



Prepared by: Jasmine Chen Casey Tewey Adriana Castillo

TABLE OF Contents

Excecutive Summary Brainstorming **Concept Selection Concept Articulation Target Audience Design Considerations Potential Hazards Key Design Features Success Criteria Stakeholders K-Scripts Usability Testings User Testimonials Group Reflection** Appendix

Page 02

EXECUTIVE Summary

Eventful is an engineering project aimed at developing a conversational AI system capable of generating and managing events. The system is designed to simplify the free-time planning process for college individuals.

The project began with brainstorming and concept generation, where the desired outcomes of the system were identified and different ideas were generated. The ideas were then downselected based on their feasibility and potential impact.

A target audience user persona was created, which identified the needs and assumptions of the users as well as the uncertainties associated with the project. This helped to guide development and to ensure that the system met the needs of its intended audience.

The success criteria for the project were established and the specifications for the system were articulated, which included the design of the conversational AI system and how it leverages GPT prompt engineering. The stakeholders were identified, and K-scripts were written to build the system.

Usability testing was conducted to evaluate the system's performance. Usability testing 1 was conducted to assess the usability of the system's basic functionality. The results of this testing were used to improve the system's design and functionality. Usability testing 2 was then conducted to evaluate the system's performance after the changes were made.

BRAINSTORMING

We wanted to build an Alexa assistant that would be able to have an impact on something that personally affected us and that utilized Alexa's unique voice assistant features.

Our criteria:

PERSONAL	UNIVERSAL	LEVERAGES
Impact	Impact	Alexa
We feel impacted by this problem	We can share it with others	Takes advantage of the Alexa platform

With this criteria in mind, our team moved onto a brainstorming session.

Brainstorming		
Phase I We initially came up with ideas independently for around 5 minutes.		
Phase 2 We regrouped and shared our ideas with one another.		
Phase 3 We selected our favorite idea after noticing that it was a problem space that we were all interested in and had generated independently.		

CONCEPT Selection

We settled on our direction after comparing our generated ideas and identifying a shared common goal of simplifying our schedules and managing time.

Each of us was interested in having an Alexa skill that could help us organize our to-do list and also give recommendations for places to eat, and shop, and spend our free time. This signified that this was a relevant problem space and that we lacked a satisfying solution.

Importantly, because of our roles as fulltime college students, we felt that we had the richest understanding of the college student population. We have confidence that our solution is uniquely informed by our personal experiences with this issue. We strive to maximize college students' limited free time enabling college students in Boston to plan their free time conveniently.



CONCEPT Articulation

The Plan

We decided to build an Alexa voice assistant that recommends ideas for how a user should spend their free time based on a number of factors including weather, date/schedule, and category of the desired event, all while utilizing third-party services like weather APIs. Our system will receive user input, identify keywords and produce AI-generated suggestions for the user's free time.



TARGET AUDIENCE

our ideal user





Background Information

Challenges:

- too many tasks to do and overworked and stressed
- often too tired to think of things to do with friends, planning wastes time

Needs

- Cut down on wasted time planning activities that could be spent sleeping, psetting, or eating
- breaks in between assignment deadlnes

Values

- quality time with people
- the ability to contrast free time and work time
- prioritizing her wellbeing and sleep quality

DESIGN Considerations

Stages Structure

Breaks down the plan into multiple questions to avoid user overwhelm (budget, number of people, among others.)

Closed-ended questions

Users provide more accurate data and can be answered in less time

Missing event details

The user is able to skip this step of the activity planning process.

User not satisfied with suggestions

Assistant asks if they would like to hear more suggestions

Weather Consideration

System takes into account the expected weather when looking into activities to suggest. Provide accurate and recent updates

Page 08

POTENTIAL Hazards

Before fully implementing our system there are several hazards that need to be addressed and resolved to provide a pleasant user experience.

Since our product heavily relies on third-party APIs to provide realtime data regarding weather, date, and time, it is important that we have backup sources in case a system disruption arises. This is our system's main feature and therefore needs to be available to provide a personalized experience for our users.

Moreover, when talking about providing a personalized experience, it is important to take into consideration the possibility of users not being satisfied with our activity suggestions or being recommended an activity that is not compatible with any preexisting physical impairments. For this reason, we have created follow-up questions to ensure that our users have the opportunity to refine their preferences and receive tailored recommendations that better suit their needs.



