



The Journey from No Code, to Low-Code, to Code

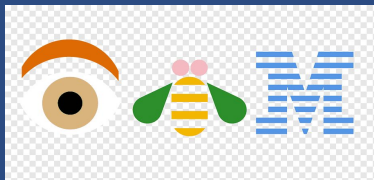
Dmitri Altum - Systems Engineer



Who am I?

- First and foremost: A dog dad
- Spent time at Meijer, IBM, Fleetsmith
- Currently a systems engineer at Ramp

meijer



Fleetsmith

Overview

What is this
journey all
about?

An Evolution

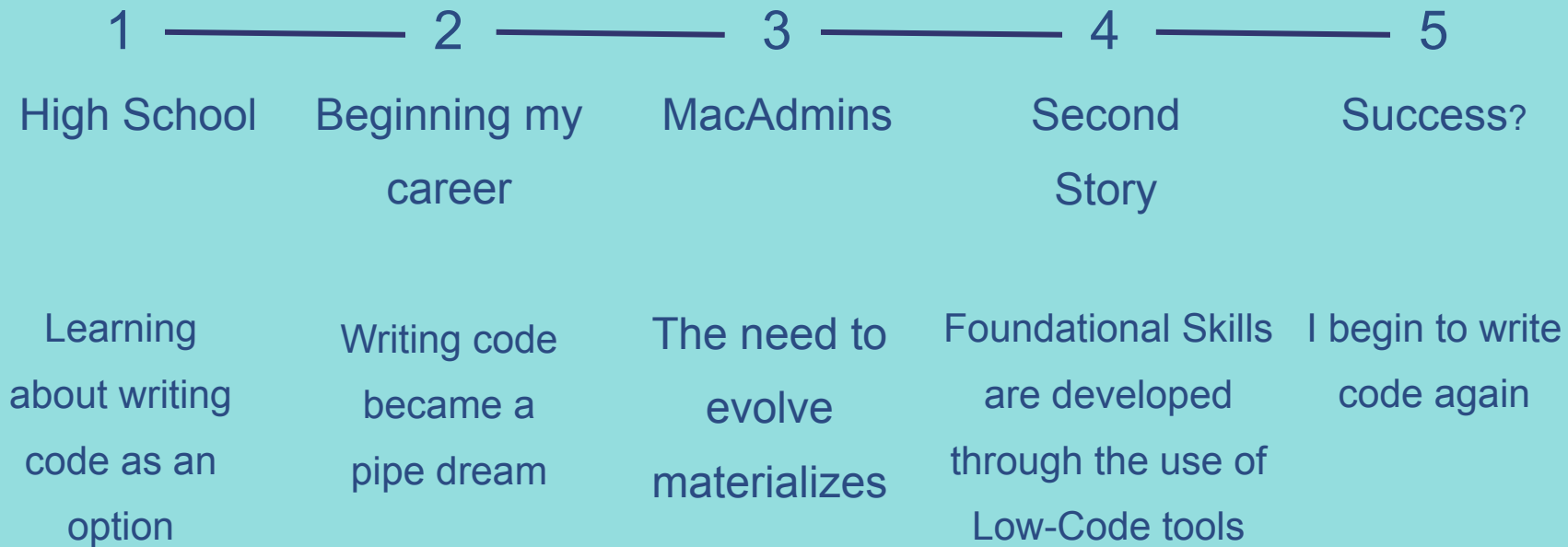
Learning code started as a desire, and turned into a need to evolve

Traditional Resources Weren't Helping

Textbooks, school courses, and online courses weren't helpful

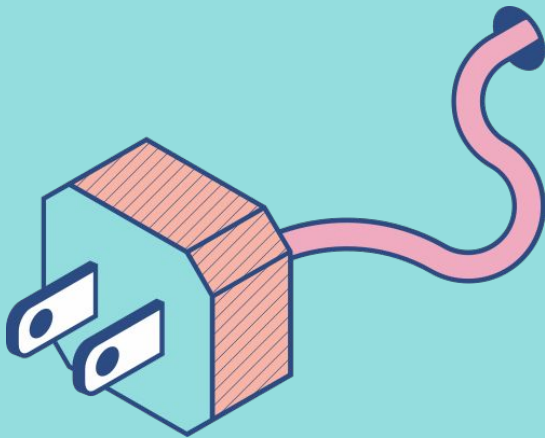
Doing My Part in Giving Back

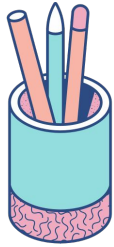
Hopefully at least one person walks away with some new ideas on how to grow



Where did the journey begin?

- High school VB & C++ classes sparked my interest in building things
- I had to give up on that idea and chase down something I felt was more realistic





The Start of No-Code





The No-Code, No-Learn problem

- The environment I “grew up” in for IT didn’t value automation
- Click-ops was common and accepted. It was “safe”
- If things took a while to accomplish?
Job security
- As I grew in roles, I needed to learn
- I started to write bash scripts, but I had too many questions
- I went searching for answers, and found MacAdmins

