**Software Requirements**

**Specification**

**for**

**Chatbot**

**Version 1.0**

**Prepared by**

Joseph Ogunsanya

Helen Abraham

Evelyn Akinlosotu

Essaid Elboukhani

Jan (Jon) Masouh

Romuald Priva Leuga Nousibouaba

Vincent Seen

**UMGC City Team 2**

2/26/2020

# Revision History

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| **Name** | **Date** | **Reason for Changes** | **Version** |
| UMGC Team 2 | 03/08/2020 | Initial Release | 1.0 |
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# 1 Introduction

## 1.1 Purpose

The purpose of the document is to collect and analyze information that will help the city of Pasadena with their web system. Our idea is to take the given requirements and brainstorm the best route to modify our Chatbot into what the customer needs in an efficient way. Our goal with this SRS document is to provide an informational overview of the Chatbot such as its parameters and goals. This document will explain many features like the targeted audience and its user interface, hardware and software requirements.

## 1.2 Document Conventions

When creating the SRS document for the city of Pasadena the following conventions are standard and standards consist of the font “Times new roman “and citations in “APA format”. Headings are bold to achieve a good visual representation.

## 1.3 Intended Audience and Reading Suggestions

This document is intended for two readers and each of these readers will view the document a little differently. One reader will go through the document to see if the reading matches up to what they want. The other reader will go through the document and see if the document is formatted and explained correctly. These are the overseers of the project. The rest of the SRS document contains information that will help the intended audience understand the goal and parameters of the Chatbot. The SRS document is organized by the overall description, system features, external interface requirements, and other nonfunctional requirements.

## 1.4 Project Scope

The software shall be a Chatbot that has a goal to answer any user's questions and/or direct them to the correct location where the answers reside using questions via typing or voice. Our purpose is to provide any user that will use the Pasadena website an extra way of communicating and a Chatbot can do that. This will benefit the user in providing quick answers to a wide variety of questions and will cut down on calls to the city of Pasadena.

## 1.5 References

IEEE Recommended Practice for Software Requirements Specifications. IEEE Std 830™-1998(R2009).

Retrieved from: <http://www.cse.msu.edu/~cse870/IEEEXplore-SRS-template.pdf>

# 2 Overall Description

## 2.1 Product Perspective

The city of Pasadena is a big city with a population of over 138,101. The Chatbot is a new application that will be running on the actual website<https://www.cityofpasadena.net/>. It will help user navigation within the website by answering the questions. Users can use a voice command or type the actual question. The Chatbot is to be linked to other applications within the website to provide accurate information to the end-user. Here are some use cases that defined the application.

The chatbot should be able to meet the following use cases specification.

* CHB-UC1: Definitions to define land use category, entitlement process where applicable (MCUP, CUP, Variance, Minor Variance, EUP), and application.
* CHB-UC2: Definitions to Home Occupation Permit.
* CHB-UC3: Regulations.
* CHB-UC4: Accessory Dwelling Unit.
* CHB-UC5: Development standards.
* CHB-UC6: Host Compliance application.
* CHB-UC7: Retrieve the Accessory Structure.
* CHB-UC8: Zoning application.
* CHB-UC9: Overlay Zoning Districts.
* CHB-UC10: Nonconforming Uses, Structures, and Lots.
* CHB-UC11: Development standards.
* CHB-UC12: Tree definitions and removal.
* CHB-UC13: Day-care definitions.

A full detail of each use case in [Appendix A: Use Cases](#_heading=h.39kk8xu)

## 2.2 Product Features

* The Chatbot can retrieve much information for the user so he/she does not have to navigate within the website.
* The Chatbot receives voice command and replies with voice and word at the same time.
* The Chatbot logs all questions that were not answered to the database and the Administrator provides the answer to enrich the Chatbot knowledge.
* The Admin can educate the Chatbot to be more efficient to the user
* The Chatbot can connect the user to the customer service if the user requests a customer service.

The UML diagram in figure 1 illustrates the external entities and system interfaces and how the data flow among them.

