

MICHIGAN STATE  
UNIVERSITY

# Project Plan MyHumanaBot

## The Capstone Experience

Team Humana

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*From Students...  
...to Professionals*

# Functional Specifications

- Automated chat service
- Natural language chatbot
- Answers member's questions about
  - Claims
  - Plans
  - Finding a Doctor
  - Go365 Status
  - Humana Pharmacy Order Status
  - Humana Smartlist
- Logs conversation history
- Saves time for members and employees
- Members get answers to their questions faster
- Administrative portal
  - Authorized Humana employees can review conversation logs
  - Conversations are downloadable text files

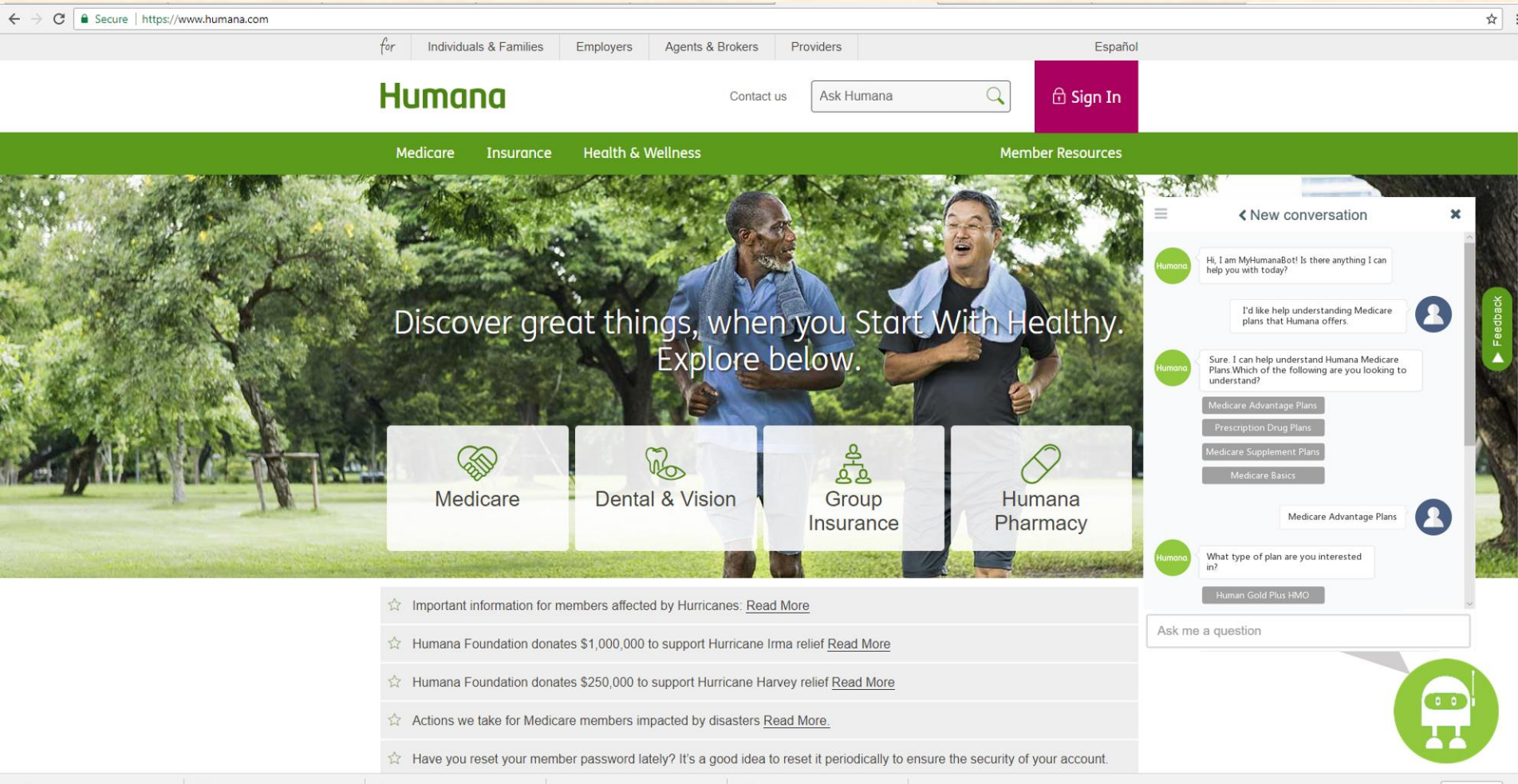


# Design Specifications

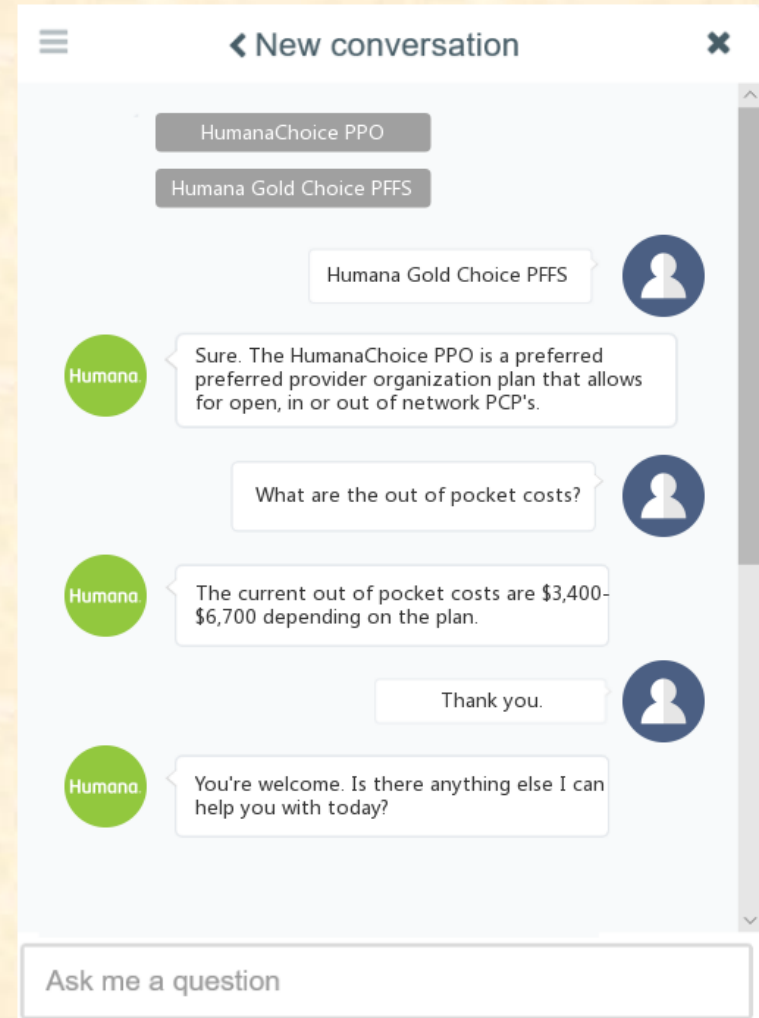
- A chatbot on top of Humana's existing site
- Looks similar to a text conversation or online chat
- Bot greets user and converses in casual, polite language
- Short text conversations
  - One input, one output
  - User asks a simple question and MyHumanaBot responds with the answer to that question
  - Example:
    - MyHumanaBot: "Is there anything I can help you with today, Sarah?"
    - Sarah: "What is Humana Smartlist?"
    - MyHumanaBot: "SmartList is a Humana program that helps members keep track of the medications they are taking."
- Long text conversations
  - Multiple inputs, multiple outputs
  - User asks a question and MyHumanaBot
  - Example:
    - MyHumanaBot: "Is there anything I can help you with today, Lee?"
    - Lee: "I want to know about Medicare plans."
    - MyHumanaBot: "Sure, I can help you understand Humana Medicare Plans. Which of the following types of plans are you looking to understand?"
    - \*MyHumanaBot displays options to select from\*: Medicare Advantage Plans, Prescription Drug Plans, ...
    - \*Lee selects Medicare Advantage Plans\*
    - MyHumanaBot continues to ask questions to isolate the exact plan to inform Lee about. Once a plan is selected, Lee can ask more specific questions about it.