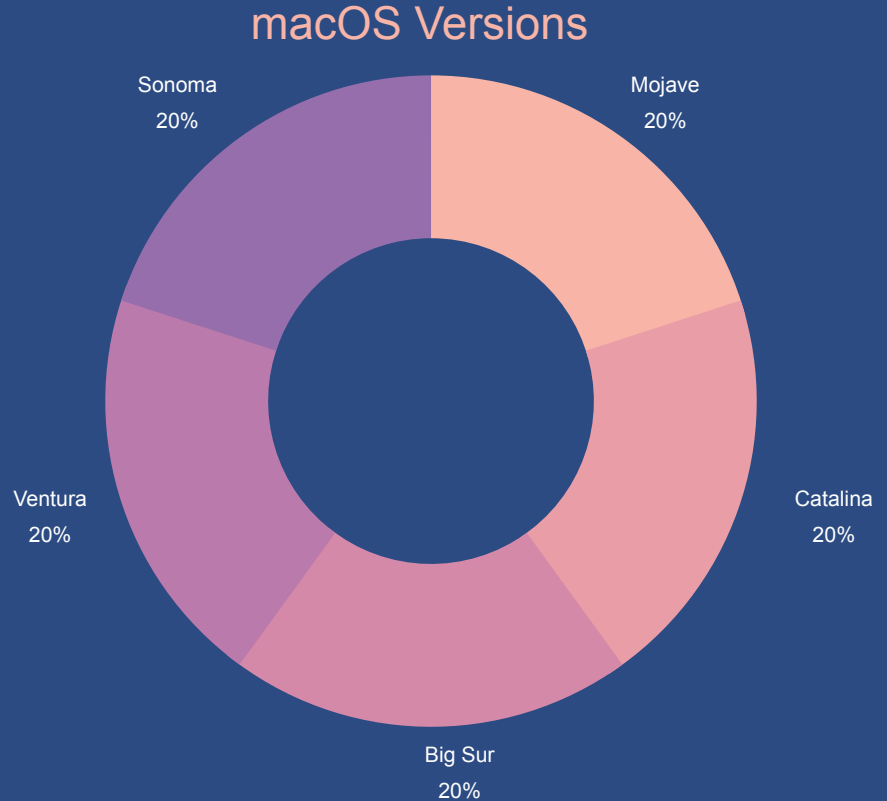
MacAdmins makes a case

Incredible Projects

- Munki - Greg Neagle
- MDS - Tim Perfitt
- So many others

Incredible Scale

- AirBnB - Graham Gilbert
- SAP - Rich Trouton
- & more!



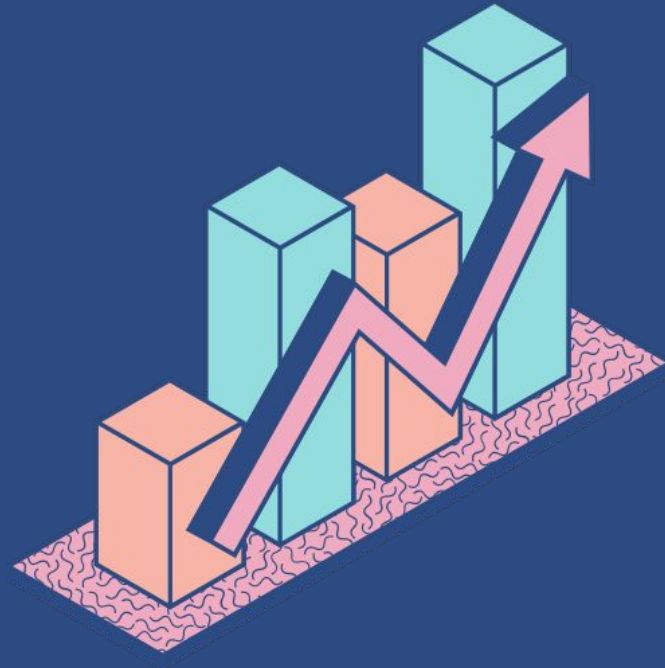


Most importantly: I was gifted the realization that I needed to grow & evolve



The role of IT

- We helped people learn to use technology
- Traditionally seen as a cost center
- With the increased significance of technology, our impact can be felt more than ever
- We are becoming a force multiplier





Joining the startup world

- Teams were leaner
- Timelines were shorter
- Personal stakes were higher

Forbes

FORBES > ENTREPRENEURS

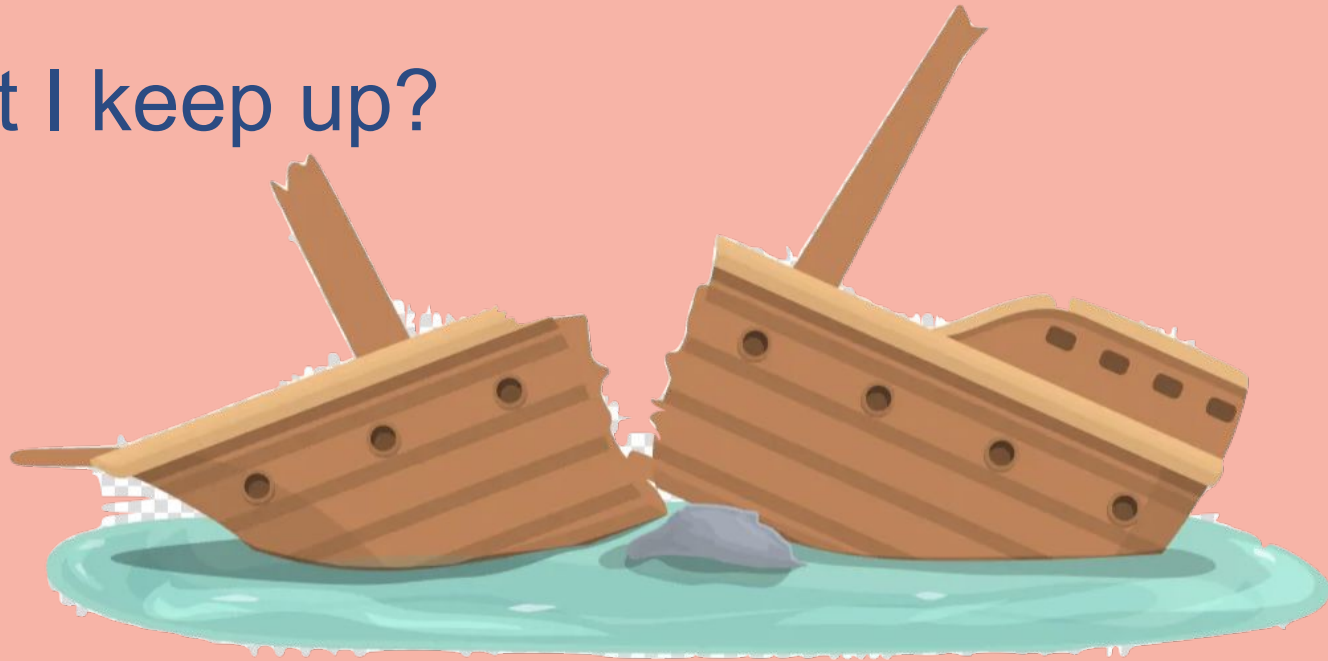
90% Of Startups Fail: Here's What You Need To Know About The 10%

Neil Patel Former Contributor @

I cover entrepreneurship, conversion optimization, marketing and sales

- I couldn't keep up

Why couldn't I keep up?



