Bento

Video Link

Project Writeup

Group 5: Milestone 6

Overview

At the beginning of this project we determined that our focus would be to address the problem of the overwhelming quantity of messages and information we receive on a daily basis through a myriad of platforms and applications. More and more people are having their time and mental bandwidth taken up by organizing all these different flows of information from all these different sources. As it stands some companies and applications have sought to address this issue, but there has yet to be a solution that is widely accepted to consolidate all these different message flows through the provision of a centralized hub overarching different applications/platforms.

The primary influence of the surplus of information and messages we sort through on a daily basis is a tremendous strain on our cognitive resources and overall mental health. It is natural that when dealing with this seemingly never ending barrage of information, a person is likely to become stressed and therefore less effective in different areas of both their work and personal life. Missing a crucial message due to it being lost among all the other messages we receive on a daily basis is an experience almost everyone is familiar with. Trying to avoid this mistake again in the future makes the experience all that more stressful and detrimental.

For the purposes of this project we wanted to focus on a target user group of millennial, knowledge workers (what we typically think of as office workers who use computers and applications frequently in their job). This is a population that deals with the issue of message and information consolidation very frequently through a combination of applications used in their social/personal life (iMessage, WhatsApp, Discord, etc.) along with necessary interactions with work-related platforms (Microsoft Outlook, Microsoft

Teams, Slack, etc.) on a daily basis. While our solution can easily apply to other user groups dealing with similar issues, we felt this was an ideal target audience for our application to improve message efficiency, summarize message threads/long messages, and create distinctions between workspaces. From this goal we developed our proposed application entitled Bento, which is designed to provide a means of messaging consolidation by offering users a centralized hub for managing various messaging applications.

Critical Success Factors

There are several factors that must be considered for our product to be successful. We conducted secondary research, interviews, and deployed a survey (see Appendix) to better understand our target population and the potential features that could improve their experience with messaging platforms. Based on the following research insights, we designed several key features that would meet the needs of our users.

Digital context switching leads to inefficiencies and distraction

From our interviews and survey, we found that users are overwhelmed by the amount of notifications they receive via different platforms. This means that they must frequently switch tasks when reading these notifications, which can lead to reduced productivity due to constant interruptions and divided attention.

Bento works to solve this issue by consolidating messaging platforms into one application. Users have the ability to customize these message notifications into groupings of their choice, which can better categorize messages based on their needs rather than based on the specific platform. For example, in the default home screen view below, messages are categorized by People and Newsletters instead of by the specific messaging platform.

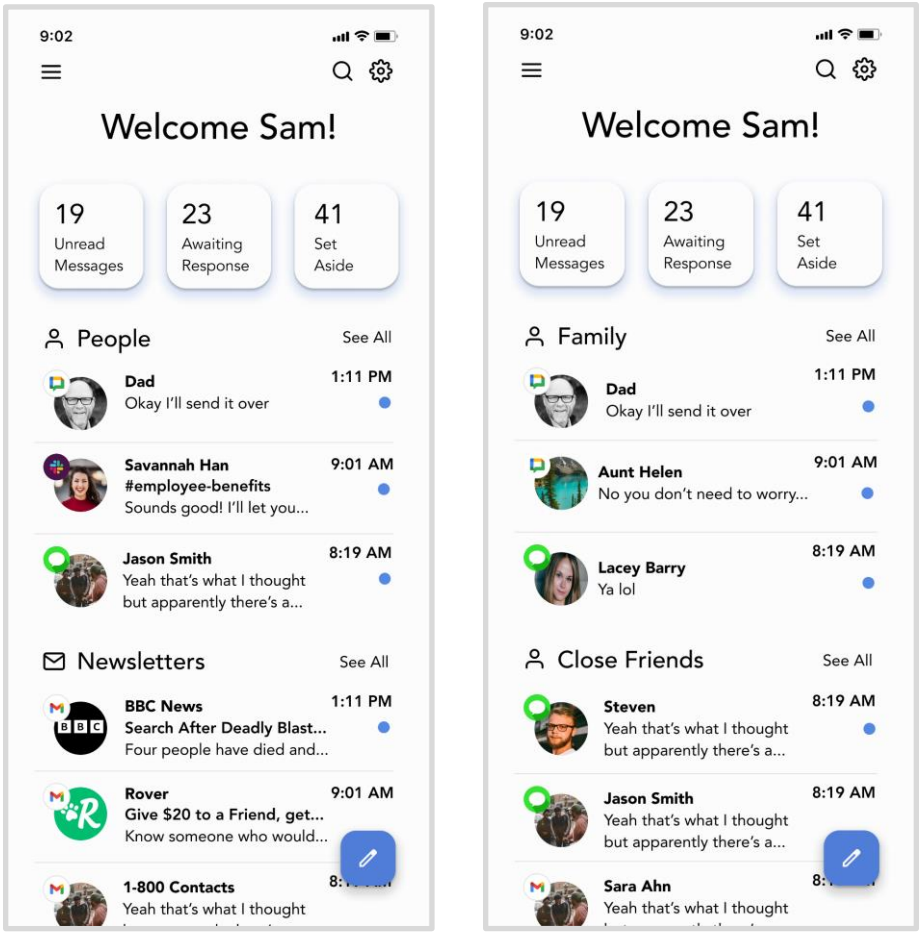

Figure 1. Default (left) and customized (right) view of the home screen.

Users often forget to respond to messages and appreciate response reminders

Interview and survey participants frequently stated that they often forget to respond to important messages due to the sheer amount of notifications they receive on a daily basis. Because important messages are buried under other notifications, users have come up with their own methods to ensure they respond. These include pinning and/or marking high priority messages as unread.

Bento works to solve this problem by providing users with automatically determined groupings for unread messages, messages that are awaiting a response, and messages that have been set aside. These awaiting response messages will use AI predictive modeling techniques to analyze messages and predict which ones require a response, while the set aside messages will be determined by the user.