# Screen Mockup: MyHumana Site



# Screen Mockup: Conversation Area





# Screen Mockup: Admin Site

## Page Header

### MyHumanaBot Chat Log

Search User ID:

Enter

[download all](#)

Date/Time	User ID	Conversation
Sep. 19, 2017 23:23	guest	<a href="#">download</a>
Sep. 19, 2017 20:27	hpotter7	<a href="#">download</a>
Sep. 19, 2017 14:33	guest	<a href="#">download</a>
Sep. 19, 2017 09:17	tford01	<a href="#">download</a>
Sep. 19, 2017 07:30	guest	<a href="#">download</a>
Sep. 18, 2017 22:00	sharonshi1	<a href="#">download</a>
Sep. 18, 2017 15:45	<u>adionise</u>	<a href="#">download</a>
Sep. 18, 2017 10:57	guest	<a href="#">download</a>
Sep. 18, 2017 01:32	thom1078	<a href="#">download</a>
Sep. 17, 2017 19:02	<u>mlevinson</u>	<a href="#">download</a>
Sep. 17, 2017 11:15	guest	<a href="#">download</a>
Sep. 17, 2017 09:37	johnsmith1	<a href="#">download</a>

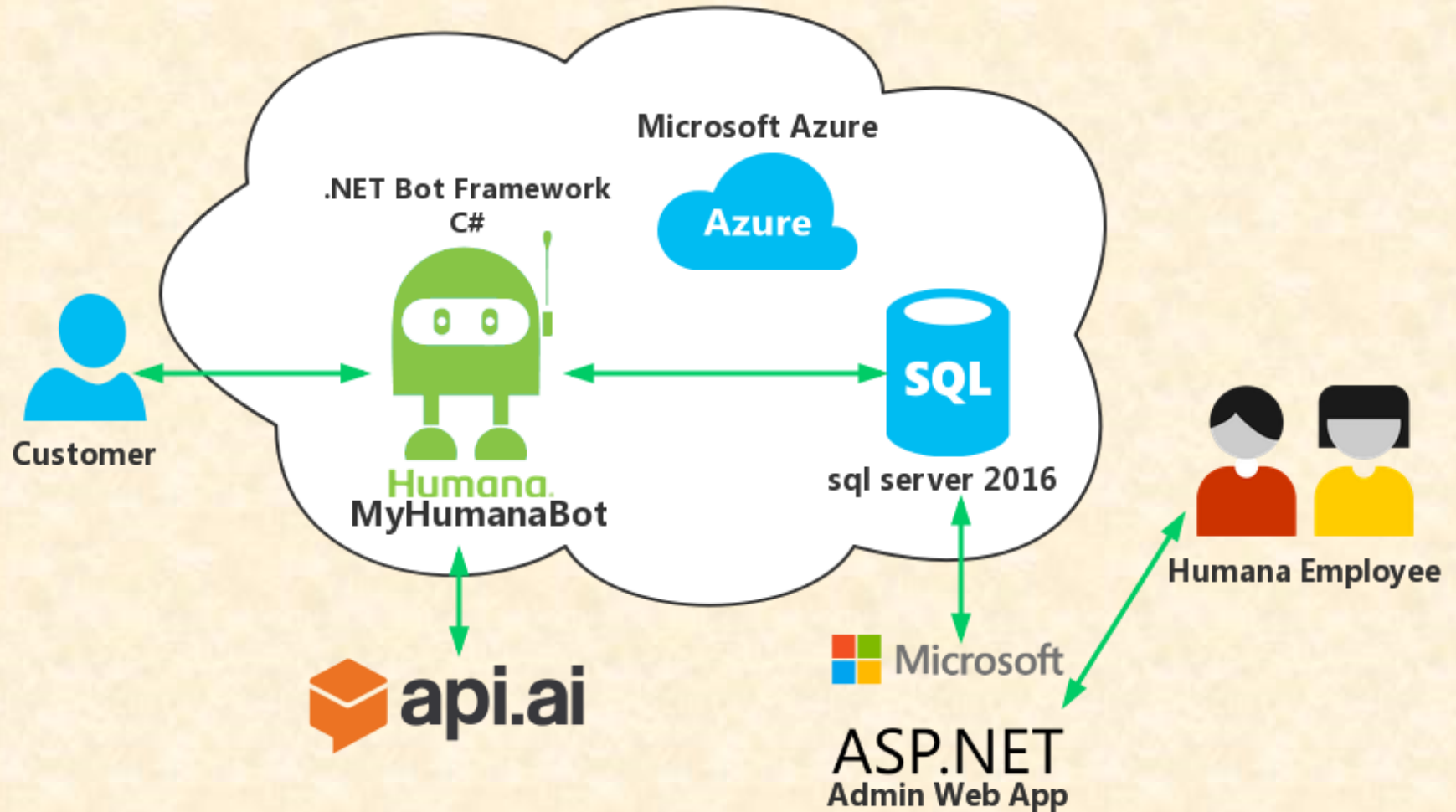


# Technical Specifications

- Microsoft Bot Framework
  - Full-featured SDK for .NET platform
  - Backend logic for mapping responses
- Natural Language Processing
  - API.ai
  - Processes user's input
  - Identifies context and intent
- Web Apps
  - ASP.NET MVC framework
  - Connected to database through Entity framework
- Database
  - Azure SQL Server
  - Stores Humana Member account information
  - Stores conversation history
- Cloud Based Tools
  - Azure Cloud Services
  - Bot and database are hosted here
- Development Tools
  - Visual Studio
  - CSE GitLab
- Test Plan
  - Microsoft Bot Emulator
  - Unit testing



# System Architecture





# System Components

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- Hardware Platforms
  - Azure Cloud Services
- Software Platforms / Technologies
  - Microsoft Bot Framework
  - Azure SQL Server
  - API.ai
  - C# / ASP.NET MVC framework version 4.6
  - Microsoft Bot Emulator
  - Visual Studio



# Testing

- Microsoft Bot Emulator