Repetitive Requests Grew

Tasks like onboarding and offboarding became lengthier and more time consuming as the company grew

...and became more frequent

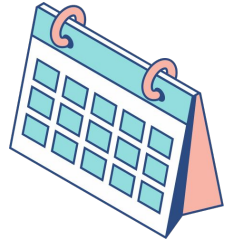
With more people, these repetitive tasks needing done more frequently. High growth came at a cost

All I could do was keep us afloat

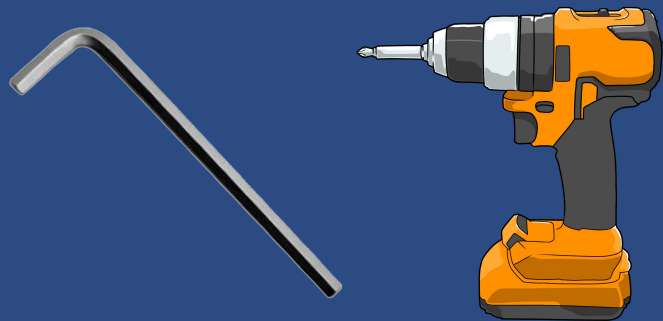
I couldn't focus on helping become a force multiplier, it was all I could do not to sink.



The Start of Low-Code



But why Low-Code?



Low-Code Provided an easy starting point

Even with limited resources, it was easy to get things accomplished quickly with a low code tool.

Low-Code is the Ikea of the IT world

Like building Ikea furniture, generally decent instructions, tools included, but you can still make it easier with your own tools. Oh, and you'll certainly get frustrated.



Why - Expanded

- Faster Development Time
- Drag & Drop Interface
- Non-Technical Users
- Incredibly easy to spin up & shut down



So...where do I start?

- I was overwhelmed, it felt like I hadn't had my coffee yet
- Ok sorry that was a lie, I don't drink coffee...but I imagine that's what it felt like!
- I started to look at what others were doing
- I looked at the (barren) templates

Let's Go!

I'm going to solve world hunger

Or...maybe not. Maybe I should just start small

A magnifying glass icon with a teal handle and a pink and white striped ring, positioned at the end of the search bar.

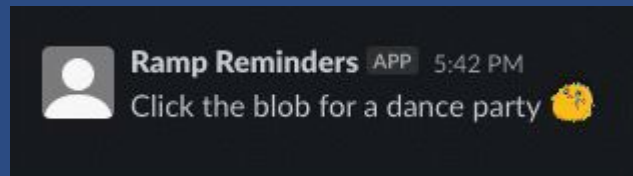
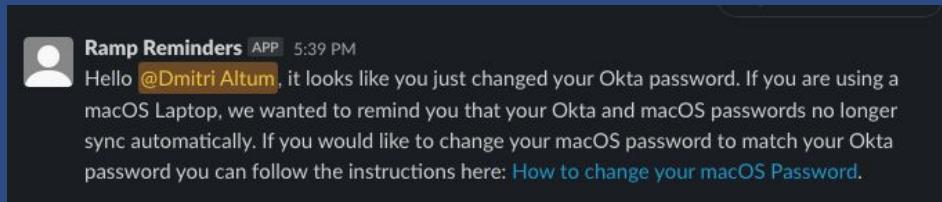
Search

Digital Learning Checklist

On-Boarding	Misc. Tasks	Reporting	Off-Boarding
Account Creation	Slack Messages	MDM Reporting	Remove User from Groups
Scheduled Account Activation	Google Device Monitoring	Device Trust Reporting	Transfer Calendar
Email Alias Creation	Privilege Alerting	User Access Logs	Set up Email Delegates
Group assignments			Transfer Google Drive

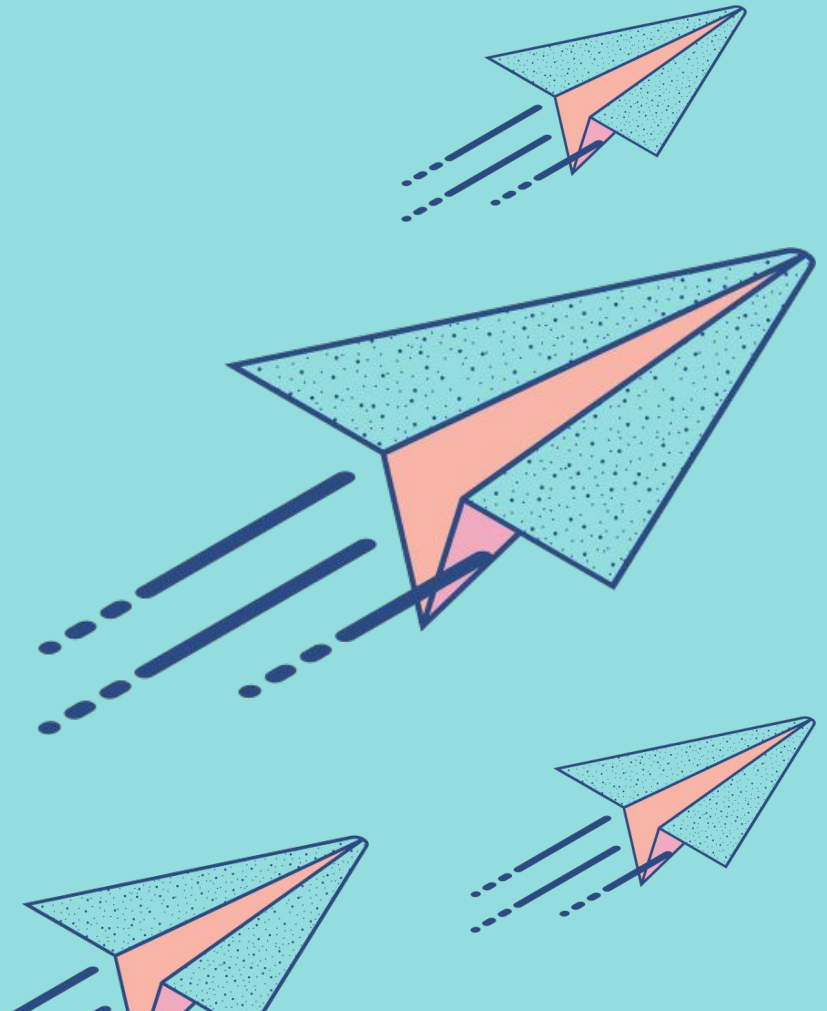
“We need to go to where our users are, not make them come to us”

- Me to myself probably
- Similar to SSO, everything can be under “one roof”
- This led to a fun (somewhat) malicious attack vector