KEY DESIGN Features

INPUT: We request input from the user on the following features. We also leverage external APIs to gather information that is necessary to create a solution.





KEY DESIGN Features

OUTPUT: We utilize ChatGPT-4 to take in a prompt that combines the input variables and then generate two specific ideas for the user. The system then asks the user if they would like more suggestions and regenerates if the user responds yes.



TAILORED SOLUTION

Created to fit the customer by collecting their input on relevant aspects.

IDEA 1

IDEA 2

Asks user if they have questions or want more ideas.



KEY DESIGN Features

INTRODUCTION: For new users, we give an outline of the entire process before beginning. For returning users, we skip the lengthier introduction Because our objective is to plan time efficiently, we wanted to keep our design consistent with this objective.

START ARE YOU A NEW USER?		
YES	NO	
Welcome! I'm here to help you plan an activity. I'll do that by first gathering some information to create the perfect experience for you. I'll consider details such as the type of activity you're interested in, your approximate budget, the time available, and the number of people involved. Don't worry, this will only take a few moments. Oh! And if you don't have an answer to a question, you can just say "skip" and we will go to the next question.		

OK, LET'S BEGIN. WHAT DO YOU WANT TO DO TODAY?

Page 10

SUCCESS CRITERIA

In order to reach our goal of developing an AI-powered voice assistant with valuable event suggestions for users, we had to establish some standards for measuring our success. Here are three of our key objectives:



Users Value our Advice

We are seeking an 80% or greater rate of approval from users on our sets of suggestions. This means that 80% or more of the time, users report our suggestions as meaningful.



Saving our User's Time

After using our product, we are hoping for 90% or more of our users reporting a reduction in the amount of time it takes them to plan their free time.



Our Platform is Rated Well

We are hoping to maintain an average rating from user surveys of 4.3 stars or higher as we expand to larger user bases.





The parties that are mostly affected and are relevant for our system's success



College Students

We seek to help students better manage their time and be more efficient. Their needs center on finding valuable event plans that accurately satisfy their preferences. Our system focuses on making this experience as intuitive and useful for them.



TripAdvisor, Yelp

The Alexa skill is a competitor to platforms such as these.



Local Businesses

They supply us with relevant information about their services. The more detailed they make their information the more clientreach they will have based on the events we recommend them for.



ChatGPT-4, Amazon

Amazon provides the Alexa platform, which we use to create our solution. ChatGPT also provides the AI technology to create suggestions.



Us

AUPOURG

Because this is hosted by ourselves on our Alexa, our team is the approver and blocker to getting it developed.





Who	Observable Action	Unobservable Action/ Notes
Alexa	"Hey there! Welcome to your go-to activity planner. Are you a new user?"	The assistant categorizes between previous users and new users in order to decide whether to give instructions about how the system works.
User	" <yes>"</yes>	
Alexa	"Welcome! I'm here to help you plan an activity. I'll do that by first gathering some information to create the perfect experience for you. I'll consider details such as the type of activity you're interested in like "going to a museum, exercising, or having an outdoors dinner", I'll also need your approximate budget, the time available, and the number of people involved. Don't worry, this will only take a few moments. Oh! And if you don't have an answer to a question, you can just say "skip" and we will go to the next question."	
Alexa	"OK, let's begin. What do you want to do today?"	This is the following question that would be asked if it was not a new user. The assistant begins to store the information inputted into variables. This is later used to narrow down the activity search.
User	" <i eat="" outside="" to="" want="">"</i>	

Alexa	"Ok How many people are you with?"	The assistant adds some pauses when asking questions to not overwhelm the user with information.
User	"<4>"	
Alexa	"Ok and what is your budget or spending limit for the activity?"	
User	"<70 dollars>"	
Alexa	"And how long would you like to spend?"	
User	"<2 hours>"	
User Alexa	"<2 hours>" "Ok I'm putting together some ideas for you now."	In the background of this step, the system utilizes an API to gather the current temperature, precipitation, date, and time at which the user is using the assistant.

Alexa	"Would you like more suggestions?"	
User	"No"	
Alexa	"Have fun!"	