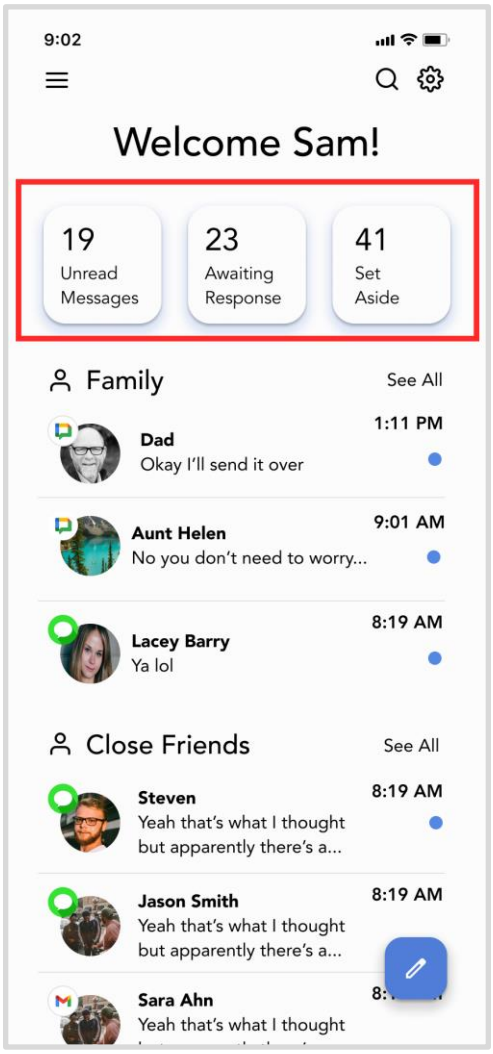

Figure 2. Unread Messages, Awaiting Response, and Set Aside Groupings on the Home Screen

Furthermore, Bento has productivity screens that remind users which platforms they still need to catch up on. These “Bento Bites” will give users data about the platforms they’re most and least productive on.

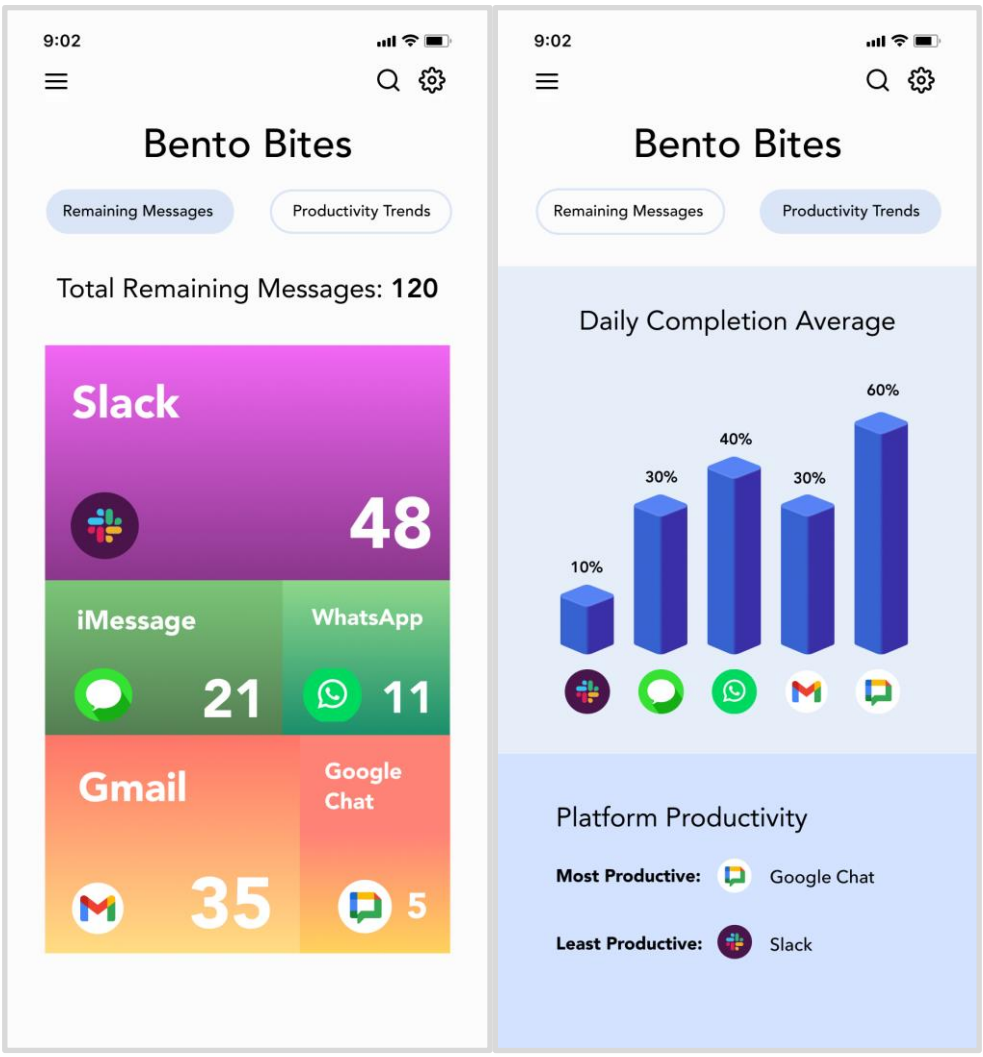

Figure 3. Productivity Screens (“Bento Bites”)

Users want an easily navigable search function

Users found that keyword searching on the messaging platforms that they currently use is helpful for quickly finding the information they need. However, applications that have a search feature with poor user experience this causes further frustration and inefficiencies.

Bento addresses this by creating a search feature that leverages keywords, global or local search, timeframe specification to help filter out unwanted or irrelevant results. This way

search results can be as specified or as broad as a user wants, giving them more control over the information yielded by their search.

