Research Report: Implementing a Chatbot for Senior Rights Victoria's Web Application

This report explores the methods and technologies available to implement a chatbot in the existing web application for Senior Rights Victoria. The goal is to enhance the staff's efficiency in handling customer inquiries by automating responses to common queries such as ticket statuses and navigation of the web application.

Analysis of Chatbot Technologies

Several chatbot frameworks and platforms are available, each with its strengths and weaknesses. Below are the most relevant options:

❖ Dialogflow

Dialogflow, developed by Google, is a comprehensive platform that uses natural language processing to create conversational agents. It supports multiple languages and can be integrated into web and mobile applications.

Pros:

- Built-in NLP capabilities.
- Easy integration with Google Cloud services.
- Pre-built integrations for popular messaging platforms.

Cons:

- Potential over-reliance on Google's ecosystem.
- May involve costs associated with Google Cloud usage.

❖ Microsoft Bot Framework

This is a powerful framework that allows developers to build, test and deploy chatbots. It integrates well with Microsoft Azure and offers features such as language understanding (LUIS) and QnA Maker.

Pros:

- Seamless integration with Microsoft Azure.
- Strong enterprise support.
- Extensive documentation and community support.

Cons:

- Requires knowledge of Microsoft Azure services.

- Can be complex to set up compared to other platforms.

❖ **Landbot**

Landbot is a no-code chatbot builder that allows users to create conversational interfaces with a visual drag-and-drop interface. It is designed for rapid prototyping and easy deployment, making it an ideal choice for creating web-based chatbots without extensive coding knowledge.

Pros:

- Drag-and-drop design makes it easy for non-developers to create and manage chatbot flows.
- Ideal for rapidly building and testing chatbot concepts before full-scale development.
- Supports integrations with popular platforms such as WhatsApp, Facebook Messenger, and web apps.
- Allows you to tailor the chatbot's appearance to match your brand's style and needs.

Cons:

- Less suitable for building highly complex chatbots with advanced NLP or machine learning requirements.
- May not be the best option for large-scale deployments requiring heavy customization or extensive backend integrations.
- While starting is free, advanced features and scaling options may require a paid plan.

❖ **Custom Development with Flask/Node.js**

Building a chatbot from scratch using Flask (Python) or Node.js (JavaScript) allows for complete customization and integration with existing systems.

Pros:

- Total control over the chatbot’s design and functionality.
- Easy integration with existing web application architecture.

Cons:

- Higher development time and effort.
- Requires advanced technical knowledge in NLP and API development.

<u>Integration with the Existing Web Application</u>

The chatbot must seamlessly integrate with the web application, considering both frontend and backend requirements.

- Backend Integration:

- API Endpoints: The chatbot will require access to the backend database to retrieve and manipulate data such as ticket statuses. API endpoints should be created to handle requests from the chatbot.
- Authentication: Ensure secure communication between the chatbot and backend services, possibly using OAuth tokens or other secure methods.

- Frontend Integration:

- User Interface: The chatbot should be accessible via a floating icon or a dedicated section on the web application. The UI should be responsive and user-friendly, supporting both desktop and mobile views.
- Conversation Flow: Implement a smooth conversation flow where users can easily interact with the chatbot, ask questions and receive quick responses.

Benefits of Implementing the Chatbot

- Efficiency: Automates repetitive tasks, freeing up staff to focus on more complex inquiries.
- Accuracy: Reduces human error by providing consistent and accurate responses.
- Scalability: Can handle multiple inquiries simultaneously, improving the application's ability to serve more users.
- User Satisfaction: Enhances user experience by providing instant responses to common questions.

Challenges and Considerations

- Data Security: Ensuring that sensitive data handled by the chatbot is secure and complies with privacy regulations.
- User Training: Staff may require training to effectively use and interact with the chatbot.
- Maintenance Costs: Consider the ongoing costs of maintaining and updating the chatbot, especially if using cloud-based services.

Chatbot Interaction Flow

Greeting/Introduction

- User: "Hello" / "Hi"
- Chatbot: "Welcome to the Staff Assistance Chatbot for SRV. How can I assist you today? "

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2. In-Progress Tickets Inquiry

- User: "How many in-progress tickets do I have?" / "Show in-progress tickets."
- Chatbot:
    - Checks the database for in-progress tickets assigned to the user.
    - Response 1 (If tickets exist): "You have 5 in-progress tickets. Would you like to see the details or update any of these tickets?"
    - Response 2 (If no tickets exist): "You currently have no in-progress tickets."
- User (Optional): "Show me the details."
- Chatbot: "Here are the details of your in-progress tickets: [List of Tickets with Summary]."

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3. Financial Abuse Tickets Inquiry

- User: "How many financial abuse-related tickets do I have?" / "Show abuse tickets."
- Chatbot:
    - Queries the database for tickets marked under the 'FinancialAbuse' category.
    - Response 1 (If tickets exist): "There are 3 financial abuse-related tickets. Would you like to see more details?"
    - Response 2 (If no tickets exist): "There are currently no abuse-related tickets."
- User (Optional): "Yes, show me the details."
- Chatbot: "Here are the details of the abuse-related tickets: [List of financial abuse Tickets with Summary]."