USABILITY TESTING

Overview

Testing was essential for us to improve our product and learn from natural and raw interactions. We tested a wide range of college students from MIT and Wellesley aged 18 to 23. We gathered a diverse group of participants with different backgrounds ranging from people who own Amazon Alexa assistants to people who have had limited interactions with assistants like Siri. We evaluated their habits and routines, for instance the amount of time they spend off campus. We also gathered relevant information on how they currently plan out their day and how they research and plan for possible activities.



The Test

Our first round of testing was conducted with four participants. We administered a pre-questionnaire to the individuals and then briefed them before starting the Alexa skill. The briefing was limited as our goal was to measure the value of the skill. A typical user would not receive a briefing from the creators.

The users ran through the Alexa skill with no assistance, and upon finishing were asked a set of reflection questions.



Meet the Testers



Moe

Wellesley, Moderate Experience with Voice Assistants No previous formal method of planning day

- <u>Celeste</u>
 Wellesley, Significant Experience with Voice Assistants
 Very regimented event planning using calendars
- <u>Kennan</u> MIT, Moderate Experience with Voice Assistants No previous method of planning day; goes with the flow
- <u>Emmi</u>

MIT, Minimal Experience with Voice Assistants Does not have a method for planning day



Your Business M 123 Anywhere St 123-456-7890 www.reallygrea hello@reallygre

Main Findings

Lack of Context

Our testers found our first edition of our voice assistant to be very robotic, as we did not have a user-friendly flow. The assistant was not particularly clear to individuals when it came to the prompt and natural flow of conversation.

Suggestions Cut Off

Our users noted that sometimes the suggestion set would cut off prematurely. For example, it would give two options and then end halfway through the third, prematurely ending our assistant's advice.

Valuable Advice

Promisingly, our users reported that the suggestions made by our event planning assistant were valuable and reasonable. Users appreciated the accuracy of our suggestions in accordance with current conditions like weather and time of season. Users also appreciated the specific points of interest that were suggested like restaurants and businesses.





Reprogrammed our Voice Flow's Style

In round one of testing, individuals found our assistant to feel extremely robotic. We decided to challenge this by reworking the way we framed our prompt and questions including more conversational style of interactions. Adding transitional phrases was very valuable for our conversational improvements.

Adjusted GPT Prompt

In order to combat the issue of our prompted advice getting cut off early, we readjusted our GPT inputs to seek more concise answers. We also reworded some of our parameters which now lead to getting two valuable and targeted answers without being cut off.

New Voice Tree

In order to make the process more streamlined for users, we created two distinct branches of voice interactions for new users and returning users. The new user branch features more of an explanation and walk-through, whereas returners will be guided right to the essential questions.

The Second Test

Our second round of testing was conducted with four participants. This time time we only administered a prequestionnaire to the new testers. We briefed all of the testers again, still keeping it limited.

Once again, the users ran through the Alexa skill with no assistance, and upon finishing were asked a set of reflection questions.



Meet the Testers

 <u>Chase - New User</u> MIT, Significant Experience with Voice Assistants Has not employed any formal day planning techniques
 <u>Celeste - Returner</u> Wellesley, Significant Experience with Voice Assistants Very regimented event planning using calendars
 <u>Kennan - Returner</u> MIT, Moderate Experience with Voice Assistants No previous method of planning day; goes with the flow
 <u>Emmi - Returner</u>

MIT, Minimal Experience with Voice Assistants Does not have a method for planning day



23 Anywhere Si 23-456-7890 www.reallygrea nello@reallygrec @reallygreatsite

Main Findings

Human Design

Our design changes made a significant improvement in the user friendliness of our system in the eyes of the testers. A returning tester Kennan said, "It now seems more like you are talking to a human than a robot."

Suggestions No Longer Cut Off



Our testers made note of the fact that the event suggestions were both more concise and never awkwardly cut off. The prompt results were now less than 50 words each, ensuring the user would not have to sit through an awkwardly long or cut-off experience.

Customized for New Users vs. Returners

Our new user was fond of the introduction we gave the assistant, the user said they felt as though the assistant had effectively introduced them to the system (in stark contrast to the last round of testing). Our returning users were appreciative of the alternative voice flow that cuts right to the chase and saves them time.

USER TESTIMONIALS

What was your first impression?

Very cool.

I'm impressed. Convenient, easy to understand, easy to use.

