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# EasyEmail

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# What is EasyEmail?

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- Designed for users who are looking to escape massive inbox sizes with more automated organization
- Features that prioritize:
  - User-friendly
  - Organized
  - Privacy/Security
- Also has benefits for elderly and tech-illiterate users
  - Simple interface
  - Large Buttons

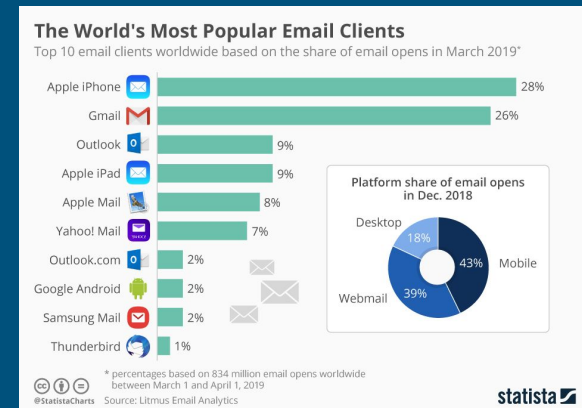


# Why Another Email Service?

- Email is not going anywhere. It has been growing by around 5% per year for the last 4 years
- Email usage has increased in every age group, especially seniors. Today, 67% of elderly over age 65 use the internet which is up from about 14% in 2000
- “I get too many emails” is the number one reason why US residence unsubscribe from email

Daily Email Traffic	2015	2016	2017	2018	2019
<b>Total Worldwide Emails Sent/Received Per Day (B)</b>	<b>205.6</b>	<b>215.3</b>	<b>225.3</b>	<b>235.6</b>	<b>246.5</b>
% Growth		5%	5%	5%	5%
<b>Business Emails Sent/Received Per Day (B)</b>	<b>112.5</b>	<b>116.4</b>	<b>120.4</b>	<b>124.5</b>	<b>128.8</b>
% Growth		3%	3%	3%	3%
<b>Consumer Emails Sent/Received Per Day (B)</b>	<b>93.1</b>	<b>98.9</b>	<b>104.9</b>	<b>111.1</b>	<b>117.7</b>
% Growth		6%	6%	6%	6%

Table 2: Worldwide Daily Email Traffic (B), 2015-2019



# Stages of Design

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## 1. Preliminary Design

- Elevator Pitch
- Brainstorm Ideas
- Pick a topic
- Conceptual Model
- Usage Scenarios

## 2. Full Design & Specification

- Semantic Level Design
- Syntactic Diagram
- Lexical Model
- Documentation & Guidelines
- Task Analysis

## 3. Storyboard & Paper Prototype

- Storyboard
- Paper prototype

## 4. Test Design & Pilot Test

- Preliminary Usability Test Plan
- Pilot Test Study

## 5. Qualitative Usability Study

- Study conducted at NEU

## 6. Medium to High Fidelity Prototype

- Medium / High Fidelity Function Prototype created.
- Adobe XD used as tool

# Users :

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- Users with an email address looking to move to service with more *privacy* or someone who doesn't want to pile up their inbox with old emails, spam, unreads, etc.
- To make the email application easier, a simple font, and uncluttered UI will encourage use by children and elderly people
- The product would be most useful for people from business, students, customer support teams who strive to keep their inboxes clean and organized.
- EasyEmail is designed while keeping the old users in mind as well by supporting the use of larger icons and text for easy readability and use.

# Usage Scenarios

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- Jessie, 40 years old, works as a doctor and is using EasyEmail as her work email. She often works with sensitive patient information. Jessie is able to let any emails with patient information go to a specific archive/folder after 30 days and delete them whenever she wants to. This helps her keep her inbox tidy and patient information safe.
- Peter, 80 years old, need to retrieve a password that was sent to him for one of his user accounts. Even though he forgets the send email address and the title of the email, he is able to retrieve the password with any of the content details ( eg, company name that send him the password) Eg : he typed in “Netflix username” and retrieved the username.
- David 17 years old, who is a student, click on ‘login’ on the home page. But as he forgot his password, he clicks on the forgot password link on the page and receives a password reset link in the recovery email account. He resets the password and login to his account

# Conceptual Model

Key Objects identified -  
User, Email, Email  
Composer and Inbox

Analysis of the Object  
attributes, the  
relationship between the  
objects and the actions  
that need to be  
performed on the object  
and the attributes and  
object relationships.