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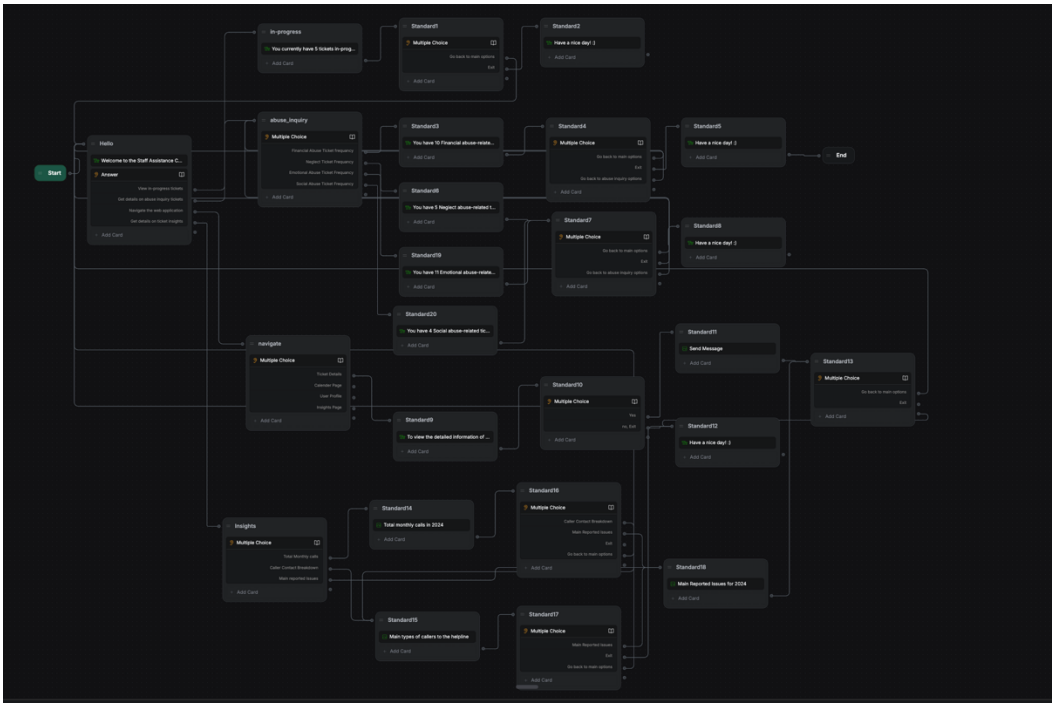
4. Navigating to See the Detailed View of a Ticket

- User: "How do I view the detailed information of a ticket?"
- Chatbot:
    - Response: "To view the detailed information of a ticket, please follow these steps:
        1. Go to the 'Ticket History' section from the user dashboard page.
        2. Browse through the list of tickets to find the one you're interested in.
        3. Click on the ticket to open its detailed view, where you can see all related information, status updates, and actions you can take."

Example chatbot interaction on Botpress:


Start
Hello
Welcome to the Staff Assistance C...
Answer
View In-progress tickets
Get details on abuse inquiry tickets
Navigate the web application
Get details on ticket insights
Add Card
In-progress
You currently have 5 tickets in-prog...
Add Card
abuse_inquiry
Multiple Choice
Financial Abuse Ticket Frequency
Neglect Ticket Frequency
Emotional Abuse Ticket Frequency
Social Abuse Ticket Frequency
Add Card
navigate
Multiple Choice
Ticket Details
Calender Page
User Profile
Insights Page
Add Card
Insights
Multiple Choice
Total Monthly calls
Caller Contact Breakdown
Main reported issues
Add Card
Standard1
Multiple Choice
Go back to main options
Exit
Add Card
Standard2
Have a nice day! ;)
Add Card
Standard3
You have 10 Financial abuse-relate...
Add Card
Standard4
Multiple Choice
Go back to main options
Exit
Go back to abuse inquiry options
Add Card
Standard5
Have a nice day! ;)
Add Card
End
Standard6
You have 5 Neglect abuse-related t...
Add Card
Standard7
Multiple Choice
Go back to main options
Exit
Go back to abuse inquiry options
Add Card
Standard8
Have a nice day! ;)
Add Card
Standard19
You have 11 Emotional abuse-relate...
Add Card
Standard20
You have 4 Social abuse-related tic...
Add Card
Standard9
To view the detailed information of ...
Add Card
Standard10
Multiple Choice
Yes
no, Exit
Add Card
Standard11
Send Message
Add Card
Standard12
Have a nice day! ;)
Add Card
Standard13
Multiple Choice
Go back to main options
Exit
Add Card
Standard14
Total monthly calls in 2024
Add Card
Standard15
Main types of callers to the helpline
Add Card
Standard16
Multiple Choice
Caller Contact Breakdown
Main Reported Issues
Exit
Go back to main options
Add Card
Standard17
Multiple Choice
Main Reported Issues
Exit
Go back to main options
Add Card
Standard18
Main Reported Issues for 2024
Add Card