Definitely more specific/nicer than past voice assistants.

What did you like?

66

I liked that it gave detailed responses!

It seems more like you are talking to a human than a robot.

Liked how it listed specific restaurants and places to go while factoring in weather conditions.

Page 26

GROUP Reflection

As a team, we are proud of the work we did on the Eventful engineering project. We believe that the project was successful due to our strong documentation, effective teamwork, and use of TimberAI to guide us through the innovation process.

Our documentation was well-developed, which helped to improve our ideas and designs as we grew step-by-step over the process. We were able to methodically use our documentation to effectively communicate our progress to stakeholders and make informed decisions about the project's direction.

Having documentation gave us a mechanical approach to find objective improvements to be made for our product.

We also had good teamwork and a clear distribution of tasks, which helped us to stay on track and meet our deadlines. Everyone on the team had a clear understanding of their roles and responsibilities, which allowed us to work efficiently and effectively.

However, one area where we could improve in the future is our time management. We often found ourselves working under tight deadlines and scrambling to get everything done on time. In the future, we could benefit from using some sort of organization tactics, such as time blocking or project management tools, to help us stay on track and manage our time more effectively.

Overall, we take pride in our collective efforts and believe that Eventful was a great learning experience for everyone involved. We look forward to applying the lessons we learned on future projects and continuing to develop our skills.



D 1 Voiceflow API Calls

- **D 2** Usability Test Pre-Test Questionnaire
- **03** Usability Test Post-Test Questionnaire
- Usability Test 1 Figures
- **05** Usability Test 2 Figures
- ChatGPT Response Validation Executive Summary
- **ChatGPT Response Validation Group Reflection**





Voiceflow API Calls



DATE/TIME Javascript Library

daysOfWeek = ["Sunday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday"]; datestr = new Date().toLocaleString('en-US', { timeZone: 'America/New_York' }); today = new Date(datestr); day_of_week = daysOfWeek[today.getDay()]; date = today.getFullYear()+'-'+(today.getMonth()+1)+'-'+today.getDate(); time = today.toLocaleTimeString()

Usability Test Pre-Test Questionnaire

Our users typed their responses before starting the Voiceflow test.



DEMOGRAPHICS

- 1. Tell me about your current role (i.e. student, athlete, intern, TA, club/org member, etc.)
- 2. How much time do you spend on:
 - a.your dorm/where you live?
 - b.campus?
 - c.off-campus?

CURRENT WAY TO GET THE JOB DONE

- 1. How do you usually plan out your day?
- 2. What do you take into account when planning out your day?
- 3. How do you decide what to do in your free time?
- 4. How do you decide where to go with friends or other people?
- 5. How much time does it take you to come up with a plan for the day?

EXPERIENCE WITH PRODUCT SPACE

1. How familiar are you with voice assistants?

Usability Test Post-Test Questionnaire

Our users typed their responses after completing the user test.



(LIKABILITY, USABILITY, COMPREHENSION)

- 1. What is your first impression of the task you just completed?
- 2. What, if anything, did you like about the experience?
- 3. What, if anything, did you not like about the experience?
- 4. What, if anything, was unclear or confusing?
- 5. Do you believe this tool will help you be more efficient or better manage your time?
- 6. Would you use this tool in the future?
- 7. How did the experience compare to past experiences?

SUGGESTIONS/IDEAS

(WHAT IMPROVEMENTS SHOULD BE MADE?)

- 1. What changes would you make to improve the experience?
- 2. Is there any other factor that should be taken into consideration when
- coming up with a plan?
- 3. Would you recommend this assistant?







Usability Test 1 Figures



Length of user interaction with assistant (minutes)



Usability Test 1 Figures

Problems (ranked)

Problem	Severity	Change
The prompt says "How many people are you with?" and "What is your budget for the activity" which is an unexpected jump from when the user states their plans for the day from the first prompt	low	medium
The assistant continues making suggestions or asking questions to come up with a new plan if the user responds something other than yes/no. For instance "no thanks" does not stop the assistant.	medium	low
Responses are fast and don't give the user enough time to think about and remember the suggestions	medium	medium
The initial prompt to get an idea of the type of activity the user is interested in is quite broad	medium	low
The assistant currently only gives suggestions for places around MIT's campus	low	low



Usability Test 2 Figures



The last user's time bar is highlighted in red because the Voiceflow kept looping so the user had to close out of the Voiceflow and forcibly end the interaction.



