

A-MAIL

AMAZON ECHO

The A-Team:

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Camille Weins



Project Description

About the Project

- Amazon Echo = Limited Skills
- Our idea: Create a productivity skill (app) that reads unread emails from Gmail.
- Target Audience
- Development



INTRODUCING
amazon echo

Always ready, connected,
and fast. **Just ask.**

Team Roles

The A-Team

Jasmine Chabra: Project leader; Development; Competitive Analysis; Documentation

Martin Slosarik: Head of Tech; Determine flow and process of the tech development; Distribute programming tasks to other team members

Rewant Prakash: Development; Documentation

Camille Weins: Vocal User Interface Design; User Research and Testing

Tianyi Chen: Vocal User Interface Design; User Research and Testing



Why Echo?

Better AI = Better Voice Recognition

Elon Musk and tech heavies invest \$1 billion in artificial intelligence

by Heather Kelly @heatherkelly

🕒 December 12, 2015: 4:08 PM ET



f Recomm

GOLDMAN SACHS: We're investing deeply in artificial intelligence

Goldman Sachs is going big on big data.

Don Duet, cohead of the bank's technology division, said the firm was investing deeply in artificial intelligence and machine learning.

"You know, we see that the ability to take data



Goldman Sachs

IoT = Amazon Echo in Every Home = Cheap



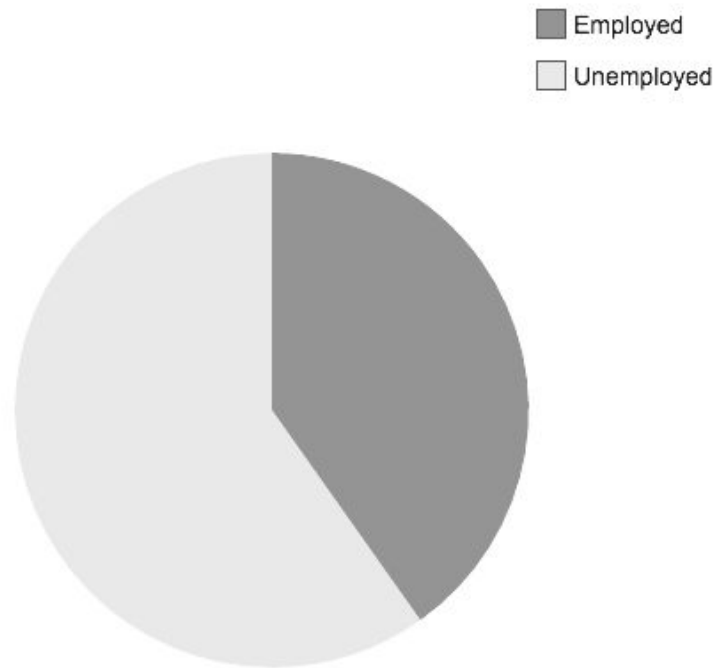
IoT worth **\$6.2 trillion**
by **2025** (McKinsey &
Co.)



Echo is an Opportunity

- Accessible regardless of vision level
- Need for productivity apps

For working age adults reporting significant vision loss, only 40.2% were employed in 2013.



National Federation of the Blind, 2013

Features and Accessibility

Features of Echo and Accessibility

- The Perkins School for the Blind lists the Echo as one of the top 3 “Most Intriguing Innovations” in 2015.
- *“This is a huge step towards accessible design; especially “for an individual who cannot see, has weak muscles, and no finger dexterity.” -Travis Love*
- The blind subreddit community says that *“the Echo offers a new way of living and entertaining people with vision impairments. “*
- Good voice recognition system, users can train echo to adapt their speaking pattern



Amazon Voice Guidelines

- Make It Clear that the User Needs to Respond
- Don't Assume Users Know What to Do
- Clearly Present the Options
- Keep It Brief
- Offer Help for Complex Skills



"Alexa" is the wake word that starts the conversation.



"Ask...to" is one of the supported phrases for requesting a service.