  - MyHumanaBot will be tested locally using Bot Emulator
- Unit Testing
  - Key components in the chatbot project will include unit tests
- Multiple branches in GIT, including a testing branch
- Field Testing
  - Will be stressed throughout semester
  - Humana has a wide user base
  - We will ask people of different ages and with different levels of technological experience to try MyHumanaBot



# Risks

- **Developing in Bot Framework**
  - No one on the team has experience creating chatbots or using this framework
  - Mitigation:
    - We will all complete an online tutorial on building chatbots using this framework
    - Review the documentation on the bot framework to get an idea of how it works
- **Natural Language Processing and API.ai**
  - No experience with natural language processing or API.ai
  - MyHumanaBot should incorporate a generative model (somewhere between 20%-40% generative)
  - Mitigation:
    - Team will research API.ai and look through relevant documentation
    - One member of the team is assigned to be the lead on API.ai
    - Team will prototype each functionality we need API.ai to perform
- **User Data Security**
  - Humana has stressed the importance of security for MyHumanaBot.
  - No extensive experience in internet security or securing personal health data
  - Without proper data security, MyHumanaBot will be useless
  - Mitigation:
    - We have assigned one member of the team, Jason, to be the security lead.
    - Research laws and regulations regarding the privacy of personal health data
    - Reach out to peers, experts, and contacts at Humana
- **Mocking Out Homepage and Login**
  - Making a sample host page with login functionality to put the bot on
  - Needs to be easily transferable / integrate well with Humana's actual site
  - Mitigation:
    - Discuss with client contact and use proper object oriented principles



# Questions?

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