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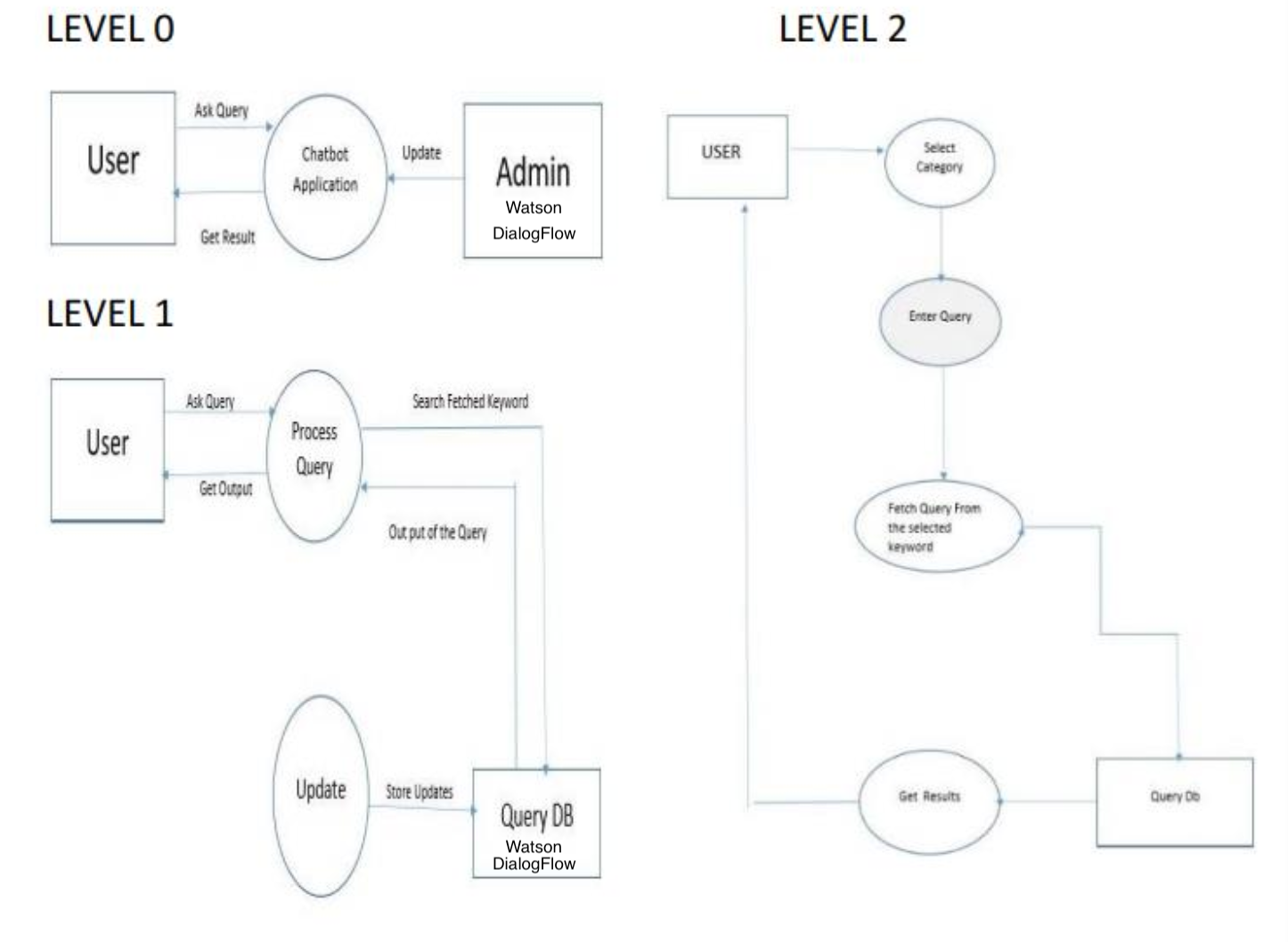


Figure 1- UML Data Flow for Chatbot System

## 2.3 User Classes and Characteristics

|  |  |
| --- | --- |
| **Table 1. Chatbot User Classes and Characteristics** | |
| **User Classes** | **Characteristics** |
| User living in the city | These are people living within the city of Pasadena that connect to check what is happening in the city. There is much information that they may use the Chatbot for such as checking the city hall address, pay utilities bill and many. |
| User living outside the city | People that are planning to move to the city of Pasadena and that need specific information. |
| User Admin | People that teach the bot how to handle the information back to the user. |
| Programmers | people that update the chat with more functionalities. |

## 2.4 Operating Environment

The client-side components of the software system must operate within everyday web-browser environments on the top of the website. The minimum set of browsers that must be supported is

* Apple Safari 8+
* Google Chrome 60+
* Microsoft Internet Explorer 10+
* Mozilla Firefox 50+

## 2.5 Design and Implementation Constraints

### 2.5.1 Language

The Chatbot will only support and be trained in using the English language.

### 2.5.2 Limited Answers Range

The Chatbot will not be able to answer every single customer question correctly at the time of deployment. The Chatbot will answer limited questions at deployment time with the ability to learn and expand knowledge by using users’ data and queries.

### 2.5.3 Metadata Limitation

The Chatbot might get limited metadata about users’ information to create advanced behaviors and intents. Metadata can help the Chatbot to answer customers’ queries faster and accurately.

### 2.5.4 Deployment Limitation

The Chatbot deployment is closely associated with the backend and database configurations of the website. Some of these future configuration changes can affect the Chatbot deployment and may require code modifications.

## 2.6 User Documentation

The Chatbot design will be a user-friendly interface. The Chatbot will have a lightweight and simplistic graphical interface that hides application and network complexities. The Chatbot will display help information and some tips for the customer.

## 2.7 Assumptions and Dependencies

We assume the use of the following technologies for the Chatbot: Angular, NodeJS, JHipster, DBBeaver, and PostgreDB. These technologies are open source and will save the customer money from purchasing software licenses.

# 3 System Features

This section defines the features of the Chatbot system to be developed. It also illustrates the functional requirements and the major services provided by the chat system. The Chatbot system will use both the DialogFlow and IBM Watson chat engines to facilitate the implementation of these features. The system will also follow the requirements provided by the customer when developing the knowledge base of the Chatbot system and creating the database data needed by the system. Creating more entities and training the natural language processing (NLP) engine which is done in real-time shall make the system cover most of the queries and predict user intents from incoming requests.

## 3.1 System messaging and audio

### 3.1.1 Description and Priority

This feature shall allow the user to either type in a message or send audio to the Chatbot system. This feature is a high priority as it allows individuals with a disability to be able to speak to the Chatbot system instead of sending text messages. With such a smart Chatbot system, the user should expect faster responses like speaking to a live human agent.

### 3.1.2 Stimulus/Response Sequences

*Stimulus*: The user enters a question in the message box and clicks the Send Button or hits the enter key.