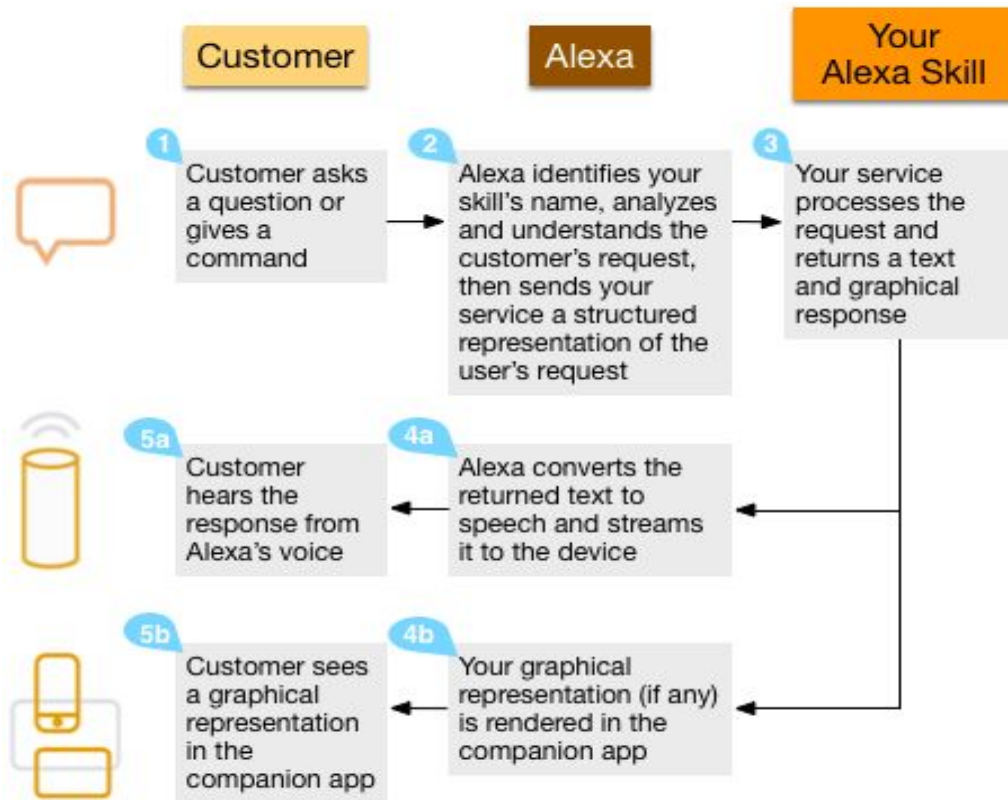
"Greeter" is the invocation name that identifies the skill the customer wants.



"Say hello world" is the specific request, question or command.

Technical Research

User-Interface Design







Back-End Development

- SpaceGeek Github
- Amazon Alexa Skills Kit (ASK)
- Amazon Alexa JavaScript SDK
- Gmail API
- Node.js (Callbacks)

```
2 + "intents": [  
3 +   {  
4 +     "intent": "GetNewFactIntent"  
5 +   },  
6 +   {  
7 +     "intent": "DoIHaveAnEmailIntent"  
8 +   },  
9 +   {  
10 +     "intent": "LabelsIntent"  
11 +   },  
12 +   {  
13 +     "intent": "HowManyNewEmailsIntent"  
14 +   },  
15 +   {  
16 +     "intent": "ListNewMessagesIntent"  
17 +   },  
18 +   {  
19 +     "intent": "AMAZON.HelpIntent"  
20 +   },  
21 +   {  
22 +     "intent": "AMAZON.StopIntent"  
23 +   },  
24 +   {  
25 +     "intent": "AMAZON.CancelIntent"
```