Usability Test 2 Figures

Change	Feedback	User comments
New and returning user split branch	+	 It was nice to have the experience be more streamlined if you were a returner
Addition of more human speech patterns (linguistic discourse markers, ellipses/and behavior)	+	Felt more humanFelt more conversational
Reduced number of options to two	+	 Liked that the reduced number of options prevented option overload/ choice paradox

Areas for Improvement

Problem/Boundary	Severity	Change	User comments
Instructions are slightly long	low	low	Include only one example of what they can ask, and avoid repetition of what is the information going to be used for.
The assistant continues making suggestions or asking questions to come up with a new plan if the user responds something other than yes/no. For instance "no thanks" does not stop the assistant.	medium	low	Expand the recognizable responses besides only "yes" and "no" or ask the user to only respond yes or no
The approximate budget question is unclear when the user is planning to go out with a group of people. Individual budgets or group budgets?	medium	low	Could ask the user if they have an individual or group budget and add that extra detail when inputting information into chat GPT.
Allow the user to plan a few days in advance	medium	high	Ask the user if they are making a plan for today or a specific day, and edit the javascript that determines the date that is input on the weather API
Allow the user to use the event planner even if they do not have something specific in mind	low	low	Ask the user "do you have something in mind that you want to do today" instead of "What would you like to do today?"

ChatGPT Response Validation for Executive Summary

ChatGPT Input to Prompt:

"Please write an executive summary for an engineering project named Eventful. The documentation will be explaining the points we will later discuss further detail: Please ensure to make the language describing things to come. For example "We will discuss the implementation and results of usability testing 1"

here are the points to hit: Table of contents + edit page numbers Brainstorming (desired outcomes + concept generation) **Downselection** Target audience user persona needs + assumptions, uncertainty identification Success criteria Specifications (concept articulation) **Stakeholders** K scripts The design behind the system ie how we leverage GPT prompt engineering Usability testing 1 What changed between the two **Usability testing 2 Group reflection** Appendix - add graphs, screenshots of voiceflow api calls and more"

ChatGPT Response Validation for Executive Summary

ChatGPT return:

"Executive Summary: Eventful Engineering Project

Eventful is an engineering project aimed at developing a conversational AI system capable of generating and managing events. The system is designed to simplify the free-time planning process for college individuals.

The project began with brainstorming and concept generation, where the desired outcomes of the system were identified, and different ideas were generated. The ideas were then downselected based on their feasibility and potential impact.

A target audience user persona was created, which identified the needs and assumptions of the users, as well as the uncertainties associated with the project. This helped to guide the development process and ensure that the system met the needs of its intended audience.

The success criteria for the project were established, and the specifications for the system were articulated, which included the design of the conversational AI system and how it leverages GPT prompt engineering. The stakeholders were identified, and K scripts were developed to guide the development process.

Usability testing was conducted to evaluate the system's performance. Usability testing 1 was conducted to assess the usability of the system's basic functionality. The results of this testing were used to improve the system's design and functionality. Usability testing 2 was then conducted to evaluate the system's performance after the changes were made.

A group reflection was conducted, which provided insights into the development process and identified areas for improvement. Appendices were added to the documentation, including graphs, screenshots of voiceflow API calls, and other relevant information.

Overall, the Eventful engineering project was successful in developing a conversational AI system that simplifies event management. The project's success was due to the effective use of user personas, success criteria, and usability testing to guide the development process."

ChatGPT Response Validation for Executive Summary

Our Revised Version:

"Executive Summary: Eventful Engineering Project

Eventful is an engineering project aimed at developing a conversational AI system capable of generating and managing events. The system is designed to simplify the free-time planning process for college individuals.

The project began with brainstorming and concept generation, where the desired outcomes of the system were identified, and different ideas were generated. The ideas were then downselected based on their feasibility and potential impact.

A target audience user persona was created, which identified the needs and assumptions of the users, as well as the uncertainties associated with the project. This helped to guide the development process and ensure that the system met the needs of its intended audience.

The success criteria for the project were established, and the specifications for the system were articulated, which included the design of the conversational AI system and how it leverages GPT prompt engineering. The stakeholders were identified, and K scripts were developed to guide the development process.