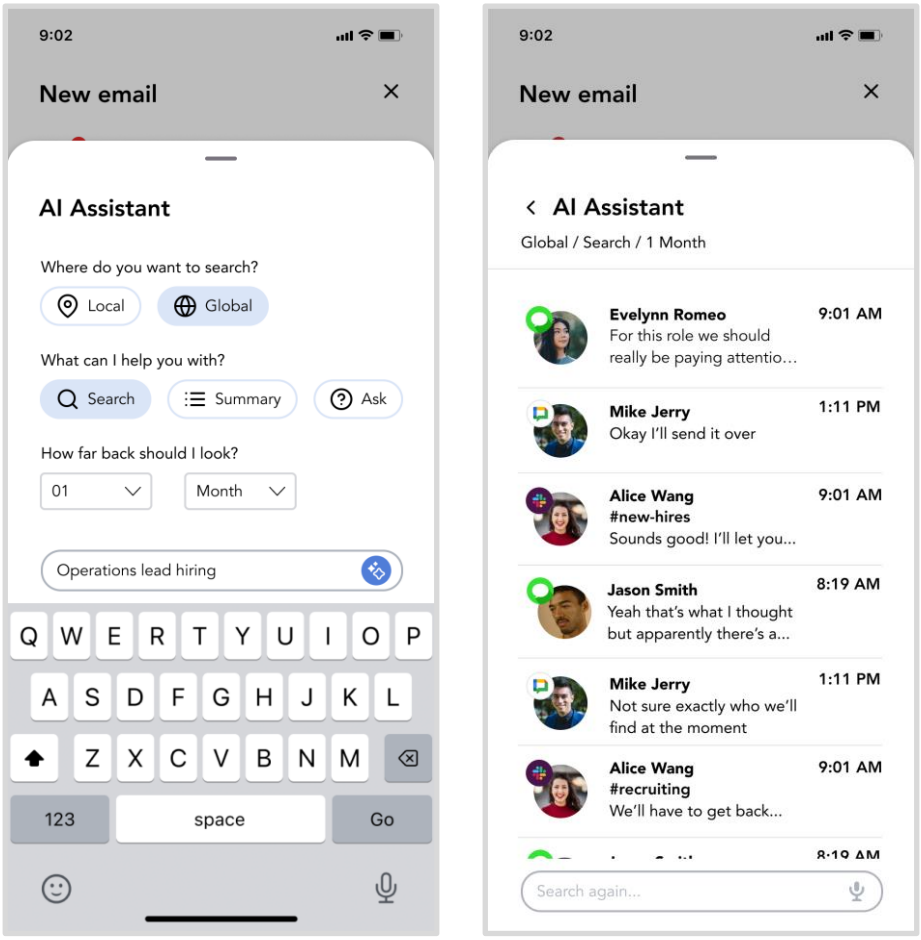

Figure 4. AI Search query bottom sheet and results

Users face challenges when navigating through lengthy message threads

Users frequently expressed frustration with the time-consuming task of catching up on lengthy messages and/or long message threads. Bento addresses this challenge by giving users the option to summarize these messages using an AI summary feature. They can again specify keywords, summarizing based on all their messages or the local thread, and setting a timeframe to ensure the highest relevance.

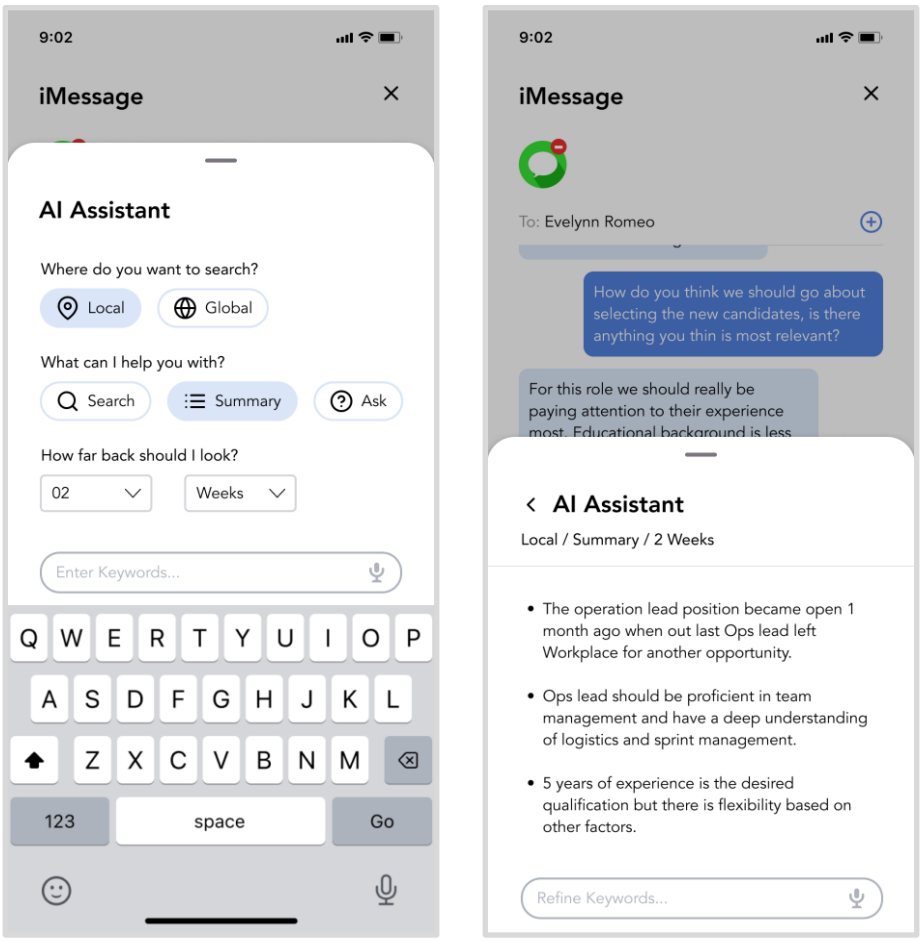

Figure 5. AI Summary keyword prompt bottom sheet and results of a local summary of the last 2 weeks

Sometimes it's easier to simply ask a question

While search and summary are both effective means of navigating the information contained in a user's messages. There are occasions when a quick question and answer is the most efficient way to access fine details quickly. Chatbot style AI interfaces have made information search and retrieval more casual and accessible, allowing for quick one off interactions and query refinement.

In addition to the search and summary features of bento there is also an ask feature which allows users to conversationally prompt an AI to answer questions based on the content of their messages. Similar to the search and summary functions this feature allows for the selection of local or global queries, and specified timeframes.

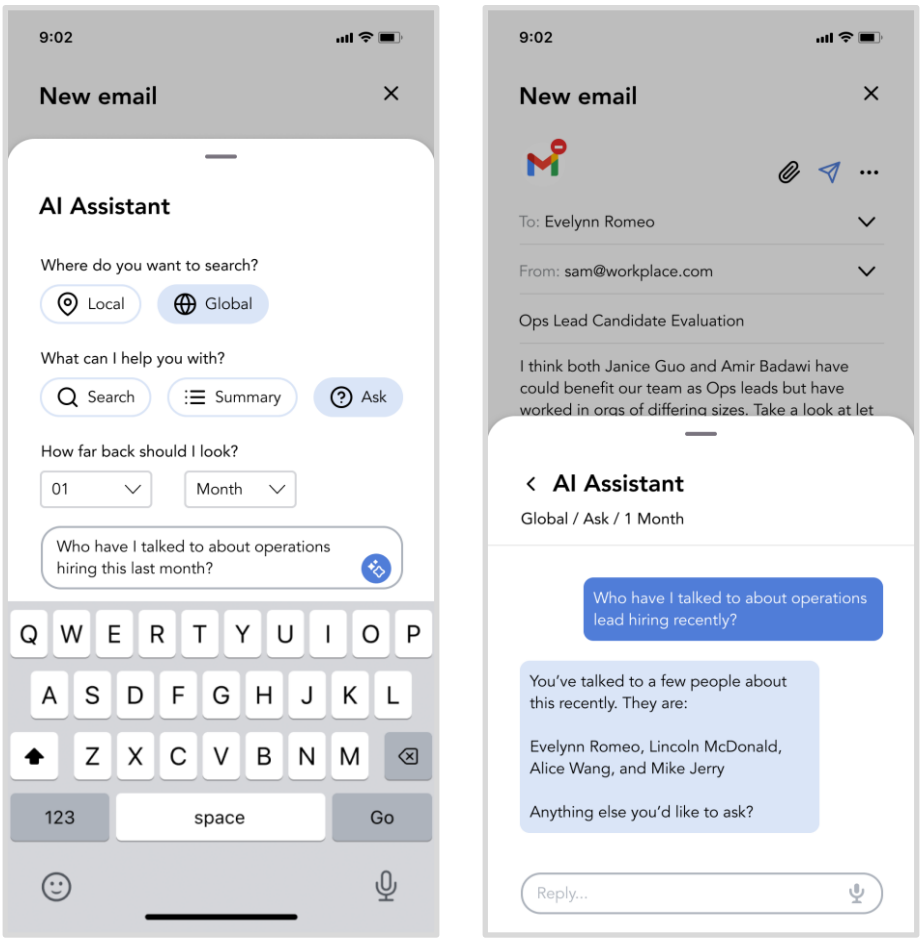

Figure 6. AI Ask Feature

Users are frustrated with the lack of separation between work and personal notifications