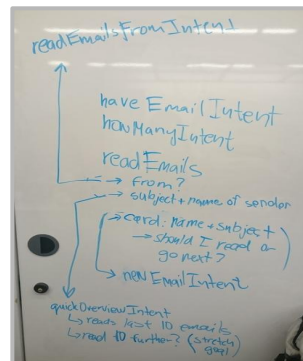
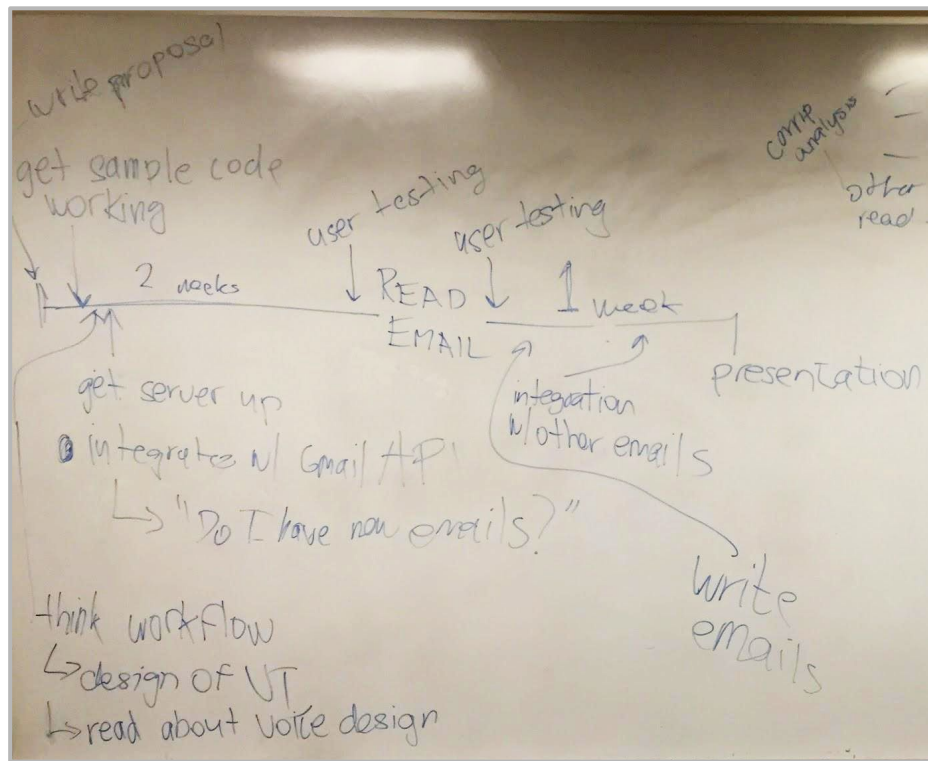
Competitive Analysis

Feature Comparison

	Ivée Voice	Dragon NaturallySpeaking	Apple's Siri	Microsoft Cortana
Description	Multi-room voice assistant for the home that lets you connect and control your favorite smart devices and services.	Email friends, search the web, dictate homework assignments and more... get things done in a fun, easier way using just your voice.	Talk to Siri as you would to a friend and it can help you get things done — like sending messages, placing calls, and making dinner reservations.	Cortana is the name for the intelligent personal assistant and knowledge navigator for Windows Phone 8.1 and Windows 10.
Access to Email	No	Yes	Yes (limited)	Yes
Price	\$99	\$74.99	\$399-\$949 (without wireless contract)	\$549-\$649 or free app download
Product Preview				

Prototyping

Design & Development Process



Design & Development Process

Baby Steps

1. First, get Alexa to respond with a simple yes or no if the user had emails.
User: *Alexa, Do I have any new emails?*
Alexa: Yes.
2. Second, get Alexa to respond with the number of emails.
User: *Alexa, Do I have any new emails?*
Alexa: Yes, you have 3 new messages.
3. Third, get Alexa to list “From” and the “Subject” of the 10 most recent emails.
User: *Alexa, Can you list my new emails?*
Alexa: *Message 1 - From Martin; (subject) "Hey You!"*
Alexa: *Message 2 - From Claire and Gus; (subject) "A-Mail gets an A+ on their final project!!"*.
4. Finally, get Alexa to read all or specific emails.
User: *Alexa, Can you read the email from Claire and Gus?*
Alexa: *You guys did an awesome job on your final project. You all get an A+!*

Example Utterances:

- Do I have any new email?
- Do I have any new messages?
- How many new emails do I have?
- Open my inbox.
- Open my mail box.
- Read my emails.
- Read emails.
- Emails

Implementation

Getting Started

However, before we got started it was important to get the Amazon Echo Sample Code working (i.e. Get a SpaceGeek to give us a fact about Space)

The screenshot shows the GitHub repository page for 'amazon/alexa-skills-kit-js'. At the top, there are statistics: 62 Watchers, 234 Stars, and 219 Forks. Below this, navigation tabs include 'Code', 'Issues (3)', 'Pull requests (0)', 'Pulse', and 'Graphs'. The main description states: 'SDK and example code for building voice-enabled skills for the Amazon Echo. <http://developer.amazon.com/ask>'. A summary bar shows '18 commits', '2 branches', '0 releases', and '4 contributors'. Below this is a toolbar with 'Branch: master', a 'New pull request' button, and buttons for 'New file', 'Upload files', 'Find file', 'HTTPS', the repository URL 'https://github.com/amzn/a', and a 'Download ZIP' button. The commit history table shows the following entries:

Commit	Message	Time
deegles	Added tutorial zip RecipeTemplate.zip to minecraftHelper.	Latest commit 1376723 8 days ago
samples	Added tutorial zip RecipeTemplate.zip to minecraftHelper.	8 days ago
LICENSE.txt	Adding JS skills	9 months ago
NOTICE.txt	Adding JS skills	9 months ago
README.md	Update README.md	2 months ago

Below the commit history, there is a section for 'README.md' which contains the text:

Node.js Alexa Skills Kit Samples

APIs

Gmail API

▼ Users.messages

Overview

delete

get

insert

list

modify

send

trash

untrash

import

batchDelete

Alexa Skills Kit

```
tell(speechOutput)
```

```
tellWithCard(speechOutput, cardTitle, cardContent)
```

```
askWithCard(speechOutput, repromptSpeech, cardTitle,  
cardContent)
```

```
onLaunch(launchRequest, session, response)
```

```
intentHandlers
```

```
onIntent(intentRequest, session, response)
```

Online Development Environment

Lambda > Functions > MyFactSkill

Test

Actions ▾

Code

Configuration

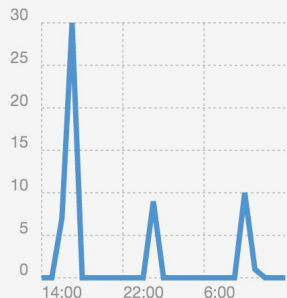
Event sources

API endpoints

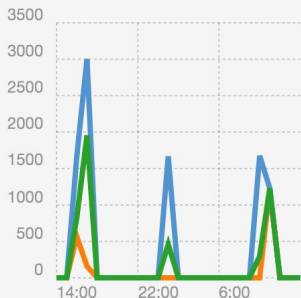
Monitoring

CloudWatch metrics at a glance (last 24 hours)

Invocation count ↺



Invocation duration ↺



Other monitoring information

Service Simulator

Use Service Simulator to test your lambda function.

Text

Json

Enter Utterance *

labels

Ask aml

Reset

Lambda Request

```
1 {
2   "session": {
3     "sessionId": "SessionId.d5d29ef5-7f42-4dbc-ae",
4     "applicationId": "amzn1.echo-sdk-ams.app.f2",
5     "user": {
6       "userId": "amzn1.ask.account.AFP3ZWPOS2BGJF",
7       "new": true
8     },
9     "request": {
10      "type": "IntentRequest",
11      "requestId": "EdwRequestId.21328e71-a0cc-4de9",
12      "timestamp": "2016-05-03T15:34:05Z",
13      "intent": {
14        "name": "LabelsIntent",
15        "slots": {}
16      },
17      "locale": "en-US"
18    },
19    "version": "1.0"
20  },
21  "shouldEndSession": true
22  },
23  "sessionAttributes": {}
24 }
```

Lambda Response

```
1 {
2   "version": "1.0",
3   "response": {
4     "outputSpeech": {
5       "type": "PlainText",
6       "text": "Labels are, CATEGORY PERSONAL, Jas",
7     },
8     "card": {
9       "content": "Labels are, CATEGORY PERSONAL,",
10      "title": "SpaceGeek",
11      "type": "Simple"
12    },
13    "shouldEndSession": true
14  },
15  "sessionAttributes": {}
16 }
```

Listen



Amazon Lambda Online Monitoring

Online Alexa Simulation (with Speech!)