*Response:* The system shall send an appropriate text response which the user can read.

*Stimulus*: The user holds the mic and speaks a question, and when finished releases the mic.

*Response:* The system shall send an appropriate audio response.

### 3.1.3 Functional Requirements

Below are the detailed functional requirements associated with this feature.

REQ-1: User can enter a message or send audio through the Chatbot system

REQ-2: The system shall return a generic response if no response is available in the knowledge base of the Chatbot or the system databases.

REQ-3: The system shall be scaled to add more common searches and inquiries.

REQ-4: The system shall have a built-in knowledge base of frequently asked questions used to send instant responses about the web site.

## 3.2 Allowed land uses

### 3.2.1 Description and Priority

This feature shall allow the user to retrieve the land use matrix specific to parcel. And retrieve the definitions of the land use category, entitlement process where applicable for conditional use permit (CU), minor conditional use permit (MCUP), Variance, Minor Variance and expressive use permit (EUP).

Priority: High

### 3.2.2 Stimulus/Response Sequences

*Stimulus*: The user enters a help message related to land uses, clicks the Send button or hits the enter key.

*Response:* The system shall parse the message, link it to the allowed land uses parcel entity and prompt the user to enter his address.

*Stimulus*: The user enters his address.

*Response:* The system shall send the link to retrieve the land use matrix specific to parcel.

*Stimulus*: The user sends a query to define the land use category.

*Response:* The system shall parse the message and send the link to retrieve the definition of the land use category.

*Stimulus*: The user sends a query to define the conditional use permit (CU), minor conditional use permit (MCUP).

*Response:* The system shall parse the message and send the link to retrieve the definitions of the CU/MCU.

*Stimulus*: The user sends a query to get all permits definitions.

*Response:* The system shall parse the message and send the link to retrieve the definitions of all permits

*Stimulus*: The user sends a query to retrieve the variance/minor variance definitions.

*Response:* The system shall parse the message and send the link to retrieve the variance/ minor variance definitions.

### 3.1.3 Functional Requirements

REQ-5: The system shall allow the user to retrieve the land use matrix specific to the parcel

REQ-6: The system shall provide the definitions of the land use category

REQ-7: The system shall provide the definitions of the variance and minor variance

REQ-8: The system shall provide the definitions of the EUP.

REQ-9: The system shall provide all permits definitions links.

## 3.3 Link to applications

### 3.3.1 Description and Priority

This feature allows the user to search for common application permits or forms for short term rental, home occupation permit, variance/minor variance, conditional use and minor conditional use, accessory dwelling unit, accessory structure and zoning, Certificate of Appropriateness (CoA), tree removal and reasonable accommodation permit.

Priority: High

### 3.3.2 Stimulus/Response Sequences

*Stimulus*: The user sends a query requesting the short-term rental or host compliance application.

*Response:* The system shall parse the message and send the appropriate link to open the short-term rental or host compliance application.

*Stimulus*: The user clicks on the application

*Response:* The application for short term permit is opened on a new window

*Stimulus*: The user sends a query requesting the application for a home occupation permit.

*Response:* The system shall parse the message and send the appropriate link to open the application for the home occupation permit.

*Stimulus*: The user clicks on the application

*Response:* The application for home occupation permit is opened on a new window

*Stimulus*: The user sends a query requesting the application for variance/minor variance permit.

*Response:* The system shall parse the message and send the appropriate link to open the application for home variance/minor variance permit.

*Stimulus*: The user clicks on the application

*Response:* The application for variance/minor variance permit is opened on a new window

*Stimulus*: The user sends a query requesting the application for variance/minor variance permit.

*Response:* The system shall parse the message and send the appropriate link to open the application for home variance/minor variance permit.

*Stimulus*: The user clicks on the application link

*Response:* The application for variance/minor variance permit is opened on a new window

*Stimulus*: The user sends a query requesting the application for Conditional Use and Minor Conditional Use permits.

*Response:* The system shall parse the message and send the appropriate link to open the application for Conditional Use and Minor Conditional Use permits.

*Stimulus*: The user clicks on the application

*Response:* The application for Conditional Use and Minor Conditional Use permits is open.

*Stimulus*: The user sends a query requesting the application for the accessory dwelling unit permit.

*Response:* The system shall parse the message and send the appropriate link to open the application for the accessory dwelling unit permit.

*Stimulus*: The user clicks on the application

*Response:* The application for the accessory dwelling unit permit is open in a new window.

*Stimulus*: The user sends a query requesting the application for the zoning application.

*Response:* The system shall parse the message and send the appropriate link to open the application zoning application.

*Stimulus*: The user clicks on the application link

*Response:* The application for the zoning is open in a new window.

*Stimulus*: The user sends a query requesting the Certificate of Appropriateness (CoA) application.

*Response:* The system shall parse the message and send the appropriate link to open the CoA application.

*Stimulus*: The user clicks on the application link

*Response:* The application for the CoA opens in a new window.

*Stimulus*: The user sends a query requesting the residential tree removal application

*Response:* The system shall parse the message and send the appropriate link to open the application.

*Stimulus*: The user clicks on the application link

*Response:* The application for tree removal opens in a new window.

*Stimulus*: The user sends a query requesting the reasonable accommodation permit application.

*Response:* The system shall parse the message and send the appropriate link to open the application.

*Stimulus*: The user clicks on the application link

*Response:* The application for the reasonable accommodation permit opens in a new window.