Key Objects	Object Attributes	Relationships	Actions on Object	Actions on object Attributes.	Actions on object Relationships.
Email	<ul style="list-style-type: none"><li>•Subject</li><li>•From</li><li>•Date</li><li>•Content</li></ul>	<ul style="list-style-type: none"><li>•Email objects can be grouped with other email objects and put into a folder based on category</li><li>•Multiple email objects can be selected to mark as read or delete</li><li>•An email object may be formed using the composer object by a user object.</li><li>•Received emails can be stored in inbox object.</li></ul>	<ul style="list-style-type: none"><li>•An email can be marked as read or unread, favorite or important.</li><li>•An email can be moved to the spam folder.</li><li>•Email can be auto-deleted if it fits in the time-frame set by the</li></ul>	<ul style="list-style-type: none"><li>•The content within the email can be downloaded.</li><li>•A reply can be sent to the sender.</li><li>•The date can be used to sort the emails</li><li>•The email can be searched for using the subject.</li></ul>	<ul style="list-style-type: none"><li>•The emails within different categories can be marked as read at once.</li><li>•The emails within the spam folder can be deleted together at once to free up space.</li></ul>

# Task Analysis

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This section includes **usability goals**, defining how the user and system work together to achieve that goal.

The major usability goals identified for this application are :

## 1. **Accuracy and Speed of the system**

This usability goal ensures that the application is fast without compromising the quality/accuracy. The below actions are the major/frequently performed user actions considered to measure this usability goal.

Case 1 :

User Action: Send an email

System Action: Ensure that the recipient receives the email correctly within the expected transfer time. Also, the sender will be notified about the email delivery

Case 2 :

User Action: Perform search and retrieve old email

System Action: Ensure that the user is able to retrieve an old email with content, heading, recipient, sender, etc.



# Task Analysis

## 2. Ease of using the application

Case 1 :

User action: Create an account

System action: Users will be able to create a new account with minimal personnel details. There will be only one personnel identification data to ensure the genuinely of the user, either a phone number or link to another email account.

Case 2 :

User action: Login to the system

System action: Users will be able to login to the system with username and password. There will be options to retrieve a forgotten username or password by using the personnel identification data entered by the user

Case 3 :

User action: Compose and send an email

System action: Users will be able to create compose and send emails with ease. There will be spellcheck and grammar checks that the system does while the user composes the email. Once the email is composed user can send the email to any number of the recipient ( some recipients can also be kept as hidden from other recipients.) The system will also notify the user of the delivery of the email to the recipient.

Case 4:

User action: Receive email

System action: Users will be notified once they receive the email if the options are enabled by the user

# Task Analysis

3. **User Satisfaction** - Measure: This defines how satisfied the customer was by using this email application. The features and usages of the product can be measured in a way to rate the overall success of the product. The areas that can be used for this analysis are :

Case 1 :

User action: How often the product is being used

System action: Gather metrics of how often the user logs into the mail application to check the emails and send emails.

Case 2 :

User action: Create a new email account

System action: Gather metrics of the number of users who sign up

Case 3 :

User action: Login to the email application and use the features

System action: Gather metrics of the user engagement and the login and logout time to generate statistics on the time spent by the user.

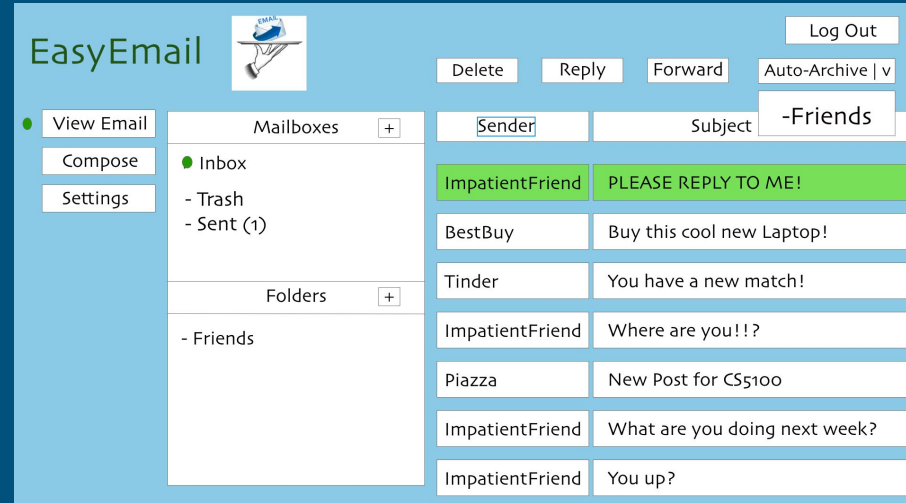
Case 4 :

User action: Login to the email application and use the features

System action: Gather metrics of which features are being used most and ensure that features are error tolerable.