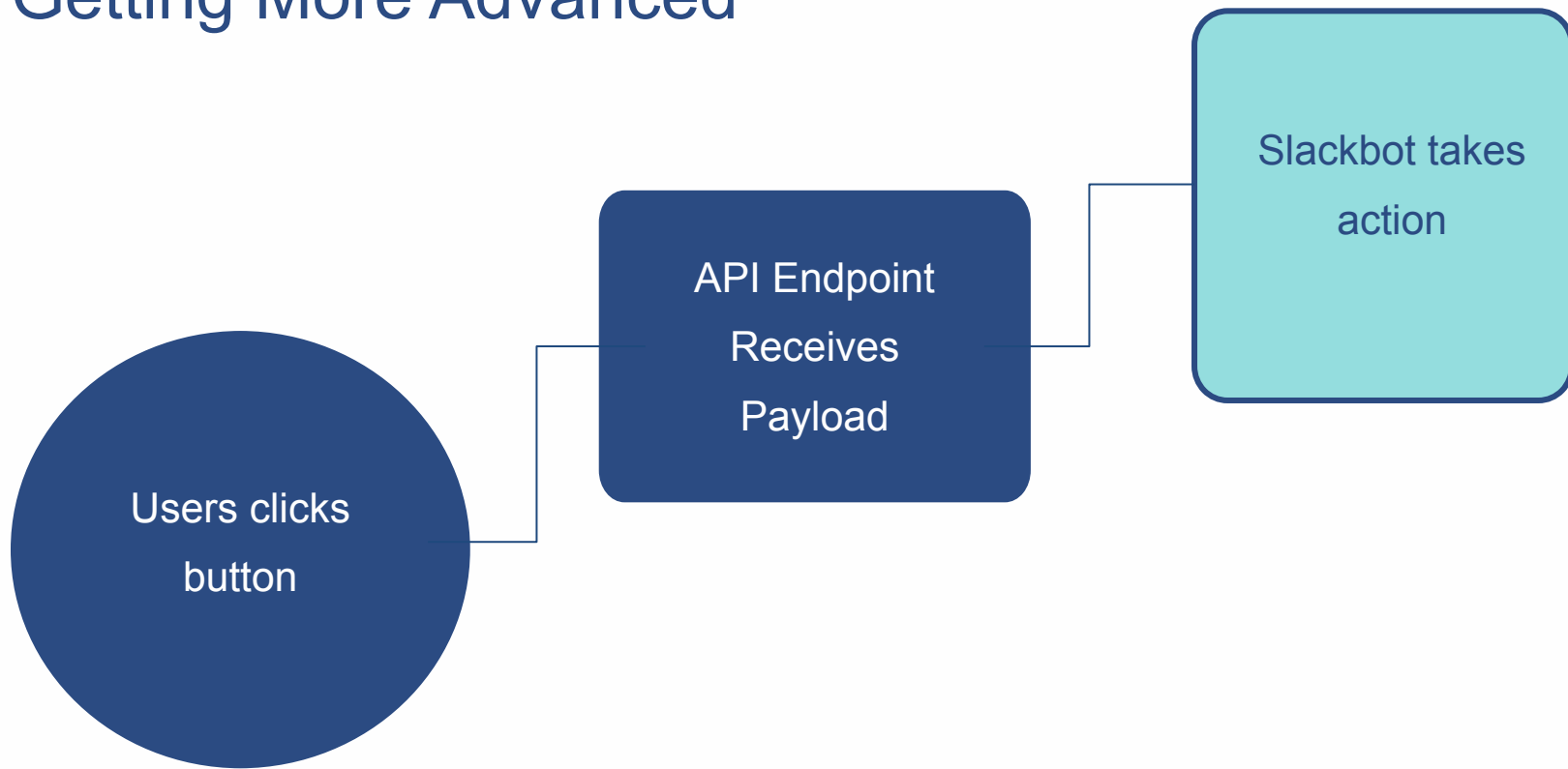


Moving Forward


- As I handled the basic tasks with relative ease, it freed me up to look at more advanced tasks
- I could look for ways to drive the company forward, not just IT.



Getting More Advanced



Getting More Advanced

 Off-Ramp ▾

[Home](#) [Messages](#) [About](#)

Schedule a new off-boarding

Press Schedule Off-boarding to begin the process

[Schedule Off-boarding](#) [Cancel](#)

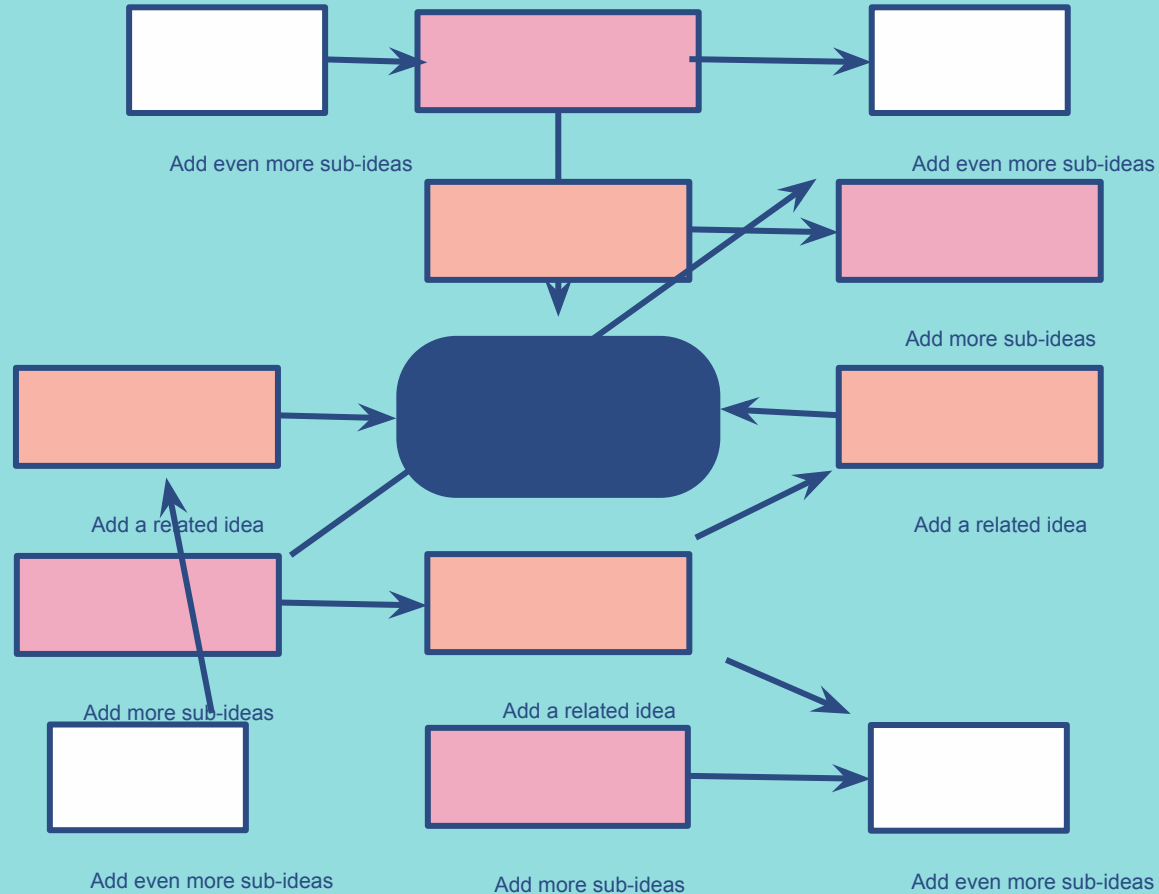
Currently scheduled off-boards

Hey there @Dmitri Altum, here is a list of our currently scheduled off-boards:

Name [REDACTED]	Email [REDACTED]
Off-board Time 5:00 pm	Off-board Date 2023-07-14
Ticket Link	IT-0296

So what did I start to build?