### 3.3.3 Functional Requirements

REQ-10: The system shall provide a link for short term rental application

REQ-11: The system shall provide a link for home occupation permit application

REQ-12: The system shall provide a link for variance/minor variance application

REQ-13: The system shall provide a link for conditional use and minor conditional use application

REQ-14: The system shall provide a link for accessory dwelling unit application

REQ-15: The system shall provide a link for accessory structure and zoning application

REQ-16: The system shall provide a link for CoA application

REQ-17: The system shall provide a link for tree removal (residential) application

REQ-18: The system shall provide a link for reasonable accommodation permits application.

## 3.4 Retrieve Regulations

### 3.4.1 Description and Priority

This feature allows the user to retrieve common regulations for short term rental, home occupation permit (riding, sanitation, general and license), accessory structure and zoning and accessory dwelling units. Also, it provides regulations of what projects are subject to a Certificate of Appropriateness (CoA)

and those for sober living facility operations.

Priority: High

### 3.4.2 Stimulus/Response Sequences

*Stimulus*: The user enters a query requesting regulations for short term rental

*Response:* The system shall provide appropriate regulations link for short term rental

*Stimulus*: The user enters a query requesting regulations for a home occupation permit

*Response:* The system shall provide appropriate regulations link for home occupation permits.

*Stimulus*: The user enters a query requesting riding regulations

*Response:* The system shall provide the appropriate link for riding regulations

*Stimulus*: The user enters a query requesting sanitation regulations

*Response:* The system shall provide the appropriate link for sanitation regulations

*Stimulus*: The user enters a query requesting home occupation general regulations

*Response:* The system shall provide the appropriate link for the general regulations

*Stimulus*: The user enters a query requesting home occupation license regulations

*Response:* The system shall provide the appropriate link for license regulations

*Stimulus*: The user enters a query requesting regulations for accessory structure and zoning

*Response:* The system shall provide appropriate regulations link for accessory structure and zoning

*Stimulus*: The user enters a query requesting regulations for what projects are subjects to CoA

*Response:* The system shall provide appropriate regulations link for what projects are subject to CoA.

*Stimulus*: The user enters a query requesting regulations for sober living facility operations

*Response:* The system shall provide appropriate regulations link for sober living facility operations

*Stimulus*: The user enters a query requesting regulations for accessory dwelling units.

*Response:* The system shall provide appropriate regulations link for accessory dwelling units.

### 3.4.3 Functional Requirements

REQ-19: The system shall provide the regulations for short term rental

REQ-20: The system shall provide the regulations for short term rental

REQ-21: The system shall provide the regulations for a home occupation permit

REQ-22: The system shall provide the home occupation riding regulations

REQ-23: The system shall provide home occupation license regulations

REQ-24: The system shall provide for accessory structure and zoning regulations

REQ-25: The system shall provide home occupation sanitation regulations

REQ-26: The system shall provide regulations for projects that are subject to CoA.

REQ-27: The system shall provide regulations for sober living facility operations

REQ-28: The system shall provide regulations for accessory dwelling units.

## 3.5 Retrieve Standards

### 3.5.1 Description and Priority

This feature allows the user to retrieve the development standards for accessory dwelling units the development standards for daycares (small, medium, and large) and the development standards for lots

Priority: High

### 3.5.2 Stimulus/Response Sequences

*Stimulus*: The user enters a query requesting the development standards for accessory dwelling units

*Response:* The system shall provide appropriate standards for accessory dwelling units.

*Stimulus*: The user enters a query requesting a waiver of development standards

*Response:* The system shall provide the appropriate standards for the waiver of development.

*Stimulus*: The user enters a query requesting the LASP General Development Standards

*Response:* The system shall provide the appropriate standards for the LASP General Development.

*Stimulus*: The user enters a query requesting the EPSP development standards

*Response:* The system shall provide the appropriate standards for the EPSP development

*Stimulus*: The user enters a query requesting the FGSP development standards

*Response:* The system shall provide the appropriate standards for the FGSP development

*Stimulus*: The user enters a query requesting the development standards for the development of small daycare.

*Response:* The system shall provide appropriate standards link for the development of small daycare.

*Stimulus*: The user enters a query requesting the development standards for the development of medium daycares.

*Response:* The system shall provide appropriate standards link for the development of medium daycares.

*Stimulus*: The user enters a query requesting the development standards for the development of large daycares.

*Response:* The system shall provide appropriate standards link for the development of large daycares.

*Stimulus*: The user enters a query requesting the development standards for lots.

*Response:* The system shall provide appropriate standards link to the development of lots.

### 3.5.3 Functional Requirements

REQ-29: The system shall provide the development standards for accessory dwelling units.

REQ-30: The system shall provide the waiver of development standards

REQ-31: The system shall provide the LASP General Development Standards

REQ-32: The system shall provide the EPSP development standards

REQ-33: The system shall provide the FGSP development standards

REQ-34: The system shall provide the development standards for each category of the daycare (Small, medium and large)

REQ-35: The system shall provide the development standards for lots.

## 3.6 Retrieve land use matrix

### 3.6.1 Description and Priority

This feature allows the users to retrieve the land use matrix specific to parcels.

Priority: High

### 3.6.2 Stimulus/Response Sequences

*Stimulus*: The user enters or speaks their address on the designated map search area of the chatbot

*Response:* The system shall provide a link to open the map on a new window displaying whether the property is within the allowed land uses.