We found that one of our target users' biggest pain points is the lack of separation between their work and personal notifications, especially for users who don't have separate work and personal phones. Users become overwhelmed by work-related messages during non-work hours and vice versa. According to John Fieldman from Forbes, proper separation of work and personal life leads to improved health, relationships, quality of work and life, as well as overall engagement levels (Fieldman, 2022).

Within Bento, users have the option to mute workspaces for a specific time period. For example, in the right screen below, the user has muted their "close friends" and "coworkers" workspaces.

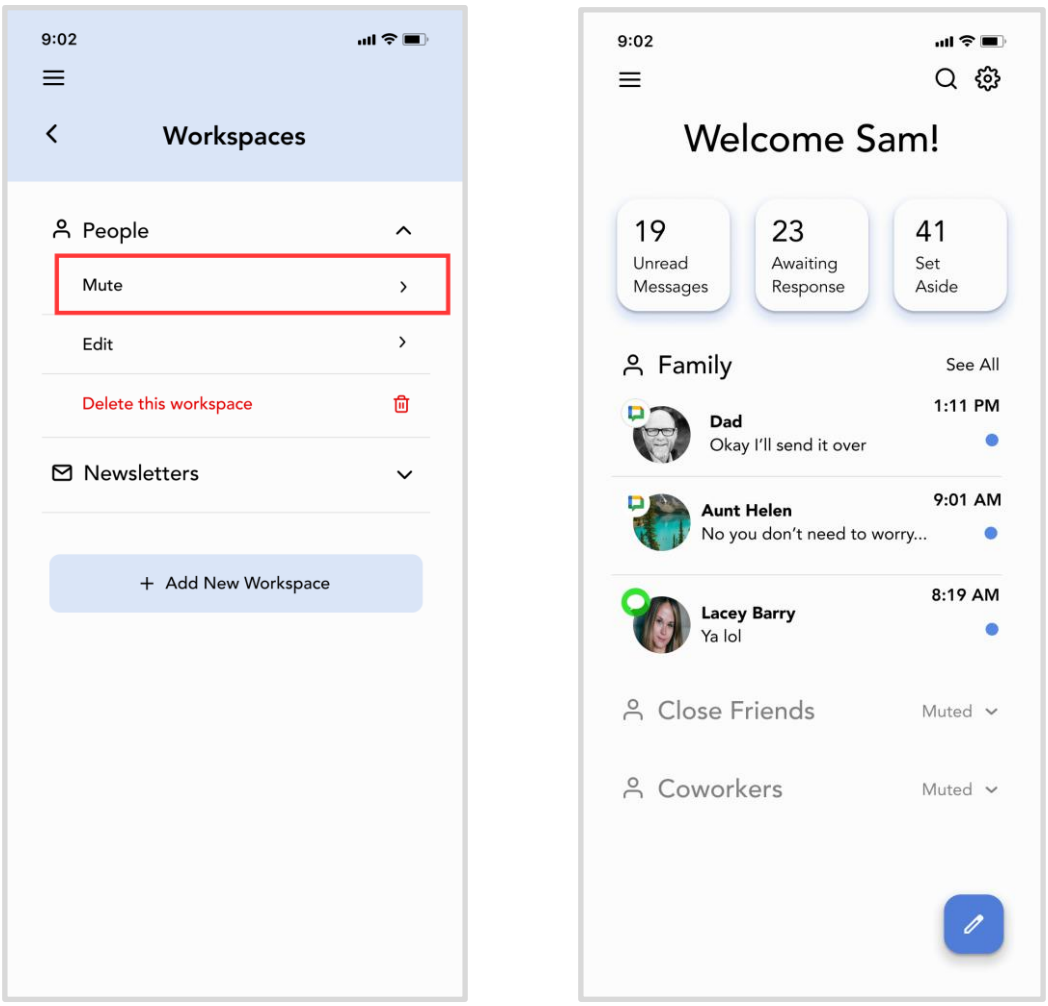

Figure 7. Mute Feature

Organization

Project Managers

Responsible for overseeing the entire development process of Bento. They ensure that the project stays on track, meets deadlines, and aligns with the project objectives. They coordinate the efforts of different teams and manage resources effectively.

Product Designers

Designers are tasked with creating the user interface (UI) and user experience (UX) of the Bento application. They work closely with stakeholders to understand user needs and preferences, conducting research and user testing to refine the design. They ensure that the interface is intuitive, visually appealing, and optimized for efficient use.

Software Engineers/Developers

These individuals are responsible for building and implementing the Bento application. They write code, develop features, and ensure that the application functions smoothly across different platforms and devices. They collaborate with designers to translate design concepts into working software.

Data Scientists/Analysts
Data scientists play a crucial role in developing the AI-driven features of the Bento application, such as predictive modeling for message response reminders. They use machine learning techniques to analyze user data, identify patterns, and make predictions. Analysts also gather insights from user feedback and usage data to inform product decisions and improvements.

Marketing Team
The marketing team is responsible for promoting the Bento application and generating user interest. They develop marketing strategies, create promotional materials, and manage advertising campaigns across various channels. They also gather feedback from early adopters and monitor user engagement to refine marketing efforts.

Customer Support
Customer support representatives play a crucial role in providing assistance to Bento users. They respond to user inquiries, troubleshoot technical issues, and provide guidance on how to use the application effectively. They serve as a direct line of communication between users and the development team, relaying feedback and feature requests for consideration.

Stakeholders/Investors
Stakeholders and investors will provide funding and strategic guidance for the development and launch of the Bento application. They have a vested interest in the success of the project and may provide input on key decisions related to product features, target audience, and market positioning. They also monitor progress and evaluate the return on investment.

Related Projects

Originally during our project's conception we had conducted a competitive analysis within both the project management and messaging space to get inspiration and see which existing solutions in the market we could improve upon. However as our research process continued and we started to get a better understanding of what would have the most

value for our target audience, we made the shift to a message consolidation application. The applications and platforms we previously studied still had tremendous value in informing our design practices and narrowing down the scope of our concept, but there is far more value in evaluating some of the most popular unified messaging applications currently in the market.