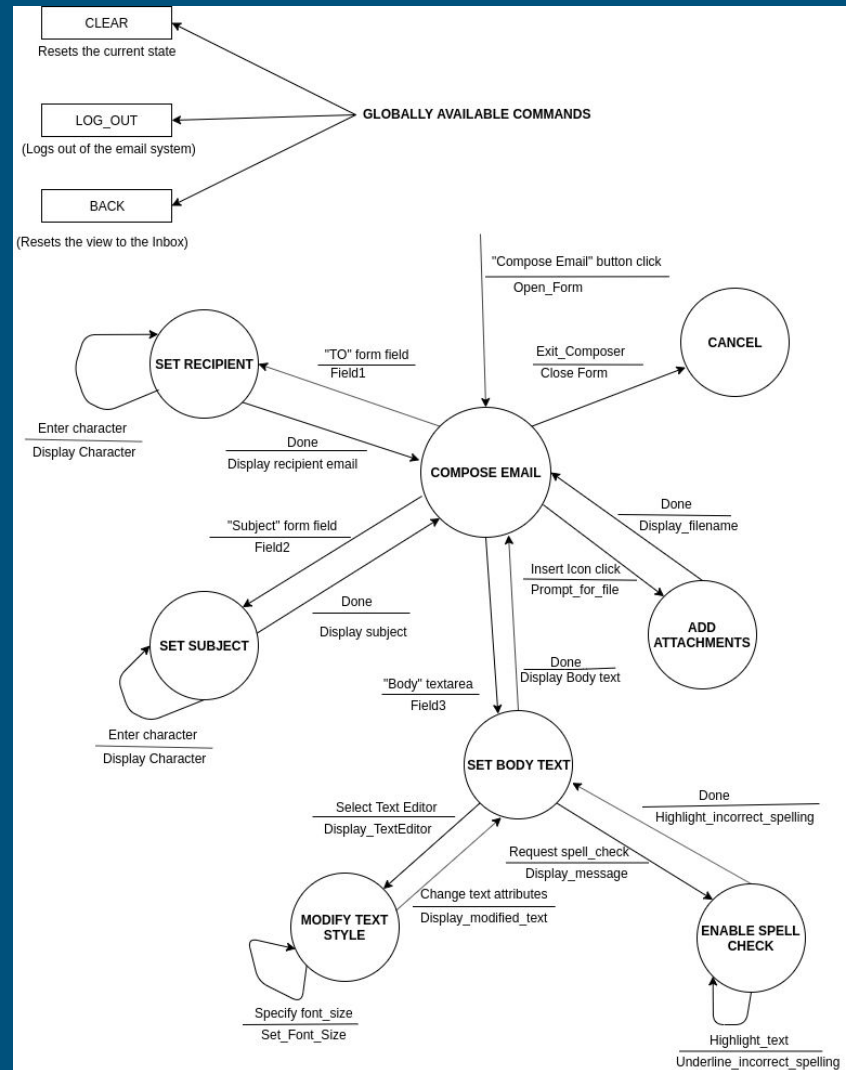
# Auto-Archive Feature

- This is one of the main features of the email service. Users click on an email and then select to auto-archive it to one of their email folders. All following emails from that address will be sent to that folder.



# Syntactic Diagram

- A syntactic diagram lists the user actions and the system responses.
- Specifically for the Compose Email action.
- Feedback for each action is very important
- Globally Available Commands
  - Can be accessed from any context while using EasyEmail



# Design Goals & Principles

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- Easy access to customization and automated organization features
- Simplicity should be favored over complexity in design
- Minimal Effort:
  - Minimize clicks, mouse movement
  - Maximize shortcuts
  - Automate inbox cleaning/archiving
- Intuitiveness:
  - Give user feedback wherever possible
  - Related features should be grouped together
  - Metaphors which reflect experiences/scenarios familiar to the user
- Aesthetically Pleasing:
  - Screen should not be cluttered with excessive options for the user.
  - Colors should be coordinated and reflect functionality

# Task-Command Analysis

Keystroke-Level Model (KLM) is one of the GOMS predictive techniques for keyboard input

KLM Calculations:

$$T_{\text{execute}} = TK + TP + TH + TD + TM + TR$$

- Take into account:
  - keystroking/ keypressing
  - pointing with a mouse to a target
  - homing the hand on the keyboard
  - drawing a line segment on a grid
  - stands for the time a user has to mentally prepare to do an action
  - the user has to wait for the system
- Logging into the email application: 2900 - 3200ms (~3s)
- Send email:  $2150 + \text{TimeToCompseEmail (T)} = 2150\text{ms} + T$
- Receive email + Read email:  $2650\text{ms} + R$
- Search for Old email: 3950ms - 5800ms depending on search term



