSV, Excel, and PDF formats
- Use of analytical data for continuous system improvement and administrative decision-making purposes

5. ACCESSIBILITY AND USABILITY

The system must be designed based on the principles of inclusiveness and usability, ensuring equal and accessible availability for all users regardless of their physical capabilities or level of digital skills.

Specifically, the system must provide:

- Compliance with WCAG 2.1 AA standards
- Support for voice-only navigation for users with visual impairments
- Use of simple, clear, and understandable language, particularly when describing public services
- Full keyboard navigation capability without mandatory use of a mouse

6. REPORTING AND COMMUNICATION

The organization is required to ensure regular communication with the client throughout the entire implementation process and present the following at the completion of each phase:

- Regular reports (weekly or monthly) that include completed work, issues encountered, and next steps
- Milestone review reports that summarize the results of the respective phase
- Final acceptance report that includes a complete description of the system, implemented functionalities, testing results, and handover documentation

7. REQUIRED SPECIALISTS AND QUALIFICATIONS

The organization must have sufficient resources and institutional capabilities to fully implement the defined scope of services.

7.1 Experience

The organization must have a minimum of 3 years of experience in the field of AI/ML solutions and chatbot development, including:

- Creation of Natural Language Processing (NLP) systems
- Implementation of digital solutions for government/public services
- Development of multilingual (Armenian, English) AI systems

7.2 Portfolio Presentation

The organization must present the following materials and documents:

- A prototype solution that must provide full support for the Armenian language and be ready for presentation to the competition commission
- Technical documentation, including system architecture diagrams and API descriptions
- Information security certificates, specifically ISO/IEC 27001, SOC 2, or equivalent security standards

8. IMPLEMENTATION ORGANIZATION

The organization must ensure phased implementation of the system and presentation of corresponding results according to the timeline and deliverables specified below.

Phase 1. Initial Analysis and Architectural Design (Month 1)

- Project Inception Report
- Overall technical and architectural description of the system
- Initial formulation of integration approaches and security architecture

Phase 2. UI/UX and Voice Flow Design (Month 2)

- User interface (UI/UX) mockups
- Description of voice interaction (voice flow) scenarios
- Integration of inclusiveness and accessibility requirements into the design

Phase 3. Core Functionality Implementation (Month 3)

- Development of chatbot and voice agent core functionality
- Integration of NLP and TTS components

- Creation of initial administrative management environment

Phase 4. Public Services Data Integration (Month 4)

- Integration of state and public service data sources
- Population and indexing of Vector Store
- Implementation of API integrations

Phase 5. Testing and Accessibility Validation (Month 5)

- Functional, integration, and performance testing
- Information security verification
- Validation of accessibility compliance (WCAG 2.1 AA)

Phase 6. Pilot Launch (Month 6)

- Pilot operation of the system with a limited user base
- Collection and analysis of user feedback
- Implementation of necessary improvements

Phase 7. National Deployment and Launch (Month 7)

- Deployment of the system in production environment
- Large-scale launch of public services
- Final verification of stability and performance

Phase 8. Documentation and Training (Month 8)

- Presentation of technical and usage documentation
- Training of live operators and administrators
- Knowledge transfer to the Client

9. EVALUATION CRITERIA

Proposals submitted to the competition will be evaluated using a comprehensive assessment principle, taking into account both technical and organizational factors (70%) as well as financial factors (30%).

The evaluation will be carried out based on the following main criteria:

- Quality and completeness of the technical solution, including compliance of the proposed architecture with the requirements of the Technical Specification
- Quality of Armenian language and voice capabilities, including accuracy of NLP and TTS solutions, natural sound, and correct pronunciation of administrative/legal terms
- Experience in implementing similar projects, particularly within the framework of state, public, or large-scale information systems
- Ensuring accessibility and inclusiveness requirements, including compliance with WCAG 2.1 AA standards
- Information security and data protection approaches in compliance with the legislative requirements of the Republic of Armenia
- Cost-effectiveness and overall value of the proposal, taking into account the total lifecycle costs
- Support, maintenance, and sustainability plan, including SLA terms and long-term maintenance capabilities

During the evaluation process, the Client has the right to request a prototype demonstration, additional clarifications, or specification of submitted materials.

10. DATA PROTECTION AND PRIVACY

a) Intellectual Property and Data Protection

All results, reports, models, and tools created within the scope of this assignment constitute the exclusive property of the Client. Any third-party intellectual property used during the assignment must be clearly disclosed, indicating the terms of the applicable license.

In the case of using open-source components, the organization is required to present a list of such components with their respective licenses and all obligations arising from them.

The solution must be designed and implemented in accordance with high standards of information security and personal data protection.

The organization is required to fully comply throughout the entire assignment with the legislative requirements and policies of the Republic of Armenia regarding data protection, personal data privacy, and information security in force. This includes:

- Ensuring data encryption during storage and transmission (data at rest and data in transit)
- Implementing role-based access control mechanisms with clear definition of rights for different users
- Maintaining data from conversations and interactions with users in anonymized form
- Storing data within the territory of Armenia or within approved jurisdictions (when necessary)

b) Confidentiality and Exclusion of Conflict of Interest

The organization undertakes to strictly maintain confidentiality regarding all information received during the performance of the assignment that does not constitute publicly available information. Such information may not be transferred to third parties without the prior written consent of the Client.

Confidentiality obligations remain in force even after the completion or termination of the contract.

The organization undertakes not to participate in any activity or assignment that may create a conflict of interest within the framework of this consulting service.