	Beeper	Shift	Franz	IM+
Summary	A universal chatting application that allows users to send messages to friends, family, and colleagues on 14 different chat applications through one application	Desktop application focused on organizing both email and app accounts. Easily manage Gmail and Google Drive, Messenger, WhatsApp, Slack, and 500+ apps.	Messaging application that combines messaging flows into one central view within the application.	Described as a truly unique, all-in-one messenger "powerhouse" with particularly fast speed of use.
Platforms	Mac, Windows, Linux, Chrome, iPhone, Android	Windows, Mac	Windows, Mac, Linux	Mac, iPhone, Android
Price	$10/month	Free and subscription options	Free and subscription options	Subscription model of $2.99/month
Supported Applications	iMessage, WhatsApp, and 13 other chat networks	Covers over 100 potential applications. The most out of these applications.	Covers around 70 messaging applications	Covers over 24 messaging applications.
Special Features	Scheduled, messaging and mute functionality	Flexible layout and can account for huge diversity in apps	Creates multiple workspaces to help user keep things organized	Has built in ad blocking features to help cut down.

	Beeper	Shift	Franz	IM+
Strengths	Reviews describe it as intuitive and easy to use	App diversity is one of the best in the market currently	Users describe setup process as particularly intuitive and easy	Speed of use and unique feature of Bitcoin rewards through usage.
Weaknesses	As of March 2024 still in early access and requires an invite	Inboxes are still separate, no grouping of message flows. Desktop only	Currently no capability for browser extensions	Overall design needs UX overhaul, described as outdated

Providing a comparison of these similar applications has been crucial in determining our success factors for Bento moving forward. For one the ability of these applications to cover such a wide variety of applications help ease our concerns about the potential for Bento to be able to incorporate the level of application diversity we were targeting. This is a factor that we feel is crucial for successfully providing an adequate level of user control and customization. Furthermore the relative success of these applications currently in the market, which we have made efforts to emulate in Bento's design, seems to be dependent on the factors of:

- Application cost/manner of revenue generation
- Diversity of applications that can be consolidated and managed
- Division of workspaces and message flows while still consolidating to a level that can be processed easily by users
- Ease/speed of use for setup and operation
- User customization and compatibility with other technology

While we feel we have addressed most of these factors in our base concept, proposed design, and to a certain extent in our prototype, we ideally would want to incorporate user testing with a finalized product to assure Bento is being competitive to these application competitors. Our application, while still in the design stage, is at a state where we can feel relatively secure that we could build upon the strengths of these applications while circumventing their weaknesses. However the true feasibility of this claim could only be determined once a final product is developed and properly tested.

Decomposition

In order to further validate the concept on which Bento operates, it will be important to evaluate the technical feasibility of its data foundations and the requirements for connecting with external platforms. Additionally, it is critical to conduct further user testing across a wider range of use cases and scenarios, evaluate privacy requirements, and create a financial model for the service.

AI and Platform Integration

Much of the functionality proposed for Bento relies on machine learning and AI to navigate information. This was outside the scope of the project work conducted up to this point. Bento would require models that consistently and accurately represent information without hallucination to provide users with a reliable pathway to simplified messaging, information, and workflows. The value of the platform also hinges on its ability to integrate with other messaging platforms, and more work is needed to assess the technical requirements of doing so.

User Testing

Further testing is required as Bento's use cases are highly contextual. Initial research has made it clear that people interact with their messaging in highly variable ways. To increase the effective reach of Bento, a deeper understanding of user behavior in the messaging space is required.

Functionality

After constructing the core functionality of Bento, it is also important to create the full product and expand the functionality of current features. A more complete user profile system is necessary to create a strong foundation for users. Notifications are essential to all messaging platforms, making it important to devise a distinct format for Bento that still retains signifiers from the native messaging platform. In order to deliver the ideal experience, it will also be important to invest more time in creating a more granular system for customization.

Privacy and Business Model

Finally, user privacy and financial positioning are essential when handling user data and creating a viable product. Gaining access to and sorting large amounts of user information and processing it through AI models requires further work to create a secure system to protect user data. Bento also requires a financial model based on subscriptions or ad traffic to ensure its long-term viability in the current market.

Appendix

Figma Brainstorming File

Secondary Research

We've ensured the relevance of our scope by conducting a literature review with regard to information consumption and the use of tech as a means of productivity increase. One of our first significant findings was on the cost of context switching. According to Harmanpreet Kaur (2020) at the University of Michigan, " Information workers switch windows every 40 seconds and working spheres every 3 minutes. Once interrupted, they can take ~ 15 minutes to resume their task…" Due to the nature of the spaces that we work and live in, there are constant demands on our attention and time, with severe effects on our ability to focus and remain on task.

Additionally, we found that "technology overload" is a very real phenomenon in which there is a diminishing return on the increased use of tools in the workplace. At a certain level tools stop enhancing our abilities to interact with information and begin to impair us causing fragmentation of our focus (Karr-Wisniewski & Lu, 2010) this combined with the time loss of each redirection of attention can lead to a compounding negative impact. In addition to technology overload Pamela Karr and Ying Lu of UNC Charlotte (2007) identified information overload and communication overload as significant factors hampering knowledge workers' ability to perform their tasks. In spite of individual efforts , it seems that the cards are stacked against our ability to filter information and take control of our own time.

Finally, it has been found that, "higher levels of perceived information overload from digital sources were significantly associated with higher levels of perceived stress. Holding the same variables constant, higher levels of perceived stress were linked with lower levels of analytical thinking…" (Misra et al., 2020). In addition to the negative effects

on time and attention, the way that many people interact with information impairs one of their most important abilities, their capacity to think analytically.

Competitive Analysis

While not all platforms had the same functionality there were commonalities across all platforms evaluated. In addition to qualitative insights about the overall function of work/messaging aggregation platforms, there were more discrete quantitative results as well. Working with the competing platforms led to the identification of three central conclusions that will guide our work moving forward.

Clarity of navigation is essential and tagging is a strong potential space for organization.