### 3.6.3 Functional Requirements

REQ-36: The system shall allow the retrieval of the land use matrix specific to parcel.

## 3.7 Identify landmark district property

### 3.7.1 Description and Priority

This feature allows the users to identify whether a property is in a landmark district.

Priority: High

### 3.7.2 Stimulus/Response Sequences

*Stimulus*: The user enters or speaks his address on the designated map search area of the chatbot

*Response:* The system shall identify whether the property is in a landmark district,

### 3.7.3 Functional Requirements

REQ-37: The system shall allow the user to identify whether a property is in a landmark district.

## 3.8 Define common terms

### 3.8.1 Description and Priority

This feature allows the users to retrieve definitions for what constitutes front yard, side yard and backyard of non-traditional lots, the definition of small, medium and large daycares, definition of a sober living facility, and what is a protected tree.

Priority: High

### 3.8.2 Stimulus/Response Sequences

*Stimulus*: The user sends a query requesting the definition of the front yard of non-traditional lots

*Response:* The system shall retrieve an explanation of what a front yard is.

*Stimulus*: The user sends a query requesting the definition of side yard of non-traditional lots

*Response:* The system shall retrieve an explanation of what a side yard is.

*Stimulus*: The user sends a query requesting the definition of the backyard of non-traditional lots

*Response:* The system shall retrieve an explanation of what a backyard is.

*Stimulus*: The user sends a query requesting the definition of sober living facility

*Response:* The system shall retrieve the definition of a sober living facility.

*Stimulus*: The user sends a query requesting the definition of protected trees

*Response:* The system shall retrieve the definition of protected trees.

### 3.8.3 Functional Requirements

REQ-38: The system shall retrieve the definitions of the front yard, side yard, and backyard of non-traditional lots.

REQ-39: The system shall retrieve the definitions of small, medium and large daycares.

REQ-40: The system shall retrieve the definitions of a sober living facility

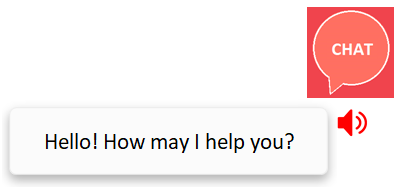
REQ-41: The system shall retrieve the definitions of protected trees.

## 

# 4 External Interface Requirements

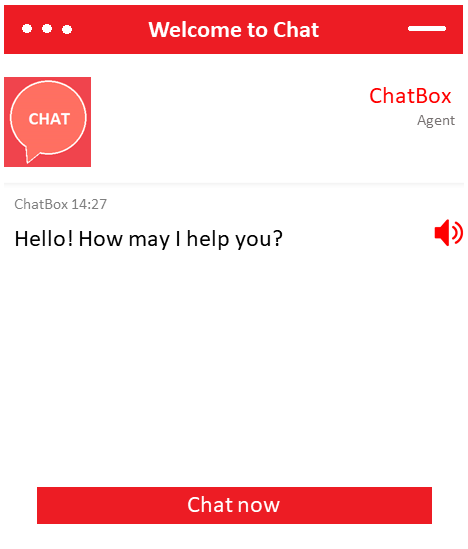
## 4.1 User Interfaces

The user external interface to realize the full functionality of the UMGC Chatbot includes a computer GUI, such as a laptop, desktop, tablet, or smartphone with audio capabilities for voice command. The user will use the interface to access an internet connection to the City of Pasadena website, <https://www.cityofpasadena.net/>. On each webpage of the website, the Chatbot is present with its icon and initial greeting, prompting the user to initialize a conversation, which is designated by the following image hovering on the lower right corner of each webpage, as shown in Figure 1.



**Figure 1. Screenshot of the Chatbot with Audio Option**

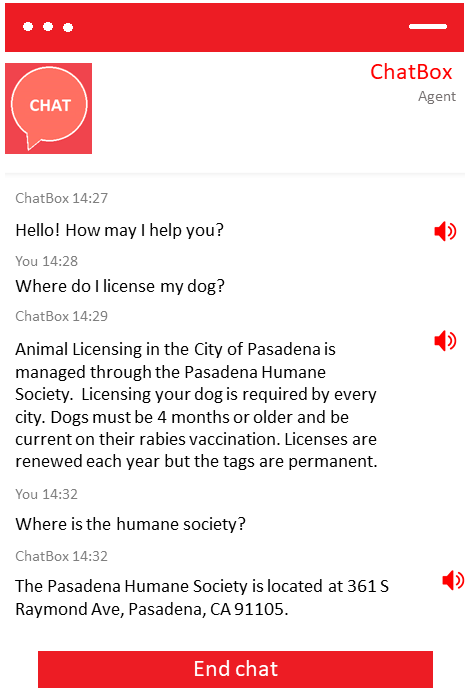
On any page, the user may click on the Chatbot icon or its initial greeting, “Hello! How may I help you?” to open a chatbot and begin a chat session. Next to the greeting is a speaker icon. The user may use the audio option by clicking on the speaker. The user’s device audio is activated when the user clicks the speaker icon. When using the audio option, the Chatbot’s will reply via audio, and verbatim texts of the Chatbot replies and the user’s questions will display in the chatbot.



**Figure 2. Chat Box Screen**

At any time during a chat, the user may switch to the audio option by clicking on the speaker icon in the chatbot. The user may click on the minus button on the upper right corner of the Chatbot to minimize the chatbot screen on the webpage. To the upper right corner of the Chatbot is a three-dot menu button for additional support. The menu button provides options for Help, Speak to Admin, and End chat, which the user may select. To end a chat session, the speaker needs only to click on the End Chat button in the chatbot.