Technical Challenges

- Authenticating the email account
- Limited resources/tutorials to reference
- Token refreshing
- Wifi Hotspots

User Research

Finding Users

- Users were primarily found through word of mouth
- We also checked r/Blind and r/Echo
- Referrals from other our users



Primary Users

Nancy

About Alexa:

- Likes that Alexa answers everything
- Uses Alexa for really basic things such as news, timer, Pandora
- “Do not use as much as I could”

Her Disability:

- Low vision-has a hole in her retina
- Other eye is functional but gets tired very fast

What she does with Gmail:

- Basic writing and reading emails
- Does not use filters or circles

Tech Skill:

- Does not like using her computer
- Will use her Ipad
- Will pitch her voice higher if device is having trouble recognizing speech
- Is accustomed to saying “Hey Siri”

Leo

About Alexa:

- Likes the idea of it, did not know it existed

His Disability:

- He is legally blind
- He is worried about developing bad tech habits

What he does with Gmail:

- Has trouble with attachments in emails-- anything outside the general text is stressful to deal with
- Doesn't want the device to describe the attachment, just notify if there is one (will probably ask sender about it in an email)

Tech Skill:

- Uses JAWS
- Does not like using Iphone (Voice Over is too difficult)
- Gets tired of using Siri real fast, will have his wife activate "Okay Google" on her phone.
- Is accustomed to saying "Hey Siri"
- Has bad results with voice recognition because of respiratory problems
- Will only check mail with Iphone but will not do other things with it

Secondary Users

Regina

- She is not familiar with Alexa. However, she has experience working with Dragon. She mentioned that she usually does not work with voice interfaces with her students.
- She is an Orientation and Mobility Specialist at LightHouse in Northern California.
- After testing Gmail-App, she was really impressed with Alexa and wants to look into purchasing one for her classroom.