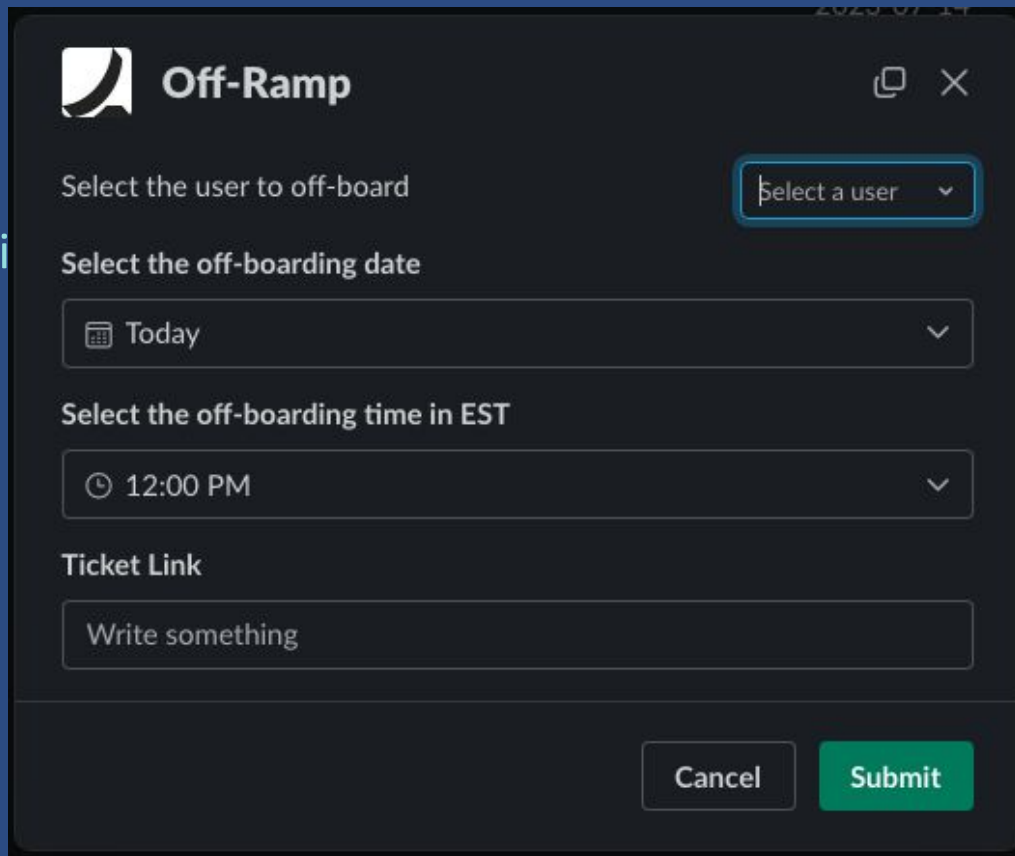
A bit of a jumbled mess...



Off-Ramp

Off-boarding Slack Bot:

Initial design credit goes to @Pete Vi
on MacAdmins Slack (link in
resources)



The screenshot shows a Slack message from the 'Off-Ramp' bot. The interface is dark-themed. At the top left is the 'Off-Ramp' logo and name. At the top right are icons for a copy and a close window. The main form contains four sections: 1. 'Select the user to off-board' with a dropdown menu showing 'Select a user'. 2. 'Select the off-boarding date' with a dropdown menu showing 'Today' and a calendar icon. 3. 'Select the off-boarding time in EST' with a dropdown menu showing '12:00 PM' and a clock icon. 4. 'Ticket Link' with a text input field containing the placeholder 'Write something'. At the bottom right are two buttons: 'Cancel' and 'Submit'.

Off-Ramp

Select the user to off-board

Select a user

Select the off-boarding date

Today

Select the off-boarding time in EST

12:00 PM

Ticket Link

Write something

Cancel Submit

Slack Interactivity

- Slack has an “interactivity” entry point
- All requests go to one API endpoint.
- Cannot distinguish between “button types” or “interaction types”

Schedule Off-boarding

Cancel

Off-Ramp

Settings

Basic Information
Collaborators
Socket Mode
Install App
Manage Distribution

Features

App Home
Org Level Apps
Incoming Webhooks

Interactivity & Shortcuts

Slash Commands
Workflow Steps
OAuth & Permissions
Event Subscriptions
User ID Translation
App Manifest NEW
Beta Features

Submit to App Directory

Review & Submit

Give feedback

Slack ♥
Help
Contact
Policies
Our Blog

Interactivity & Shortcuts

Interactivity

On

Any interactions with shortcuts, modals, or interactive components (such as buttons, select menus, and datepickers) will be sent to a URL you specify. [Learn more.](#)

Request URL

<https://ramp.workflows.okta.com/api/flo/>

Slack will send an HTTP POST request with information to this URL when users interact with a shortcut or interactive component.