Usability testing was conducted to evaluate the system's performance. Usability testing 1 was conducted to assess the usability of the system's basic functionality. The results of this testing were used to improve the system's design and functionality. Usability testing 2 was then conducted to evaluate the system's performance after the changes were made."

ChatGPT Response Validation for Group Reflection

ChatGPT Input to Prompt:

"Please write a group reflection from the perspective of members of our project team Eventful.

The follow is an executive summary of the project:

"Executive Summary: Eventful Engineering Project

Eventful is an engineering project aimed at developing a conversational AI system capable of generating and managing events. The system is designed to simplify the event management process for both individuals and organizations.

The project began with brainstorming and concept generation, where the desired outcomes of the system were identified, and different ideas were generated. The ideas were then downselected based on their feasibility and potential impact.

A target audience user persona was created, which identified the needs and assumptions of the users, as well as the uncertainties associated with the project. This helped to guide the development process and ensure that the system met the needs of its intended audience.

The success criteria for the project were established, and the specifications for the system were articulated, which included the design of the conversational AI system and how it leverages GPT prompt engineering. The stakeholders were identified, and K scripts were developed to guide the development process.

Usability testing was conducted to evaluate the system's performance. Usability testing 1 was conducted to assess the usability of the system's basic functionality. The results of this testing were used to improve the system's design and functionality. Usability testing 2 was then conducted to evaluate the system's performance after the changes were made.

A group reflection was conducted, which provided insights into the development process and identified areas for improvement. Appendices were added to the documentation, including graphs, screenshots of voiceflow API calls, and other relevant information.

Overall, the Eventful engineering project was successful in developing a conversational AI system that simplifies event management. The project's success was due to the effective use of user personas, success criteria, and usability testing to guide the development process."

Now write a reflection from our point of view addressing the following things we believe we did well in the process:

Documentation was well developed thanks to TimberAI guiding us through the innovation process. Good teamwork and distribution of tasks.

the key thing we would want to improve in the future are our time management perhaps using some sort of organization tactics"

ChatGPT Response Validation for Group Reflection

ChatGPT return:

"As a team, we are proud of the work we did on the Eventful engineering project. We believe that the project was successful due to our strong documentation, effective teamwork, and use of TimberAI to guide us through the innovation process.

Our documentation was well-developed, which helped to keep everyone on the same page and ensure that we were all working towards the same goals. We were able to use our documentation to effectively communicate our progress to stakeholders and make informed decisions about the project's direction.

We also had good teamwork and a clear distribution of tasks, which helped us to stay on track and meet our deadlines. Everyone on the team had a clear understanding of their roles and responsibilities, which allowed us to work efficiently and effectively.

However, one area where we could improve in the future is our time management. We often found ourselves working under tight deadlines and scrambling to get everything done on time. In the future, we could benefit from using some sort of organization tactics, such as time blocking or project management tools, to help us stay on track and manage our time more effectively.

Overall, we are proud of the work we did on the Eventful engineering project and believe that it was a great learning experience for everyone involved. We look forward to applying the lessons we learned on future projects and continuing to develop our skills as a team."



ChatGPT Response Validation for Group Reflection

Our Revised Version:

"As a team, we are proud of the work we did on the Eventful engineering project. We believe that the project was successful due to our strong documentation, effective teamwork, and use of TimberAI to guide us through the innovation process.

Our documentation was well-developed, which helped to improve our ideas and designs as we grew step by step over the process. We were able to methodically use our documentation to effectively communicate our progress to stakeholders and make informed decisions about the project's direction.

Having documentation gave us a mechanical approach to find objective improvements to be made for our product.

We also had good teamwork and a clear distribution of tasks, which helped us to stay on track and meet our deadlines. Everyone on the team had a clear understanding of their roles and responsibilities, which allowed us to work efficiently and effectively.

However, one area where we could improve in the future is our time management. We often found ourselves working under tight deadlines and scrambling to get everything done on time. In the future, we could benefit from using some sort of organization tactics, such as time blocking or project management tools, to help us stay on track and manage our time more effectively.

Overall, we take pride in our collective efforts and believe that Eventful was a great learning experience for everyone involved. We look forward to applying the lessons we learned on future projects and continuing to develop our skills."