User Testing

First Iteration



Second Iteration

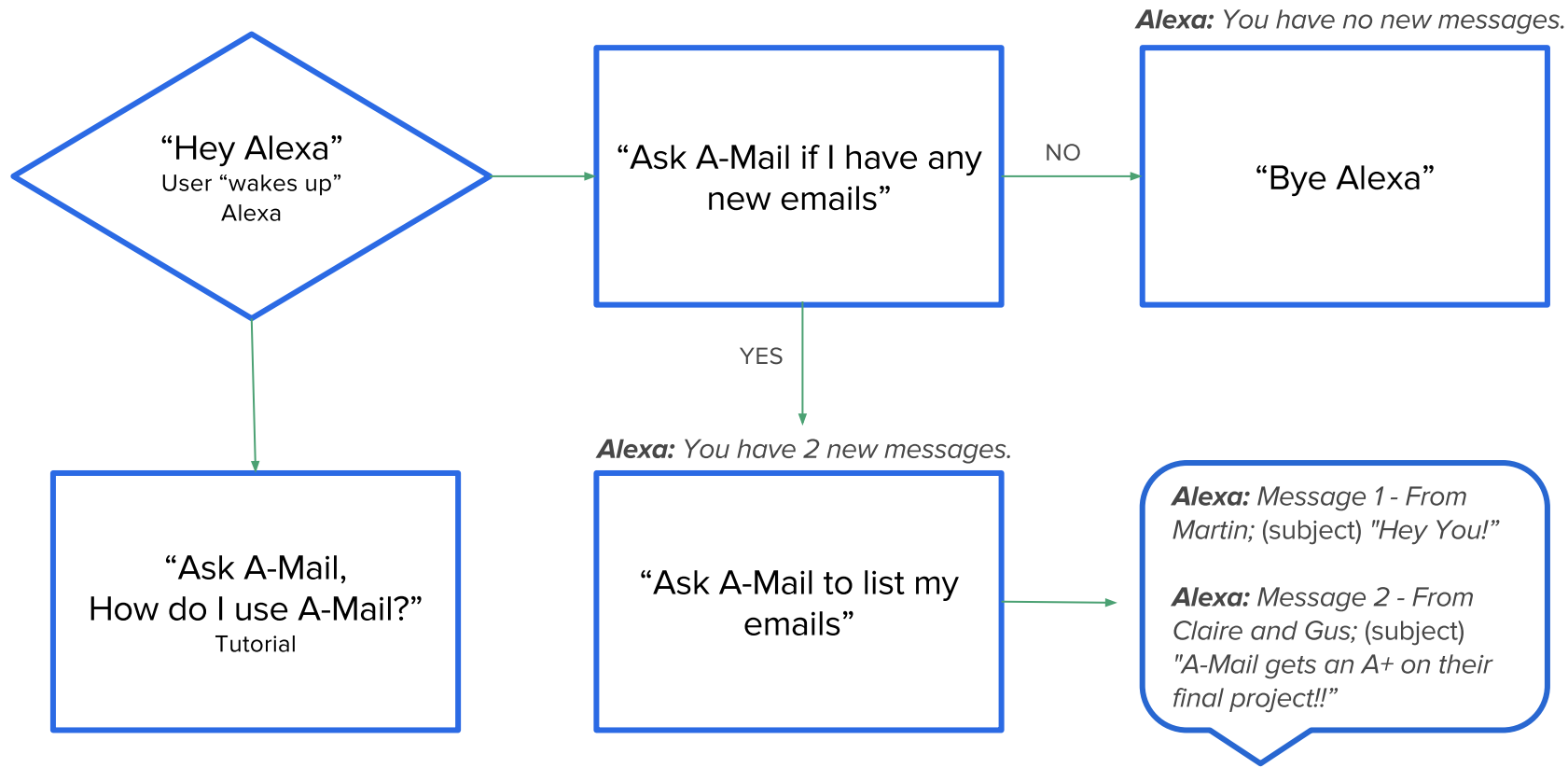


Final Version

- A-mail can now read email snippets
- Has a tutorial
- Includes more short utterances
- Includes more consistent utterances

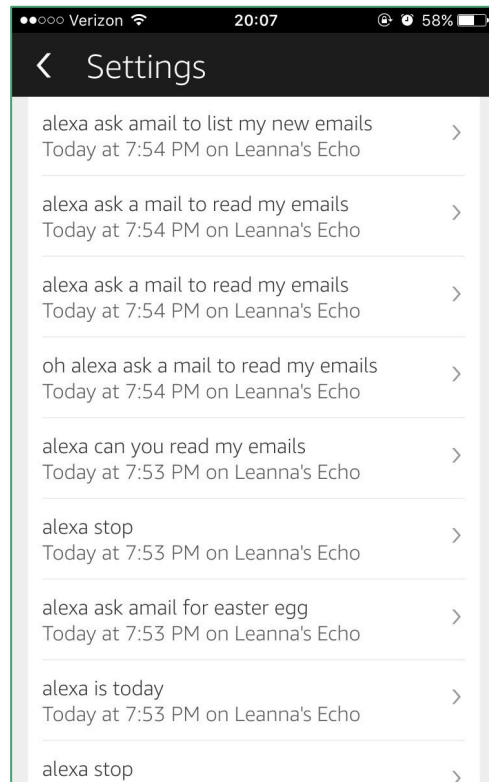
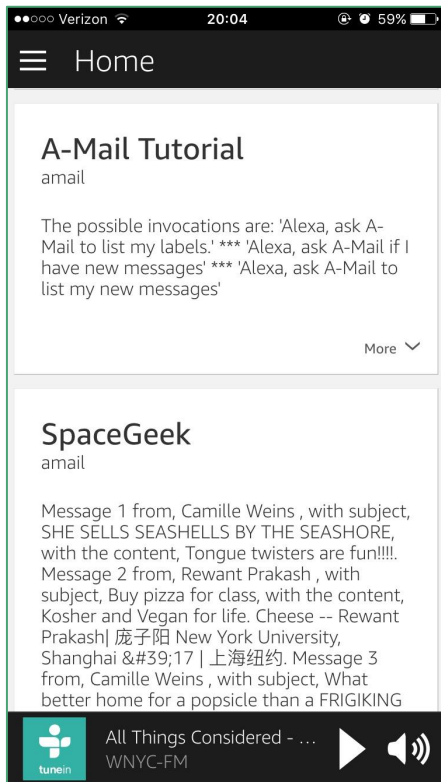
```
1  LabelsIntent list my labels
2  LabelsIntent give me my labels
3  LabelsIntent what are my labels
4  LabelsIntent labels
5  LabelsIntent tell me my labels
6  HowManyNewEmailsIntent how many emails do i have
7  HowManyNewEmailsIntent how many emails
8  HowManyNewEmailsIntent how many
9  HowManyNewEmailsIntent new emails
10 HowManyNewEmailsIntent do i have any new messages
11 HowManyNewEmailsIntent do i have any new emails
12 ListNewMessagesIntent emails
13 ListNewMessagesIntent list my new messages
14 ListNewMessagesIntent list emails
15 ListNewMessagesIntent new messages
16 ListNewMessagesIntent list my new emails
17 ListNewMessagesIntent list messages
18 ListNewMessagesIntent what are my emails
19 AMailHelpIntent tutorial
20 AMailHelpIntent how do i use a mail
21 EasterEggIntent easter egg
```