The next sequence of screens displays an example of the Chatbot conversation with a user inquiring about dog licensing. The Chatbot searches its knowledge base of information on the website to answer the user’s questions.



**Figure 3. Sample Chat Session Questions and Answers**

The Graphical User Interface (GUI) standards required for the Chatbot is any computer device with an Internet connection that operates on a Windows 10, MAC, Android, or iOS. There are no specific screen layout constraints. All screen views and contents of the Chatbot shall be viewable from any size and resolution of computer and mobile devices.

The standard buttons and functions on every screen of the Chatbot include

* Chatbot icon and initial greeting on the City of Pasadena website – to initialize the chat
* Speaker icon – to utilize user’s device audio for the chat session
* Chat now button – to begin a chat session
* Menu icon – to select additional options: *Help*, *Speak to Admin*, or *End chat*
* Minus icon – to minimize the chatbot
* End chat button – to end the chat session

The keyboard shortcuts to assist users for faster searches on the website include the use of the audio option for the chat session. The user may select this option at the beginning or during a chat session. The audio option is a convenient feature for individuals with a mobile disability or users multitasking during the chat session.

Questions beyond the scope of the Chatbot’s immediate knowledge capability will return an error message (and audio of the error message, if utilizing the audio chat feature). Example: the user is asked to enter the zip code or address and the user’s input response is invalid address not found, the Chatbot will reply and display on the screen the following standard error messages:

* *“The address or zip code you entered is not found”* – for incorrectly typed or misspelled address input
* *“Did you mean…?”* – for suggesting address or information closely related to the user’s search input
* *“The information you entered is not found”* – for information that is not in the knowledge base capability of the Chatbot or is completely irrelevant to the website

|  |  |
| --- | --- |
| **NOTE** | The Chatbot will have the capability of recognizing and providing suggestions for a closely-matched address or keyword entered by the user when a user misspells a word or the user’s input is closely related to information within the Chatbot knowledge base. |

To use the Chatbot, the following Chatbot components and functionalities require the user interface described in Table 2.

|  |  |
| --- | --- |
| **Table 2. Chatbot Components Interface Descriptions** | |
| **Component/Functionality** | **Required Interface** |
| Chatbot Access | Computer or Mobile Device with Internet Connection and Audio Input/output Connection |
| Address and Zoning | City of Pasadena Municode Library Database |
| User Questions | Test Cases Database |
| Help | Live Agent Routing |
| Speak to Admin | Live Agent Routing |

## 4.2 Hardware Interfaces

The Chatbot hardware interfaces include a computer or mobile device with keyboard functionality. This includes a PC, desktop, tablet, or smartphone of any size and any brand. The minimum resolution required is 1024 X 768.

## 4.3 Software Interfaces

The Chatbot software interfaces include the tools, databases, document files, and operating systems that provide the data and capabilities for the Chatbot functionalities. The Chatbot application programming interface (API) architecture and test cases will be generated using the Watson and DialogFlow chart design. The Chatbot will operate on any Windows, MAC, Android, or iOS system. For knowledge base data, the Chatbot will interface with other applications on the City of Pasadena website and will utilize the Municode Library database stored on the Oracle server.

## 4.4 Communications Interfaces

The Chatbot will utilize web browser, network server communications, and HTTP.

# 5 Other Nonfunctional Requirements

## 5.1 Performance Requirements

NF-1.1: The system shall accommodate many users at a time.

NF-1.2: The system shall generate the output from the predefined FAQ package.

NF-1.3: The Chatbot application shall respond to user input immediately when the user clicks enter on the text message or releases the mic.

## 5.2 Safety Requirements

No safety requirements have been identified.

## 5.3 Security Requirements

NF-1.1: The system shall permit only the designated staff members to create, modify, or delete the FAQs log input and output that will be delivered by the Chatbot.

## 5.4 Software Quality Attributes

NF-1.1: The system shall record all the input logs that can be used for system improvement and scaling.

Availability: The Chatbot system shall be available to users reaching out to the City of Pasadena website 99.9% of the time based on the availability of the website.

Robustness: The system shall use state of the art machine learning engine that copes with inputs and responses error and that the system should be tested and trained on possible errors.

# 6 Other Requirements

## 6.1 Appendix A: Use Cases

|  |  |
| --- | --- |
| ID | CHB-UC1 |
| Description | Definitions to define land use category, entitlement process where applicable (MCUP, CUP, Variance, Minor Variance, EUP), and application |
| Primary Actor | Chatbot user |
| Trigger | The user searches for one of these terms:   * CUP/MCUP, conditional use permit, minor conditional use permit * Variance, Minor Variance * EUP, expressive use permit |
| Pre-conditions | The user must be connected to the chatbot |
| Post-conditions | If success, each of the searched term should link the user to these links:   * CUP/MCUP, conditional use permit, minor conditional use permit <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART6LAUSDEPEPR_CH17.61PEAPDI_17.61.050COUSPEMAPL>   <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART6LAUSDEPEPR_CH17.61PEAPDI_17.61.050COUSPEMAPL>  <https://ww5.cityofpasadena.net/planning/wp-content/uploads/sites/56/2017/09/Conditional-Use-Permit-Application.pdf>   * Variance, Minor Variance <https://ww5.cityofpasadena.net/planning/wp-content/uploads/sites/56/2017/09/Variance-Minor-Variance-Permit-Application.pdf> * EUP, expressive use permit <https://ww5.cityofpasadena.net/planning/wp-content/uploads/sites/56/2017/09/Expressive-Use-Permit.pdf> <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART6LAUSDEPEPR_CH17.61PEAPDI_17.61.060EXUSPE>   If failure:   * The chatbot displays a message to the chat user to contact the City of Pasadena. |