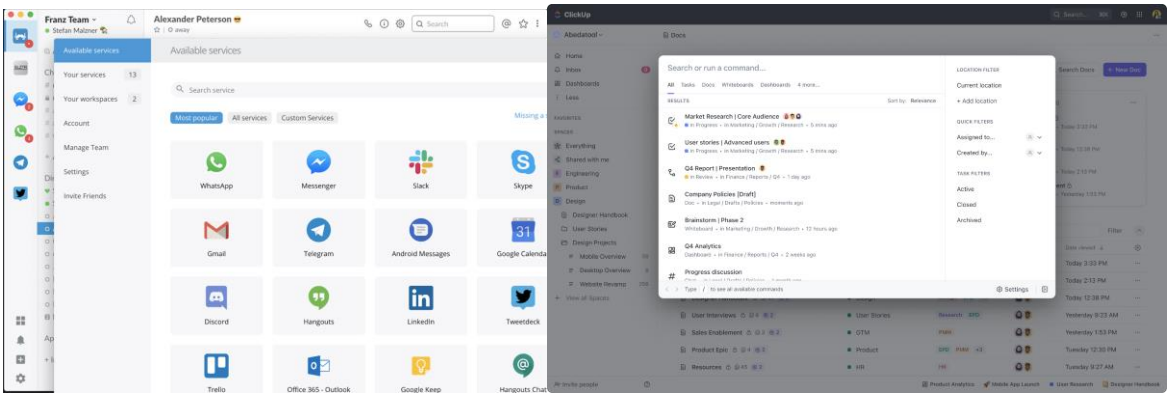

Figure 7. Left hand nav and top search bar in Spark and ClickUp

6 out of 7 of the competitors audited featured both a left hand navigation bar and a top search bar. These are clear navigation structures frequently present in desktop layouts that align with user expectations offering clear and learnable structures due to their frequent occurrence in productivity and organizational software. Within these commonly occurring navigation structures there was also a frequent reliance on some sort of tagging to sort items in the left hand nav bar, structure filters, and increase their discoverability through search.

AI as an organization and decision making assistant can be beneficial in reducing the cognitive load of interacting with information.

4 out of the 7 competitors feature some sort of AI base assistance. This can range from basic AI writing assistance featured in Spark, to the integration of Microsoft Copilot with Microsoft Loop, to the organizationally focused AI used in delegation and decision making in ClickUp. AI offers a unique opportunity to further alleviate the cognitive overload many people experience in the digital spaces that they occupy. One of the simplest and most impactful use cases seems to be in summarizing information, generating key insights, and catch up notes. These are functionalities we intend to explore further in our design process.

Information organization is often customizable and offers varying degrees of personalization depending on the platform and its functionality.

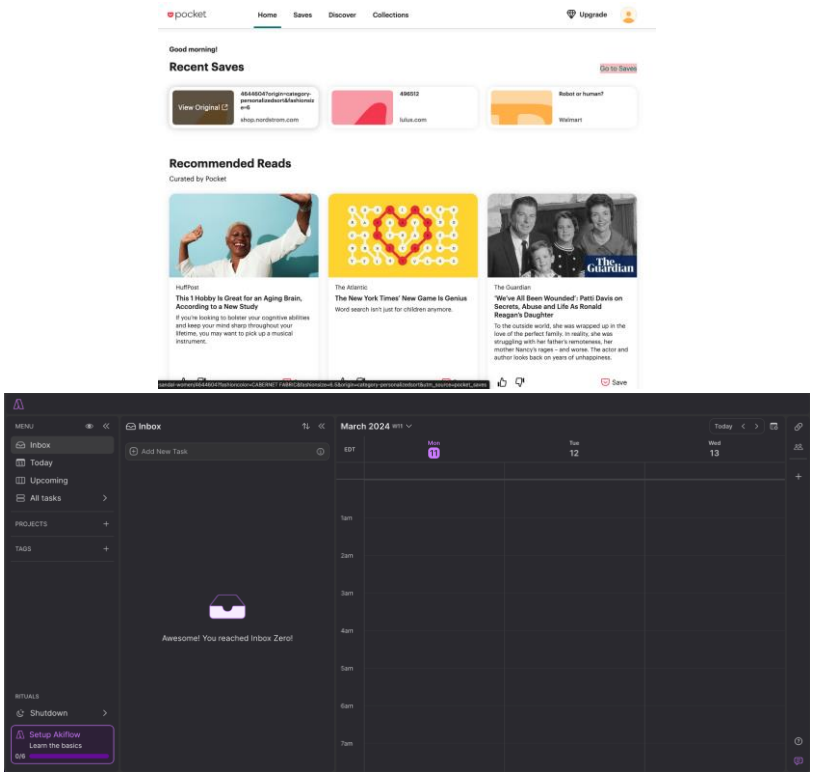

Figure 8. Varying degrees of layout customization in Pocket and Akiflow

6 out of the 7 competitors allowed for users to customize the layout of the application in order to best suit their needs. There were varying levels of customization available. Spark

and Akiflow featured standardized interfaces that allowed the users to hide and display different pieces of information based on their current needs. Pocket and Microsoft Loop offer mid level customization with drag and drop component style variations. Asana and ClickUp offer the most extreme layout customization with modular data visualization boards and a variety of pages in which users can organize their information. It will be important for us to deliberate how much organizational freedom to give users to maximize the usability of our program.

Interview Insights

The interview results present a multifaceted exploration of the delicate balance between personalization and company-wide standardization in task management. Respondents emphasized the challenges associated with physical methods versus digital methods, demonstrating the importance of finding effective strategies that cater to individual preferences while maintaining organizational coherence.

Company permission for third-party applications emerged as a critical consideration, highlighting the need for seamless integration of external tools within corporate frameworks. The constraints of in-person meeting data recording and digital tracking were identified as significant hurdles, shedding light on the complexities of transitioning from traditional to digital methods.

Respondents acknowledged the tendency to forget tasks and appreciated reminders as a reinforcement. The need to address low-priority tasks highlighted the importance of efficient prioritization mechanisms. Participants highlighted their adeptness at instantly handling high-priority tasks and expressed the need for a streamlined process to reevaluate and refocus on previous priorities. In the interviews, search functionality emerged as a crucial feature, with keyword searching praised for its effectiveness in quickly accessing unsorted information. One respondent suggested strategies such as muting projects to reduce stress over less essential tasks and emphasizing the importance of adaptive task management approaches.

Effective communication with stakeholders stood essential, emphasizing clarity, conciseness, and speed in conveying information. The trade-off between time consumption and mental bandwidth was recognized, prompting considerations for optimizing efficiency without compromising cognitive load. The interviewees identified challenges related to digital/document attachments, advocating for a smoother and more organized attachment system. The desire for an in-app preview and a native view

prioritizing messages, coupled with a convenient mini-view of other applications, highlighted the importance of user-friendly interfaces in enhancing productivity.

Finally, the concept of "buckets down" was introduced, suggesting a top-down view summary that can delve into different levels of detail and information. This hierarchical approach aims to provide users with a comprehensive yet customizable overview of their tasks, aligning with the broader theme of balancing personalization and standardization in task management.

Survey Insights

To gain quantitative insights about our problem space and the needs of our target population, we deployed a survey of several likert scale and open ended questions to 12 participants. Participants primarily use iMessage for messaging and manage other information through various platforms such as outlook, notes apps, and google calendar.