Shortcuts

Let people take actions — like filing a bug or adding a new sales lead — while using your app in Slack. [Learn more.](#)

Name	Location	Callback ID
------	----------	-------------

Create New Shortcut

Select Menus

If you want to load external data in your select menus, you need to provide an options load URL. [Learn more.](#)

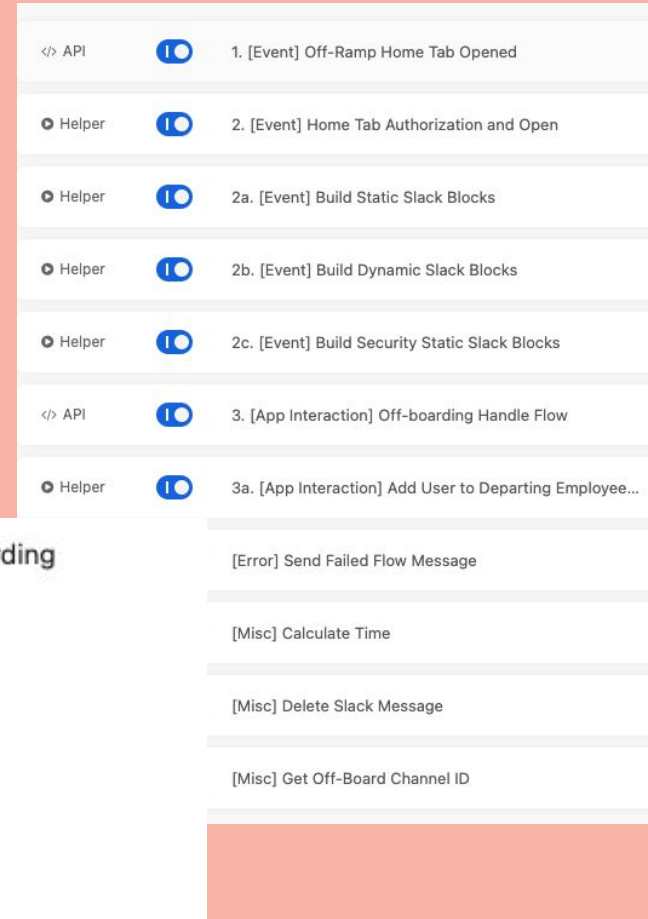
Options Load URL

<https://my.app.com/slack/options-load-endpoint>

For interactions with select menus where `type` is set to `external_select`, Slack will send an HTTP POST request with information to load options from this URL upon user invocation.

Off-Ramp - Modules

- Originally had a “All in one” mindset.
- Realized quickly this made troubleshooting and testing very difficult
- Broke it down into Modules & Sub-Modules.



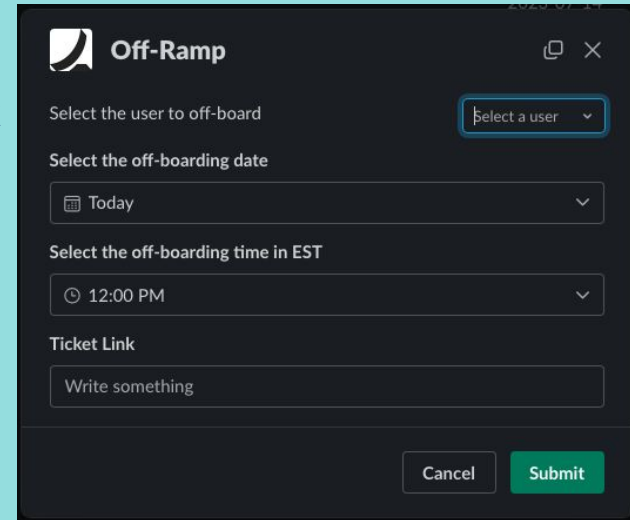
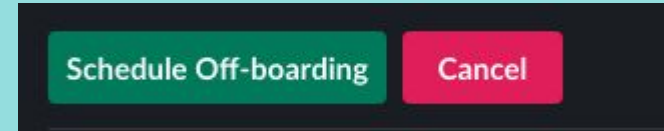
Off-Ramp - Schedule

- Needed a way for IT & HR to schedule off-boarding
- Didn't want to just "trigger" the app manually, as there may be late night/after-hours exits.

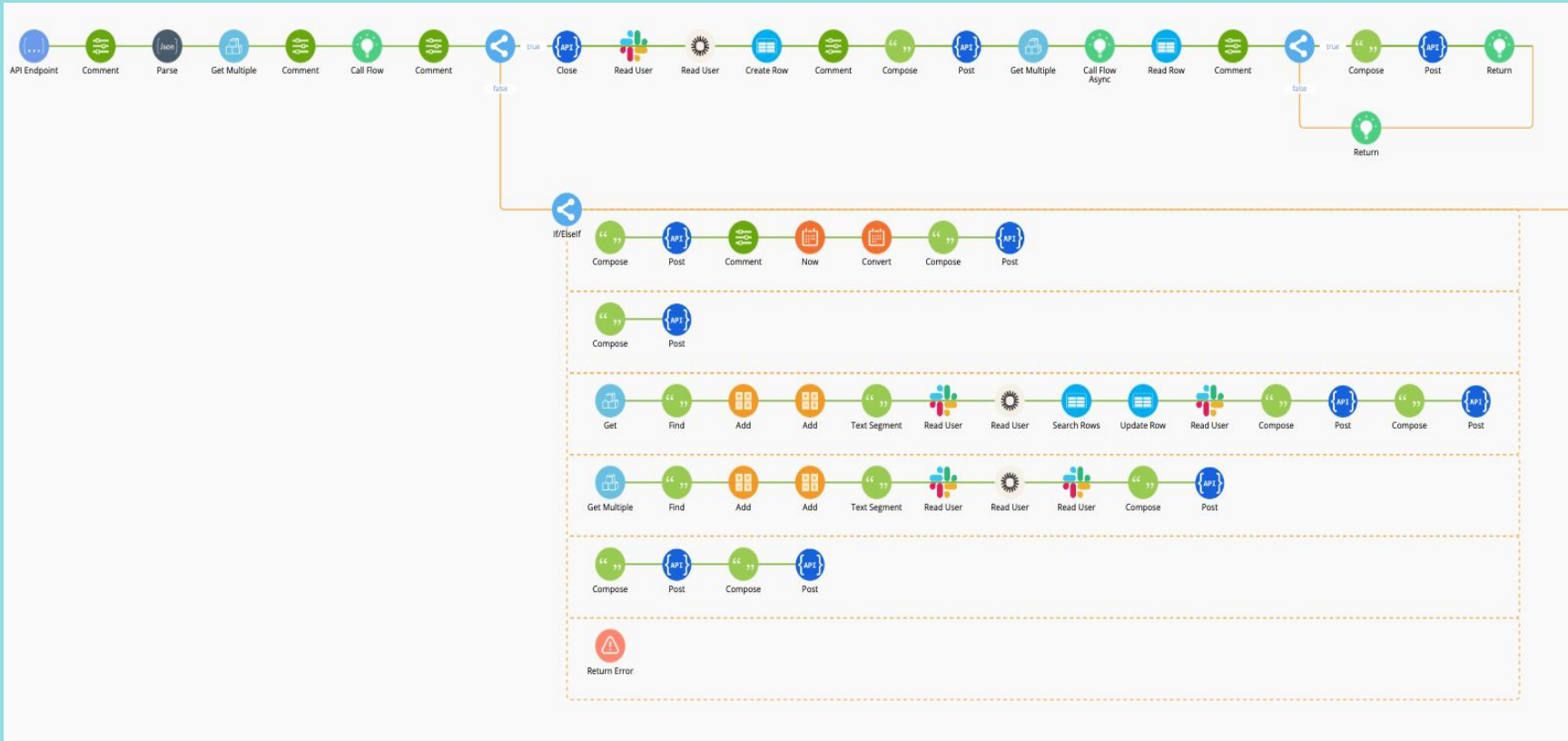
Off-board Time ⚙	Offboard Date ▾ ⚙	Off-boarding Done ⚙
17:00	2023-07-14	false
18:00	2023-07-07	true
17:00	2023-07-07	true
17:00	2023-07-07	true
22:15	2023-07-06	true
17:00	2023-06-30	true
17:00	2023-06-30	true
18:00	2023-06-30	true
17:00	2023-06-29	true
17:00	2023-06-23	true

