

MICHIGAN STATE

U N I V E R S I T Y

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

The screenshot displays the MyHumana website interface. At the top, there is a navigation bar with links for "for" (Individuals & Families, Employers, Agents & Brokers, Providers) and a language selector for "Español". The Humana logo is on the left, and "Contact us" and "Ask Humana" search fields are on the right. A prominent "Sign In" button is also visible.

Below the navigation is a green horizontal menu with categories: "Medicare", "Insurance", "Health & Wellness", and "Member Resources".

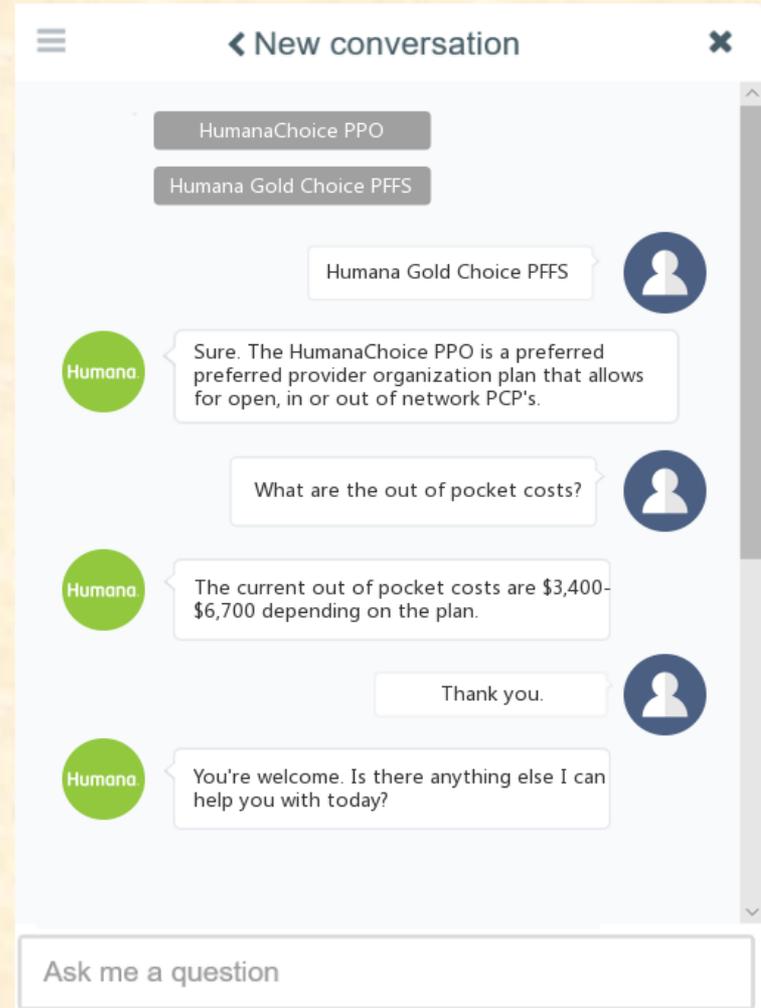
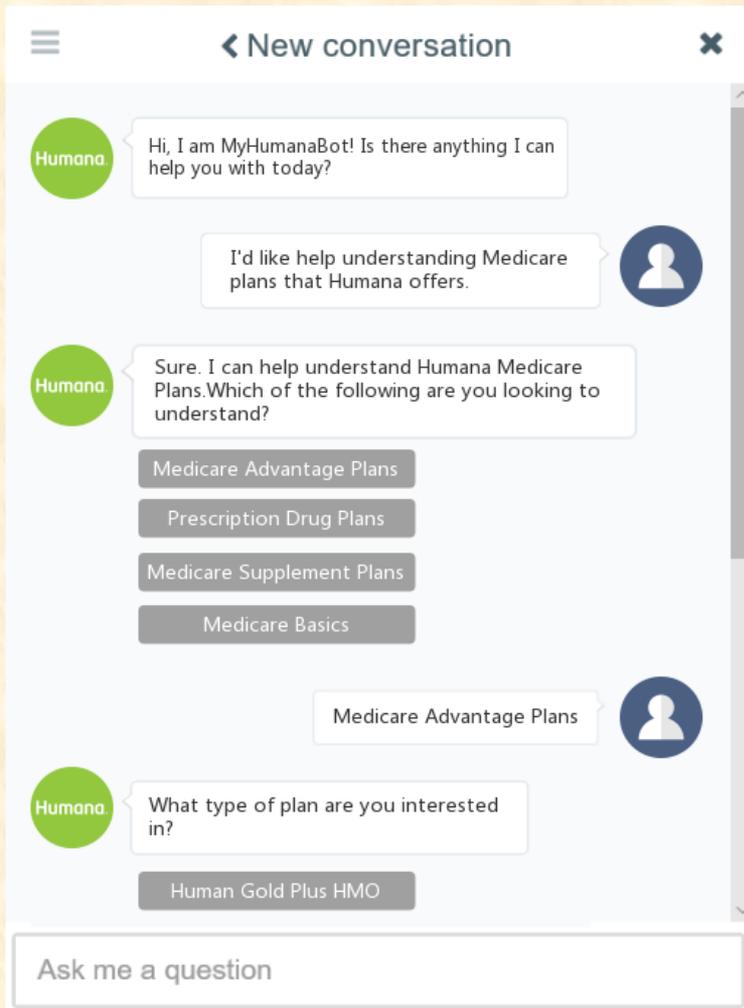
The main hero section features a background image of two men jogging in a park. The text reads: "Discover great things, when you Start With Healthy. Explore below." Below this text are four service category buttons: "Medicare" (with a heart icon), "Dental & Vision" (with a tooth icon), "Group Insurance" (with a group icon), and "Humana Pharmacy" (with a pill icon).