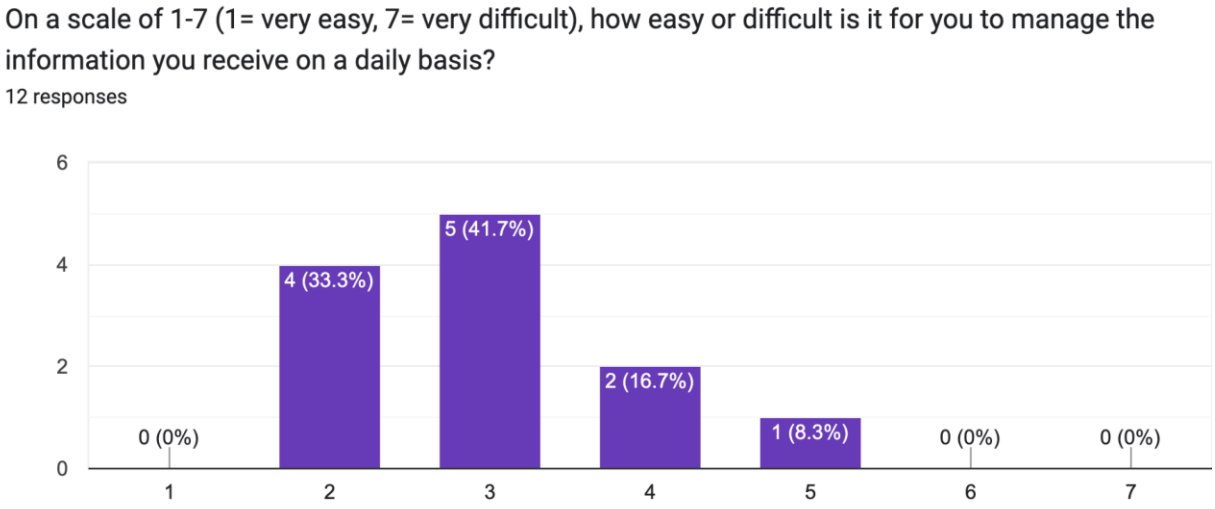

Figure 9. Survey Results

Overall, users thought that the information they receive on a daily basis is somewhat easy to manage, as shown in Figure 3. When asked to elaborate, user sentiments were that the information management and messaging platforms themselves were straightforward as long as they kept their information organized. However, they had difficulty sifting through all their cumulative information across multiple platforms. For example, one user

mentioned that, because their information was “too scattered,” they had difficulty finding specific content for reference.

When asked how they feel about the information they receive on a daily basis, participants felt somewhat overloaded as shown in the figure below.

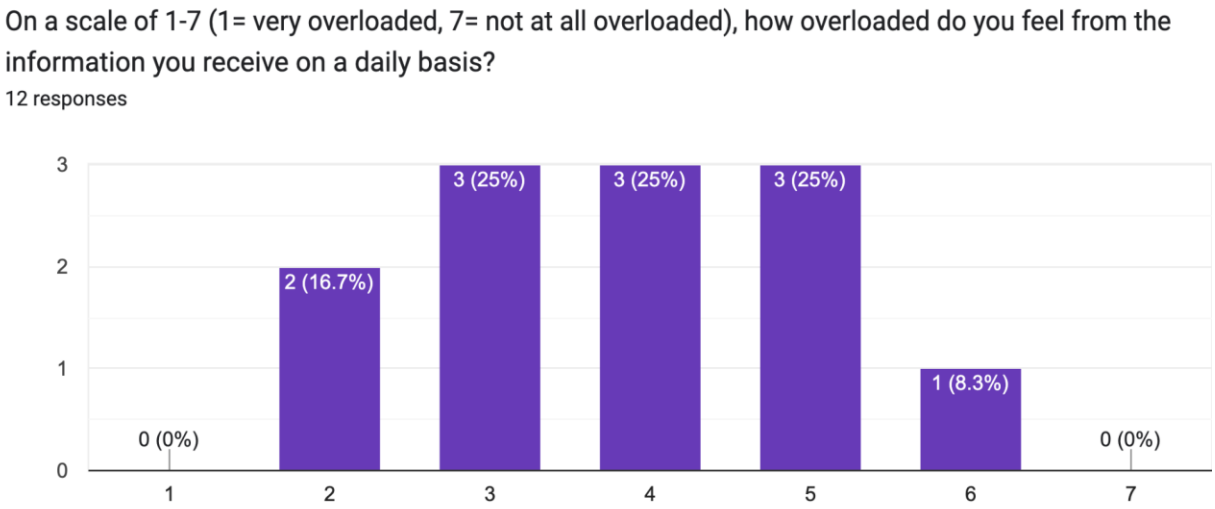

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Figure 10. Survey Results

Participants generally felt that they receive many streams of information from different platforms, all of which contribute to a general feeling of fatigue. Additionally, 25% of participants cited social media as one of the root causes behind their feelings of information overload. Several participants also mentioned that they found separating work and personal information streams to help their organization.

We also asked participants the consequences of context switching between different platforms. Participants noted that this context switching led to lowered efficiency when completing tasks, brain fatigue, and shortened attention spans. According to one participant, “it slows down [their] efficiency and ability to stay on task.”

Ultimately, while information and messaging platforms are relatively easy to manage, complexities arise when managing their information across multiple platforms and switching between different platforms. These findings support the validity of our problem

space and give us a deeper understanding about the specific issues that users face when managing their information streams.