|  |  |
| --- | --- |
| ID | CHB-UC2 |
| Description | Definitions to Home Occupation Permit |
| Primary Actor | Chatbot user |
| Trigger | The user searches for this term:   * Home Occupation Permit |
| Pre-conditions | The user must be connected to the chatbot. |
| Post-conditions | If success, each of the searched term should link the user to these links:   * Home Occupation Permit <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART5STSPLAUS_CH17.50STSPLAUS_17.50.110HOOC>   If failure:   * The chatbot displays a message to the chat user to contact the City of Pasadena. |

|  |  |
| --- | --- |
| ID | CHB-UC3 |
| Description | Regulations |
| Primary Actor | Chatbot user |
| Trigger | The user searches for one of these terms:   * Regulation * Riding regulations * Sanitation regulations * General regulations * License regulation |
| Pre-conditions | The user must be connected to the chatbot |
| Post-conditions | If success, each of the searched term should link the user to these links:   * Regulation <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT12STSI_CH12.14VAPA_12.14.100RE> * Riding regulations <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT10VETR_CH10.60BI_10.60.140RIRE> * Sanitation regulations <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.08COES_8.08.020SARE> * General regulations <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT3CIEVFA_CH3.32ARSEPULA_ARTIGEPR_3.32.060GERE> * License regulation <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT5BULIRE_ARTIGE_CH5.10LIRE>   If failure:   * The chatbot displays a message to the chat user to contact the City of Pasadena. |

|  |  |
| --- | --- |
| ID | CHB-UC4 |
| Description | Accessory Dwelling Unit |
| Primary Actor | Chatbot user |
| Trigger | The user searches for one of these terms:   * Accessory Dwelling Unit |
| Pre-conditions | The user must be connected to the chatbot |
| Post-conditions | If success, each of the searched term should link the user to these links:   * Accessory Dwelling Unit <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART5STSPLAUS_CH17.50STSPLAUS_17.50.275ACDWUN> * <https://www.cityofpasadena.net/planning/accessory-dwelling-unit-regulations/>   If failure:   * The chatbot displays a message to the chat user to contact the City of Pasadena. |

|  |  |
| --- | --- |
| ID | CHB-UC5 |
| Description | Development standards |
| Primary Actor | Chatbot user |
| Trigger | The user searches for one of these terms:   * Development standards * Waiver of Development Standards * LASP General Development Standards * EPSP development standards, EPSP Additional Development Standards * FGSP Development Standards |
| Pre-conditions | The user must be connected to the chatbot |
| Post-conditions | If success, each of the searched term should link the user to these links:   * development standards <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART2ZODIALLAUSZOECST_CH17.29HIOVDI_17.29.050DEST> * Waiver of Development Standards <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART4SIPLGEDEST_CH17.43DEBOWAIN_17.43.060WADEST> * LASP General Development Standards <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART3SPPLST_CH17.37LIAVSPPL_17.37.060LAGEDEST> * EPSP development standards, EPSP Additional Development Standards <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART3SPPLST_CH17.32EAPASPPL_17.32.070EPDEST>   <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART3SPPLST_CH17.32EAPASPPL_17.32.080EPADDEST>   * FGSP Development Standards <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART3SPPLST_CH17.33FAOAANGRSPPL_17.33.050FGDEST>   If failure:   * The chatbot displays a message to the chat user to contact the City of Pasadena. |

|  |  |
| --- | --- |
| ID | CHB-UC6 |
| Description | Host Compliance application |
| Primary Actor | Chatbot user |
| Trigger | The user searches for one of these terms:   * Host Compliance application * Short-term Rental Registration * Compliance application |
| Pre-conditions | The user must be connected to the chatbot |
| Post-conditions | If success, each of the searched term should link the user to these links:   * Host Compliance application <https://safe.hostcompliance.com/pasadena-ca/permit-registration/welcome> * Short-term Rental Registration <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART5STSPLAUS_CH17.50STSPLAUS_17.50.296SHRMRE>   If failure:   * The chatbot displays a message to the chat user to contact the City of Pasadena. |

|  |  |
| --- | --- |
| ID | CHB-UC7 |
| Description | Retrieve Accessory Structure |
| Primary Actor | Chatbot user |
| Trigger | The user searches for one of these terms:   * Accessory Structure * Residential Uses |
| Pre-conditions | The user must be connected to the chatbot |
| Post-conditions | If success, each of the searched term should link the user to these links:   * Accessory Structure <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART5STSPLAUS_CH17.50STSPLAUS_17.50.250REUSCCUSST>   If failure:   * The chatbot displays a message to the chat user to contact the City of Pasadena. |

