

AI Chatbot - Business Requirements Document (BRD)

Executive Summary

This BRD outlines the requirements for an AI-powered chatbot system designed to enhance user engagement, automate responses, and provide intelligent conversational support. The chatbot will leverage natural language processing (NLP) and machine learning to understand user intent and deliver contextual, accurate responses across various domains.

1. Document Information

Field	Details
Document Title	AI Chatbot - Business Requirements Document
Version	1.0
Date	November 7, 2025
Status	Draft
Prepared By	Development Team

2. Product Overview

2.1 Purpose

The AI Chatbot is designed to provide automated, intelligent conversational interfaces that can handle user queries, provide support, and deliver personalized experiences while reducing operational costs and improving response times.

2.2 Scope

- Conversational AI supporting multiple languages
- Intent recognition and entity extraction
- Context-aware response generation
- Integration with backend systems and APIs
- User conversation history management
- Analytics and reporting capabilities

2.3 Target Users

- End customers seeking support
- Internal team members requiring assistance
- Business analysts requiring data insights
- System administrators managing the chatbot

3. Business Objectives

1. **Improve Response Time:** Reduce average response time from hours to seconds
2. **Reduce Operational Cost:** Automate 60-70% of routine inquiries
3. **Enhance User Experience:** Provide 24/7 availability and personalized interactions
4. **Gather Intelligence:** Collect user behavior data for continuous improvement
5. **Scalability:** Handle 1,000+ concurrent conversations

4. Key Features & Requirements

4.1 Core Features

- **Natural Language Understanding (NLU):** Parse user intent and extract entities
- **Conversational Flow:** Multi-turn conversations with context retention
- **Knowledge Base Integration:** Query structured and unstructured data
- **Response Generation:** Dynamic, contextual reply creation
- **Escalation Handling:** Seamless handoff to human agents when needed
- **User Authentication:** Secure access with user identification

4.2 Functional Requirements

Requirement ID	Description	Priority
FR-001	Accept and process natural language input	High
FR-002	Maintain conversation context across sessions	High
FR-003	Provide relevant answers based on knowledge base	High
FR-004	Log all conversations for audit trails	Medium
FR-005	Support human agent escalation	High
FR-006	Generate conversation summaries	Medium
FR-007	Support multiple languages	Medium
FR-008	Provide feedback and rating mechanism	Low

4.3 Non-Functional Requirements

Requirement ID	Description	Target
NFR-001	Response latency	< 2 seconds
NFR-002	System uptime	99.5%
NFR-003	Concurrent users supported	1,000+
NFR-004	Data encryption	TLS 1.3 minimum
NFR-005	Message retention	24 months

5. Technical Requirements

5.1 Technology Stack (Recommended)

- **AI/NLP Engine:** OpenAI GPT, Google Dialogflow, or custom ML models
- **Backend:** Node.js with Express or Python with FastAPI
- **Database:** PostgreSQL (conversations), Redis (caching)
- **Frontend:** React, Vue.js, or web-based chat widget
- **Deployment:** Docker, Kubernetes, cloud platforms (AWS/GCP/Azure)

5.2 API Requirements

- REST API for chat interactions
- Webhook support for external integrations
- Authentication via OAuth 2.0 / JWT tokens
- Rate limiting and throttling mechanisms

5.3 Integration Points

- CRM systems
- Knowledge management systems
- Ticketing/support platforms
- Analytics platforms
- Payment systems (if applicable)

6. User Interface Requirements

- **Chat Widget:** Responsive, minimal design
- **Message Display:** Clear distinction between user and bot messages
- **Input Field:** Text input with suggestions and autocomplete

- **Typing Indicators:** Visual feedback during processing
- **Quick Replies:** Suggested next questions/actions
- **Conversation History:** Accessible previous chats

7. Security & Compliance

- **Data Privacy:** GDPR, CCPA compliance for user data
- **Encryption:** End-to-end encryption for sensitive conversations
- **Access Control:** Role-based permissions for admin access
- **Audit Logging:** Complete conversation audit trail
- **PII Handling:** Automatic detection and masking of sensitive information

8. Success Metrics

Metric	Target	Measurement
User Satisfaction (CSAT)	> 85%	Post-chat surveys
Resolution Rate	> 70%	Successful resolutions without escalation
Average Response Time	< 2 sec	System logs
Conversation Completion Rate	> 80%	Conversation analytics
System Availability	99.5%	Uptime monitoring

9. Timeline & Phases

Phase	Duration	Deliverables
Phase 1: Planning & Design	2-3 weeks	Architecture, technical specs, UI mockups
Phase 2: Development	6-8 weeks	Backend, NLU integration, frontend
Phase 3: Testing & QA	3-4 weeks	Functional, security, performance testing
Phase 4: Deployment	2 weeks	Production deployment, monitoring setup
Phase 5: Launch & Monitoring	Ongoing	Support, optimization, analytics

10. Dependencies & Assumptions

10.1 Dependencies

- Availability of trained ML models or third-party AI service access
- Knowledge base population by domain experts
- Sufficient infrastructure/cloud resources
- Integration API documentation from external systems

10.2 Assumptions

- Users have basic internet connectivity
- Knowledge base will be maintained and updated regularly
- Initial user base: 500-1,000 active users
- 24/7 deployment not required in Phase 1

11. Risks & Mitigation

Risk	Impact	Mitigation
Poor intent recognition	High	Implement comprehensive training data, continuous model refinement
Data security breach	Critical	Regular security audits, encryption, compliance checks
System scalability issues	Medium	Load testing, auto-scaling infrastructure
User adoption	Medium	UX optimization, user training, feedback loops

12. Approval & Sign-Off

Role	Name	Date	Signature
Product Owner	_____	_____	_____
Technical Lead	_____	_____	_____
Business Stakeholder	_____	_____	_____