# CITI Certification

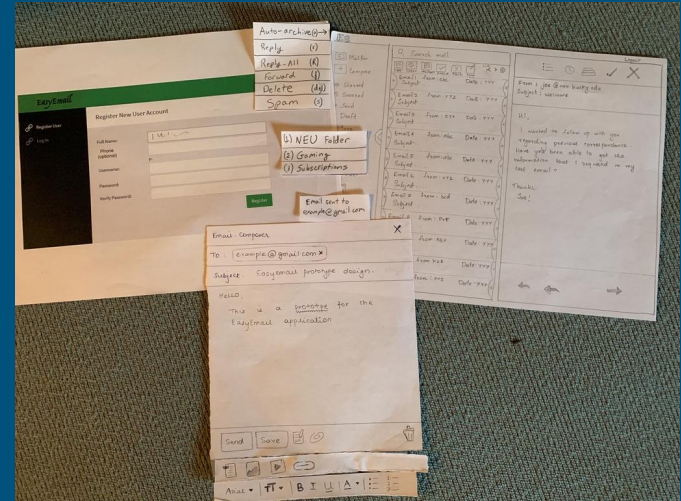
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- Collaborative Institutional Training Initiative
- Covered *ethical principles* involved in doing research with human subjects
- *Federal Regulation* of research
- *Privacy and consent* involved in doing research
- Conflicts of interest
- Researches with *children and Prisoners, Internet -based etc.*



# The Prototype

- Our initial prototype was a paper prototype but after some practice runs we realized that it was difficult to run because there were lots of small pieces of paper that had to be placed. We could have printed out several full size pages with minor changes on each too but we chose to use Adobe XD instead





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# Qualitative Usability Study

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- Test session conducted at Northeastern University, Silicon Valley campus.
- Prototype created using Adobe XD was used.
- 5 subjects invited for the study from different backgrounds
- Subjects were asked to perform 3 tasks
  - Create an account and login
  - Compose and send an email
  - Auto archive an email
- Goal of the usability study:
  - Measure the usability of the product.
  - Get opinions from the user on specific features like the auto-archive feature.
  - Measure the time the user takes to perform each action.
  - Incorporate new suggestions and feedback if applicable

# EasyEmail



Delete

Reply

Forward

Auto-Archive | v

View Email

Compose

Settings

Exit

Mailboxes



> Inbox

- Trash

Folders



- Friends

Sender

Subject

ImpatientFriend

What are you doing next week?

ImpatientFriend

What are you doing next week?

ImpatientFriend

What are you doing next week?

ImpatientFriend

What are you doing next week?

ImpatientFriend

What are you doing next week?

ImpatientFriend

What are you doing next week?

ImpatientFriend

What are you doing next week?

MacBook Pro

# Preliminary usability test plan

Participant ID: \_\_\_\_\_ Site: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

## System Usability Scale

**Instructions:** For each of the following statements, mark one box that best describes your reactions to the website *today*.

		Strongly Disagree				Strongly Agree
1.	I think that I would like to use this website frequently.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	I found this website unnecessarily complex.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	I thought this website was easy to use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	I think that I would need assistance to be able to use this website.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	I found the various functions in this website were well integrated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	I thought there was too much inconsistency in this website.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	I would imagine that most people would learn to use this website very quickly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	I found this website very cumbersome/awkward to use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	I felt very confident using this website.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	I needed to learn a lot of things before I could get going with this website.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide any comments about this website:

## Consent Form (Easy Email Usability Study)

This study is being conducted by graduate students in the Computer Human Interaction class at Northeastern University for the purpose of education. Some of the material collected may be used in a students portfolio to demonstrate graduate work to potential employers.

I agree to participate in the study conducted as part of the usability study for Easy Email.

I understand that participation in this usability study is voluntary and I agree to immediately raise any concerns or areas of discomfort during the session with the study administrator.

Please sign below to indicate that you have read and you understand the information on this form and that any questions you might have about the session have been answered.

If you have any questions or concerns at a later time please contact:  
Zach Rooney (rooney.z@husky.neu.edu)

Date: \_\_\_\_\_

Please print your name: \_\_\_\_\_

Please sign your name: \_\_\_\_\_

Thank you!