Off-Ramp - What Happens when a user clicks Schedule

1. A payload is sent to API endpoint, including some basic information.
 2. API endpoint reads the payload and determines what action to take based on what button was clicked
 3. A modal view is created using Compose/Construct Cards
 4. The modal view is “published” to the user.
-
1. The user selects an employee, date, time, and gives a ticket link and submits that info
 2. The same API endpoint receives a payload with that new information
 3. Based on the button that was clicked, the API endpoint chooses what to do
 4. Information is added to a table (or “DB”)

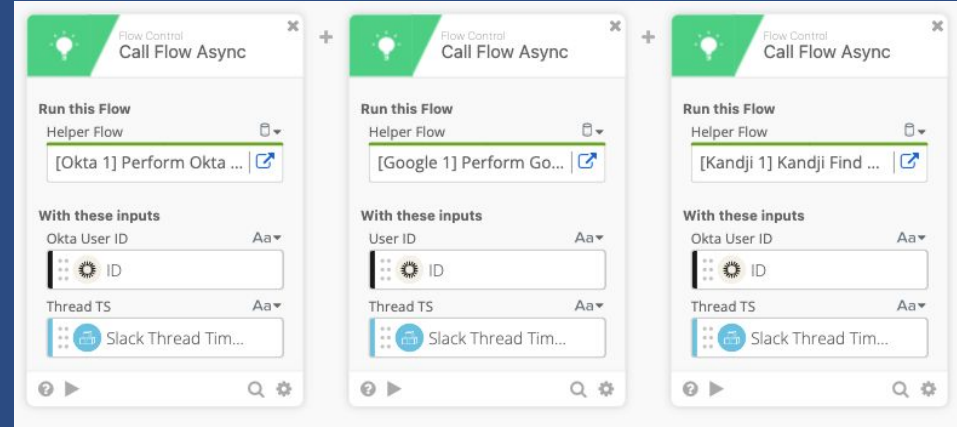
A dark-themed modal window titled "Off-Ramp" with a close button in the top right. The form contains four sections: "Select the user to off-board" with a dropdown menu showing "Select a user"; "Select the off-boarding date" with a dropdown menu showing "Today"; "Select the off-boarding time in EST" with a dropdown menu showing "12:00 PM"; and "Ticket Link" with a text input field containing the placeholder "Write something". At the bottom right are "Cancel" and "Submit" buttons.

Off-Ramp - What Does That API Endpoint Look Like?



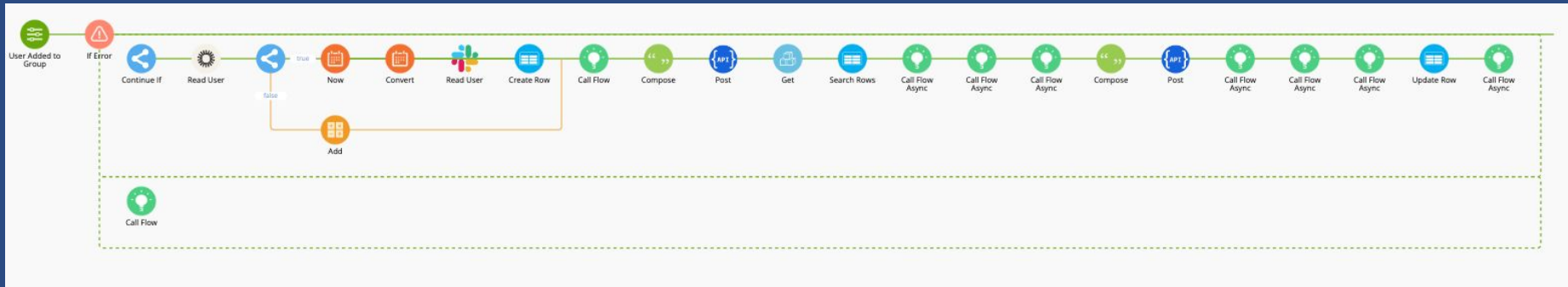
Off-Ramp - Perform

- Reads the table at set intervals
- Any rows that match conditions trigger the off-board.
- Many flows running simultaneously



Off-Ramp - What it Looks Like

- Not only does it need to perform many off-boarding actions, it needs to notify for those that it can't do.
- Alerting is critical



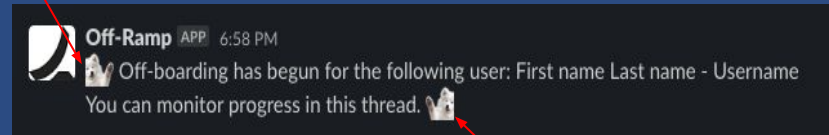
Off-Ramp - Fun Intricacies

- Dynamic setting date selector
- “Get Off-board Channel ID” flow
- Even prank my coworkers
 - When you watch this, try clicking the emojis on the most recent off-board :)

Select the off-boarding date

Today

Off-boarding Channel ID		Filter	Columns	
rowId (auto)	updated (auto)		Channel ID	Channel Name
8f0e79f0-fe42-11ec-955	7/12/22 8:14pm UTC		C05	Off-board Workflow Testing
1dd9fb20-021f-11ed-9b4	9/30/22 7:44pm UTC		C05	IT-Alerts