|  |  |
| --- | --- |
| ID | CHB-UC8 |
| Description | Zoning application |
| Primary Actor | Chatbot user |
| Trigger | The user searches for one of these terms:   * Zoning * Zoning application * Zoning Permit |
| Pre-conditions | The user must be connected to the chatbot |
| Post-conditions | If success, each of the searched term should link the user to these links:   * Zoning, Zoning application <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART6LAUSDEPEPR_CH17.62HIPR_17.62.070DELADI> * Zoning Permit, Zoning application <https://ww5.cityofpasadena.net/planning/wp-content/uploads/sites/56/2017/09/Zoning-Permit-Application.pdf>   If failure:   * The chatbot displays a message to the chat user to contact the City of Pasadena. |

|  |  |
| --- | --- |
| ID | CHB-UC9 |
| Description | Overlay Zoning Districts |
| Primary Actor | Chatbot user |
| Trigger | The user searches for one of these terms:   * Overlay Zoning Districts * Applicability of Overlay Zoning Districts |
| Pre-conditions | The user must be connected to the chatbot |
| Post-conditions | If success, each of the searched term should link the user to these links:   * Overlay Zoning Districts, Applicability of Overlay Zoning Districts <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART2ZODIALLAUSZOECST_CH17.28OVZODI_17.28.020APOVZODI>   If failure:   * The chatbot displays a message to the chat user to contact the City of Pasadena. |

|  |  |
| --- | --- |
| ID | CHB-UC10 |
| Description | Nonconforming Uses, Structures, and Lots |
| Primary Actor | Chatbot user |
| Trigger | The user searches for one of these terms:   * Fence, Fencing * Lots * Back yard * Side yard * Front yard |
| Pre-conditions | The user must be connected to the chatbot |
| Post-conditions | If success, each of the searched term should link the user to these links:   * Fence, Fencing <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART4SIPLGEDEST_CH17.40GEPRDEUSST_17.40.180WAFE> * Lost, backyard, front yard, or side yard <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART7ZOCOAD_CH17.71NOUSSTLO> <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART4SIPLGEDEST_CH17.40GEPRDEUSST_17.40.180WAFE>   If failure:   * The chatbot displays a message to the chat user to contact the City of Pasadena. |

|  |  |
| --- | --- |
| ID | CHB-UC11 |
| Description | Development standards |
| Primary Actor | Chatbot user |
| Trigger | The user searches for one of these terms:   * Development standards * Lot(s) Development * Flag Lot Development Standards * Waiver of Development Standards * EPSP Development Standards |
| Pre-conditions | The user must be connected to the chatbot |
| Post-conditions | If success, each of the searched term should link the user to these links:   * Development Standards <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART2ZODIALLAUSZOECST_CH17.29HIOVDI_17.29.050DEST> * Lot(s) Development <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART4SIPLGEDEST_CH17.40GEPRDEUSST_17.40.050FLLODEST> * Standards for subdivisions, new development <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT14BUCO_CH14.27FLMARE_14.27.150STSUOTPRNEDE> * Waiver of Development Standards <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART4SIPLGEDEST_CH17.43DEBOWAIN_17.43.060WADEST> * EPSP Development Standards <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART3SPPLST_CH17.32EAPASPPL_17.32.070EPDEST>   If failure:   * The chatbot displays a message to the chat user to contact the City of Pasadena. |

|  |  |
| --- | --- |
| ID | CHB-UC12 |
| Description | Tree definitions and removal |
| Primary Actor | Chatbot user |
| Trigger | The user searches for one of these terms:   * Tree(s) * Tree removal * City Tree * Tree protection |
| Pre-conditions | The user must be connected to the chatbot |
| Post-conditions | If success, each of the searched term should link the user to these links:   * Tree <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.52CITRTRPROR> * Tree Removal <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.52CITRTRPROR_8.52.085PRAC> <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.52CITRTRPROR_8.52.075PRPRTRRELATRPRPESS> <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.52CITRTRPROR_8.52.070PRPRTRRELATRPRPEPP> <https://www.cityofpasadena.net/wp-content/uploads/sites/30/Tree-Removal-Private.pdf?v=1584654649267> <https://ww5.cityofpasadena.net/planning/wp-content/uploads/sites/56/2017/09/Tree-Removal-Public.pdf> * City Tree <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.52CITRTRPROR> * Tree protection <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.52CITRTRPROR_8.52.032TRPRGU> <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.52CITRTRPROR_8.52.110PRTRDUIM>   If failure:   * The chatbot displays a message to the chat user to contact the City of Pasadena. |

|  |  |
| --- | --- |
| ID | CHB-UC13 |
| Description | Day-care definitions |
| Primary Actor | Chatbot user |
| Trigger | The user searches for one of these terms:   * Day-care * Day Care * Child Care |
| Pre-conditions | The user must be connected to the chatbot |
| Post-conditions | If success, each of the searched term should link the user to these links:   * Day-care  <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT17_ZONING_CODE_ART5STSPLAUS_CH17.50STSPLAUS_17.50.080DREFA> * Tree Removal <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.52CITRTRPROR_8.52.085PRAC> <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.52CITRTRPROR_8.52.075PRPRTRRELATRPRPESS> <https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.52CITRTRPROR_8.52.070PRPRTRRELATRPRPEPP>   If failure:   * The chatbot displays a message to the chat user to contact the City of Pasadena. |

## 

## 6.2 Appendix B: Analysis Models

*<Optionally, include any pertinent analysis models, such as data flow diagrams, class diagrams, state-transition diagrams, or entity-relationship diagrams*.>

## 6.3 Appendix C: Issues List

*< This is a dynamic list of the open requirements issues that remain to be resolved, including TBDs, pending decisions, information that is needed, conflicts awaiting resolution, and the like.>*