Persona

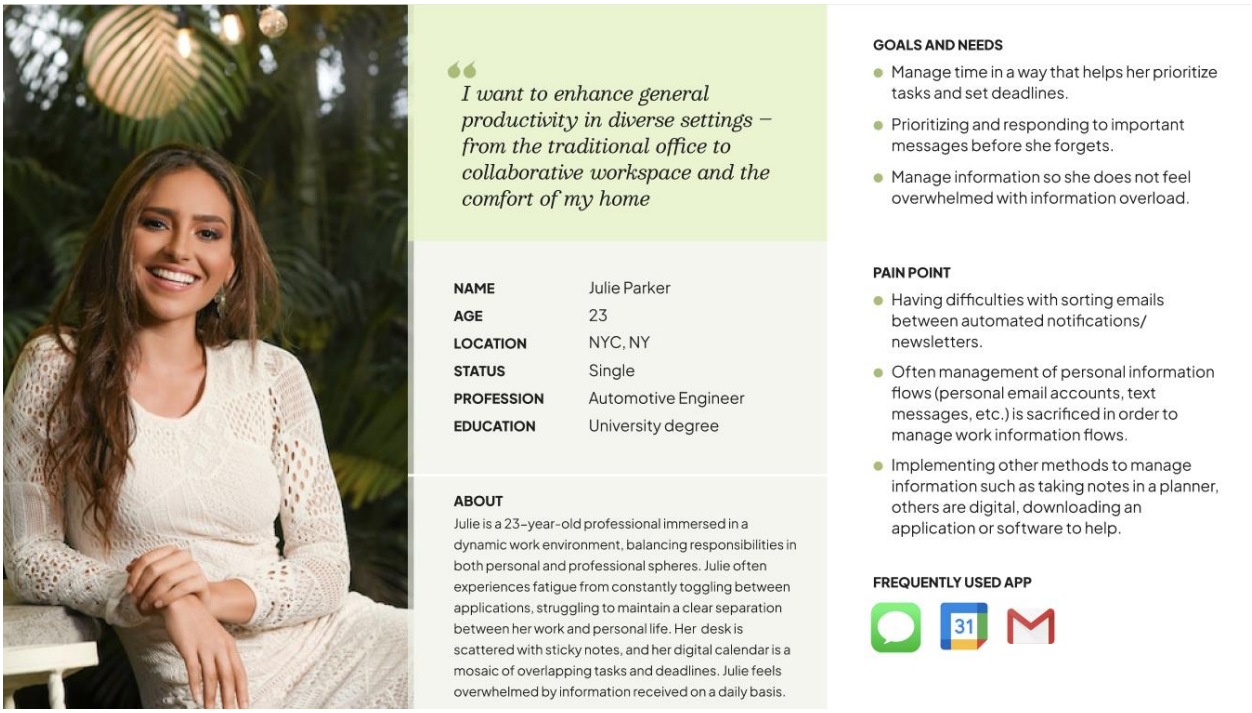


Figure 11. Persona

Persona Scenario

Julie is a 23-year-old professional immersed in a dynamic work environment, balancing responsibilities in both personal and professional spheres. Julie often experiences fatigue from constantly toggling between applications, struggling to maintain a clear separation between her work and personal life. Her desk is scattered with sticky notes, and her digital calendar is a mosaic of overlapping tasks and deadlines. Julie feels overwhelmed by information received on a daily basis.

Empathy Map

Figure 12. Empathy Map

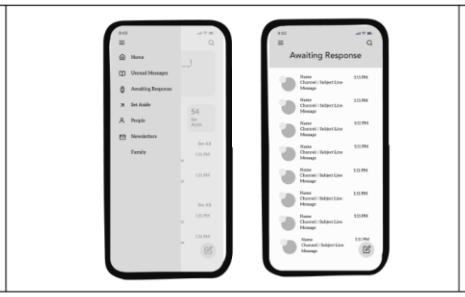
Storyboard

Sam has always been overwhelmed by the amount of emails and messages he receives at work.

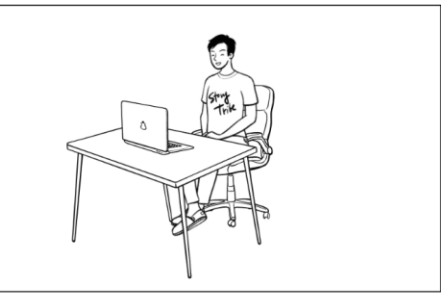
Once he gets home, he still receives many work messages. Even though he's off the clock, he still feels obligated to respond to these messages.

He wishes he could get through his messages more quickly and separate them from his personal messages on his phone.

He learns about Bento, an app that allows users to link all their messaging platforms in one space. After linking his accounts, he customizes his homepage to include a workspace of coworkers and another of his family & friends.



He creates another workspace for all his newsletters. To stay on top of his messages, he views the "Awaiting Response" grouping and frequently visits the productivity screen.



After using Bento, Sam feels like he manages his messages much better and doesn't forget to respond to coworkers, friends, and family as often.

[Prototype Link]

Demo Script

Sam is a recruiter in his late twenties who has been working from home for two years now, ever since the pandemic. He has always been overwhelmed by the amount of emails and messages he receives at work, but has felt especially overwhelmed recently due to the lack of separation between his work and personal life environments.

Once his workday is over, he still receives many work messages and emails because some of his coworkers are in different time zones. Even though he’s off the clock, he still feels obligated to respond to these messages. This is overwhelming since he also has many personal messages to catch up on from friends and family.

Sometimes he forgets to respond to important messages from his family because of the amount of notifications he receives on a daily basis. He wishes that he could get through all of his messages more quickly and ensure that he doesn't forget to respond to anything, especially important messages from family members.

He learns about Bento, an app that consolidates messaging platforms into one space.

[Onboarding Screens] He goes through the onboarding process and customizes the theme to his liking, then signs into the accounts that he wants to connect.

[Home Screen] On the home screen, Sam views the default view that groups his messages into unread, awaiting response, and set aside messages. He also sees the people and newsletters workspaces, which groups messages from specific contacts from messages about news, shopping deals, and other general information.

[Customization flow] He decides to modify these workspaces to meet his needs. Sam wants to create three different spaces: one for his family members, one for close friends, and one for coworkers. He edits the first workspace and selects the platform for the person to add to that space. He adds his dad and his aunt, who have androids and use google chat, then adds his sister and mom, who use iMessage. After he creates this "family" workspace, he goes through the same process to create "coworker" and "close friends" workspaces.

[Awaiting Response Screen] Next, he decides to check on his messages that are awaiting a response. This feature would use AI predictive modeling techniques to analyze message threads and predict which ones require a response.

[Create new message flow and AI assist] After responding to some messages, he creates a new message. He needs to talk to his boss Evelynn about candidates for an operations lead role. He first selects imessage from his synched platforms, then directly searches and selects her name from his imported contacts. Sam pauses after reading her last message trying to remember the details of their conversation.

A pop up at the bottom of the screen reminds him that there is an AI assistant. Sam selects local and summary as well as setting the time window for the past two weeks. The summary gives him the information he needs to respond but realizes Evelynn asked him to loop “everyone else in”. He then decides to start a new email. Bento preserves his message content and presents the platforms on which he is connected to Evelynn.

He uses an AI function to generate a subject line and switches to his work email. Bento instantly adds his email signature for him. Remembering the AI assistant, Sam pinches the screen selects global as a search condition and asks who he’s spoken to about Operations lead hiring in the last month, he also does a quick search to ensure that there isn’t an existing email thread on the subject.

With this information in hand he updates the recipients of the email and adjusts the content to better fit the context. With the help of Bento Sam is sure he hasn’t missed a detail and was quickly able to access info he needed without leaving his message draft. He sends the email and returns to his Bento home screen.

[Productivity screens] Finally, Sam decides to visit the Bento Bites screens to view a general summary that lets him know how well he’s caught up with his messaging flows. He can choose to visit productivity trends for a deeper analysis of his messages.

After using Bento, Sam feels like he manages his messages much better than before and doesn’t forget to respond to family, friends, and coworkers as often.

Citations

Feldmann, J. (2022, November 8). *Council post: The importance of separating work and personal life in a remote environment*. Forbes. https://www.forbes.com/sites/forbeshumanresourcescouncil/2022/01/18/the-importance-of-separating-work-and-personal-life-in-a-remote-environment/?sh=2811698346c8

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