

AI-Powered Complaint Management System

1. Business Goal

I want a system that helps my organization **receive, track, analyze, and resolve customer complaints automatically**, while giving managers **real-time insights** into performance and trends.

The system must use **Artificial Intelligence (AI)** to classify, prioritize, and suggest resolutions for complaints.

2. Functional Requirements (System Features)

2.1. Complaint Submission

- Users (customers or employees) should be able to **submit complaints easily** via:
 - Web form
 - Mobile app
 - Email (auto-imported)
 - Live chat integration
 - Complaint form should capture:
 - Name, Contact Info, Complaint Type, Description, Attachments (image, PDF, etc.)
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2.2. AI Complaint Analysis

- The system should automatically:
 - Detect the **type/category** of complaint (Billing, Product, Service Delay, etc.)
 - Determine **priority/urgency** level.
 - Analyze **sentiment** (Positive, Neutral, Negative).
 - Extract key entities (order ID, invoice number, product name, etc.).
 - Generate a short **summary** of the complaint for staff.
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2.3. Complaint Routing

- Based on the AI analysis, complaints should be **auto-assigned** to the relevant:
 - Department (Billing, Technical, Support, HR)
 - Agent or team member
 - System should support **manual reassignment** and **escalation** rules.
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2.4. Dashboard & Tracking

- Dashboard for admin to view:
 - Total complaints (open, in progress, resolved)
 - SLA compliance rate
 - Complaint trends by category, time, or sentiment
 - Average resolution time
 - Agent/team performance
 - Agents should see **their assigned complaints** with status filters.
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2.5. Automated Notifications

- Automatic email/SMS/in-app notifications for:
 - Complaint received acknowledgment
 - Updates during investigation
 - Resolution provided
 - Admins get alerts for SLA breaches or unresolved complaints.
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2.6. AI Response Suggestions

- When staff view a complaint, system should show:
 - Suggested reply or response templates generated by AI
 - Relevant FAQ or Knowledge Base articles
- Agent can edit the suggestion before sending.

2.7. Feedback & Continuous Learning

- After a complaint is resolved, customer can rate satisfaction (1–5 stars).
 - Feedback will be used to **improve AI model accuracy**.
 - System should store resolved complaints as **training data** for future improvement.
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2.8. Admin Panel

- Manage users (Admin, Agents, Managers).
 - Configure complaint categories, SLAs, and routing rules.
 - View analytics and export reports (CSV, PDF).
 - Add/edit/delete AI response templates and knowledge base content.
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3. AI-Specific Requirements

- Use a **Natural Language Processing (NLP)** model (e.g., Gemini, Hugging Face, or custom fine-tuned BERT) for:
 - Text classification (category, sentiment, urgency)
 - Entity recognition (names, dates, order IDs)
 - Text summarization
 - Response generation
 - Maintain a **confidence score** for each AI decision — if below threshold, send to human verification.
 - Must allow **model retraining** with new data (semi-supervised learning).
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4. Non-Functional Requirements

4.1. Performance

- System should process complaints in real time (<3 seconds per request).
- Dashboard should update dynamically without page reload.

4.2. Security

- All data encrypted (TLS for transfer, AES-256 for storage).
- Role-based access control (RBAC).
- GDPR-compliant data retention & deletion.
- Audit trail for every complaint action.

4.3. Scalability

- System should handle thousands of complaints daily.
- Must support cloud deployment (AWS, GCP, Azure).

4.4. Usability

- Simple, modern UI (responsive for web & mobile).
- Multi-language support (English + local languages).
- Easy search & filter options.

4.5. Integration

- Integrate with email servers (Gmail, Outlook).
 - Optional: integration with CRM tools (Salesforce, Zoho).
 - API available for external systems to push or fetch complaint data.
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5. Deliverables Expected

1. Fully functional web-based application.
 2. (Optional) Android app for customers.
 3. Admin and agent dashboards.
 4. AI models deployed and connected.
 5. Documentation (API docs, user manual, setup guide).
 6. Training session for admin/staff.
 7. Maintenance and update plan.
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6. Success Criteria

- 90%+ correct AI classification of complaint categories.
- 50% faster complaint resolution time compared to manual system.
- Real-time performance dashboard accessible 24/7.
- Secure storage and access control for all complaint data.
- Positive feedback from staff and customers after deployment.