# Results

## Task Completion Success Rate

Participant	Task 1	Task 2	Task 3			
1						
2						
3						
4						
5						
6						
Success						
Completion Rates	%	%	%			

# Participants

Participant	ID Number	Age	Use Email before? (if yes which domain)	Occupation	Favorite site
1					
2					
3					
4					
5					
6					

# Observation Gathered

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Task 1 : Register new account

Task 2: Compose email and send

Task 3: Set up an auto archiving instruction

	Success	Time (Minutes)	Satisfaction rate
Task 1	1.0	0.4	7.6
Task 2	1.0	0.3	8.2
Task 3	1.0	0.3	6.8

# Summary of Feedback Received

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## Things liked by subjects

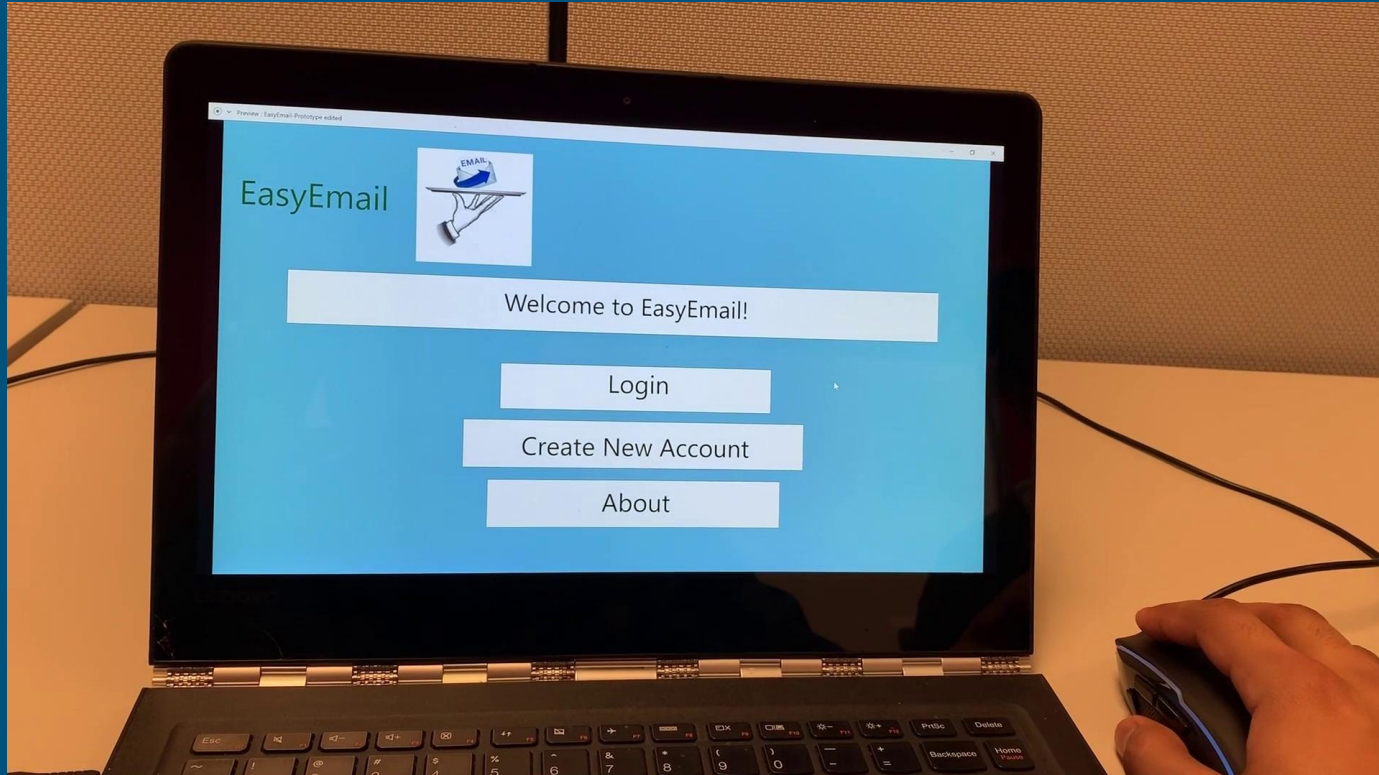
- Straightforward Design
- Three column design with the folder
- Size of buttons, easy to find
- The clarity in buttons indicating the user actions

## Issues faced/ Things disliked by subjects

- Difficulty in finding auto-archive feature from the User Interface.
- Placement of buttons.
- Prototype consistency.
- No “Back” button

# Medium/High Fidelity Prototype

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# Future Work

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## Add more features

- Incorporate more user feedback (textual/contextual) into prototype
- Add regular expression for customizing the inbox/send items
- Add follow up reminders feature
- Schedule and send later feature
- Ability to see and edit a list of all active auto-archive instructions