User Flow



Demo!

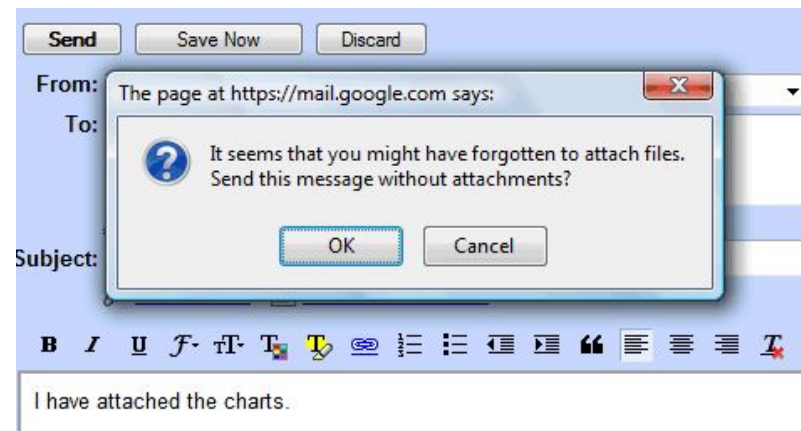
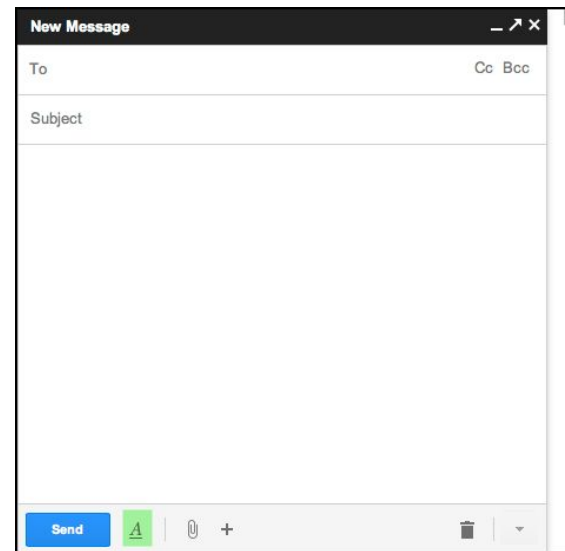
Cards



Conclusion

Future Improvements

- Handling cards for the login
- Write messages
- Attachment detection
- Push Notification for new emails
(maybe every 15 min or 30 min - time can be customized)
- Use email services beyond gmail



A-Team Out