At the bottom of the hero section, there is a list of news items, each with a star icon and a "Read More" link:

- ☆ Important information for members affected by Hurricanes: [Read More](#)
- ☆ Humana Foundation donates \$1,000,000 to support Hurricane Irma relief [Read More](#)
- ☆ Humana Foundation donates \$250,000 to support Hurricane Harvey relief [Read More](#)
- ☆ Actions we take for Medicare members impacted by disasters [Read More](#)
- ☆ Have you reset your member password lately? It's a good idea to reset it periodically to ensure the security of your account.

On the right side of the page, there is a chatbot overlay titled "New conversation". The chatbot, named MyHumanaBot, has initiated a conversation with the user. The user has asked for help understanding Medicare plans. The chatbot has responded with a list of plan types: Medicare Advantage Plans, Prescription Drug Plans, Medicare Supplement Plans, and Medicare Basics. The user has selected "Medicare Advantage Plans". The chatbot has then asked, "What type of plan are you interested in?" and has provided the option "Human Gold Plus HMO". A "Feedback" button is visible on the right side of the chat window.

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	download
Sep. 19, 2017 20:27	hpotter7	download
Sep. 19, 2017 14:33	guest	download
Sep. 19, 2017 09:17	tford01	download
Sep. 19, 2017 07:30	guest	download
Sep. 18, 2017 22:00	sharonshi1	download
Sep. 18, 2017 15:45	adionise	download
Sep. 18, 2017 10:57	guest	download
Sep. 18, 2017 01:32	thom1078	download
Sep. 17, 2017 19:02	mlevinson	download
Sep. 17, 2017 11:15	guest	download
Sep. 17, 2017 09:37	johnsmith1	download

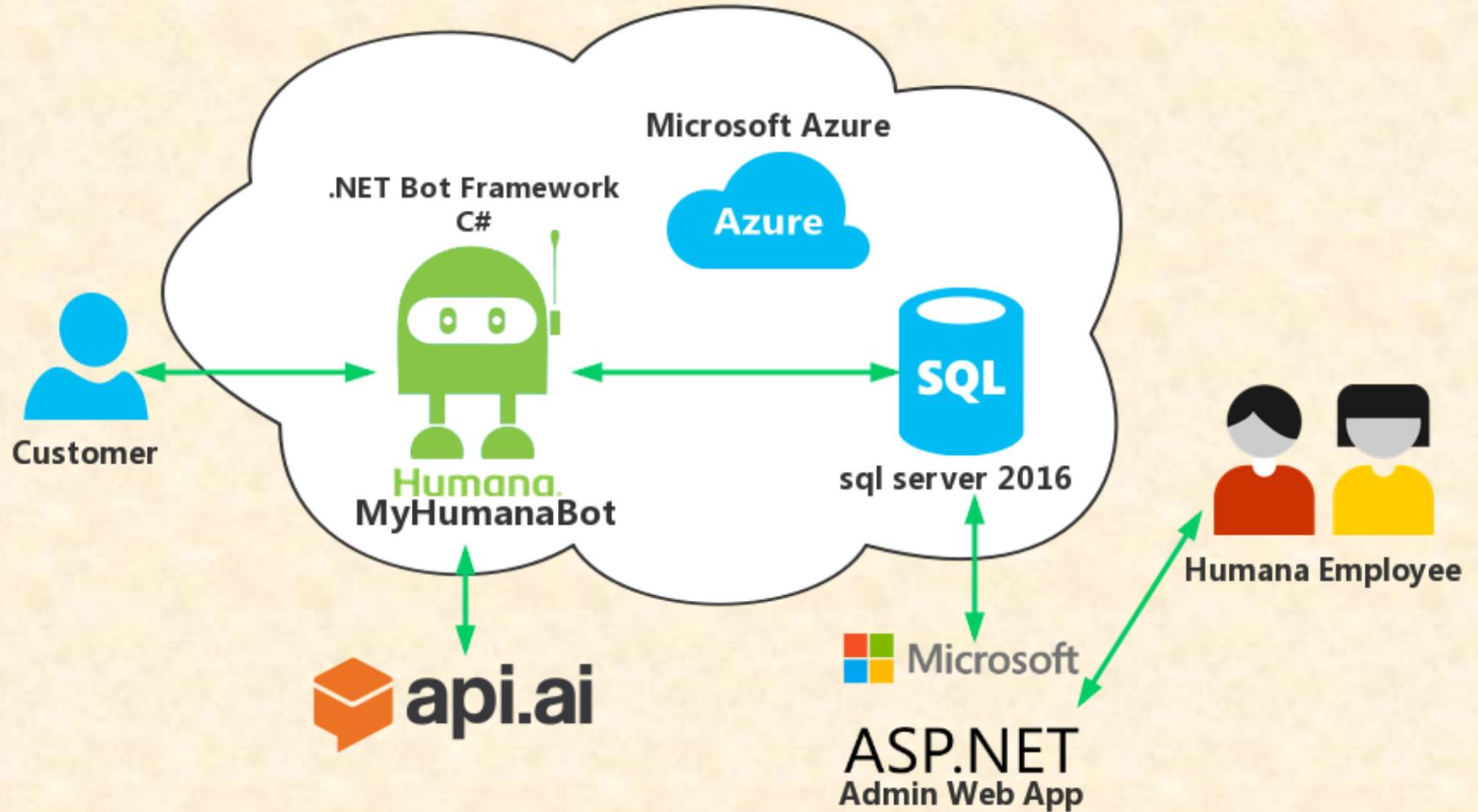


Technical Specifications

- 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

- 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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