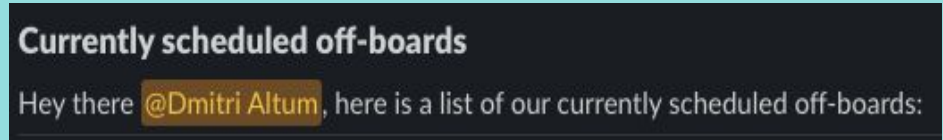
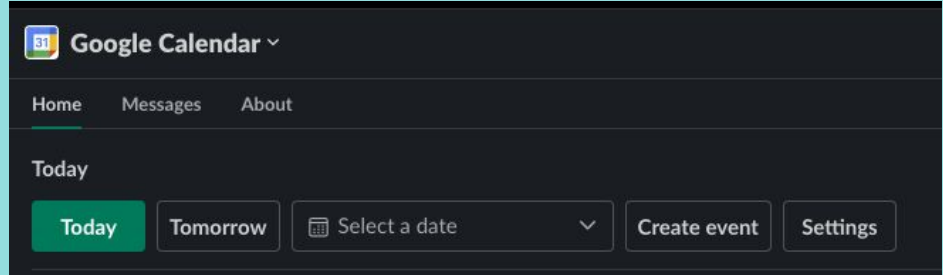


Off-Ramp - Concerns

- Who gets access?
- How do I limit access?

Who Gets Access & How Do I Limit Access?

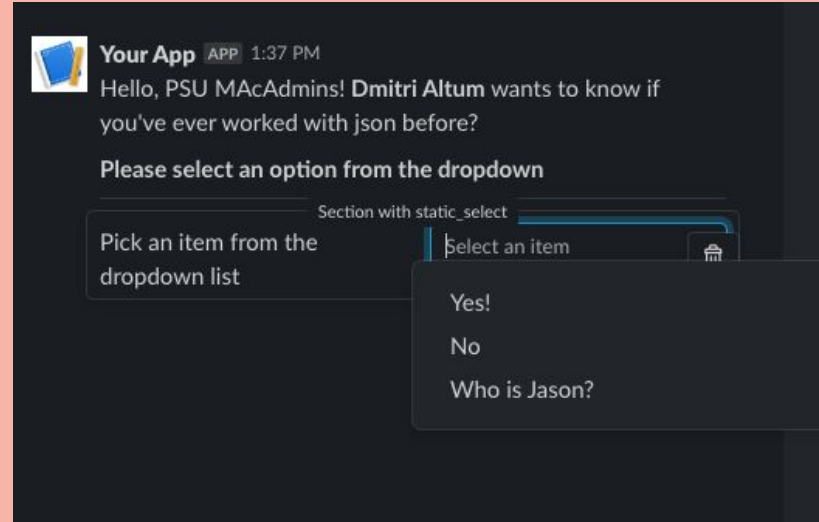
- Cross-functional Conversation
- This was more difficult.
- Originally planned to only be used in 1 channel
- Customize to the user



So what are some
lessons from
Off-Ramp?

Working with Jason...err json.

- Being brand new to json, I wasn't familiar with how it worked, how to write it, or why I kept getting all those gosh darn errors.
- Sought out tools to help and learned a few things: Slack's Block Kit Builder, Json Linters, Json visualizers
- Learned about objects, lists, and more.



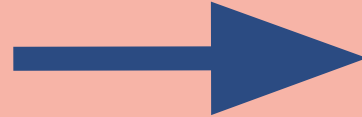
Expected Input

- Working with json gave me familiarity with structured data
- Expected input/output was crucial
- Error handling



In

Out



Stumbling into advanced

- Working with API endpoints, not just json.
- Monolithic vs Microservices even entered my brain
- (Spoilers: At small scale, less about performance, more about troubleshooting ability).



Dmitri Altum ● 7 months ago

I have a sorta eng based question that you might not be the best person to ask but maybe you can point me to who in eng could give me a solid discussion if you aren't:

In this example every time a user is added to an Okta Group, an event hook fires somewhere. From a performative standpoint is it better to have one ingestion point for that event hook that determines what "service" to send it to, or is it better to have many services that all ingest that event data and determine individually if they need to do anything with it? I.e. Service A only needs to take action if the person was assigned to Group1, Service B only needs to take action if the person was assigned to Group2, etc.

4 replies



Dmitri Altum ● 7 months ago

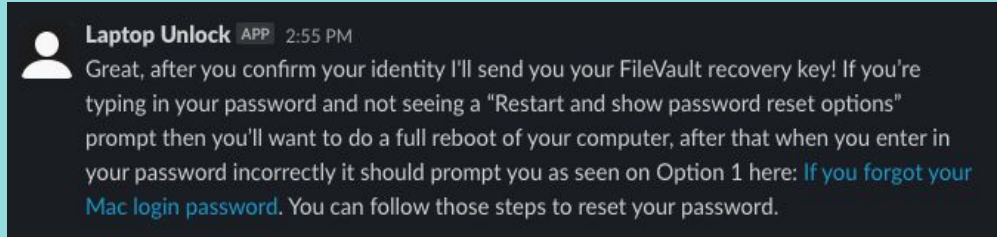
Also have i opened a can of worms and stumbled upon micro services architecture discussion?

Skeleton Key

Ramp Access 'Mediately Please - Skeleton Key

FileVault Recovery Tool

Shoutout to @Gabriel Sroka on Slack for helping point me in the right direction.

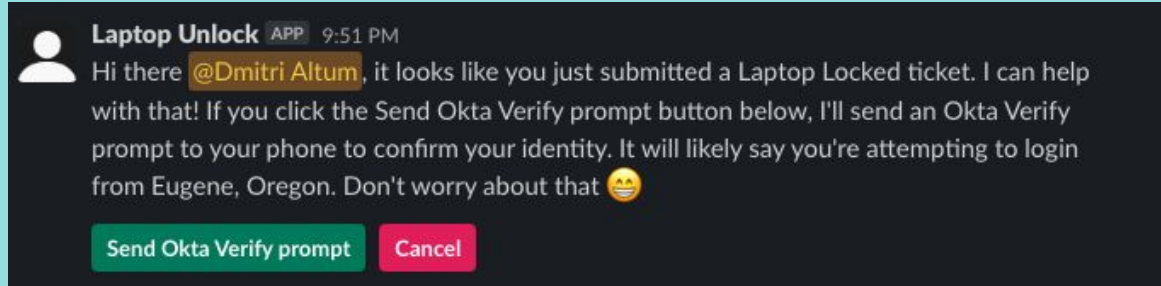


Skeleton Key - How It Works

- Webhook generated by ticket type

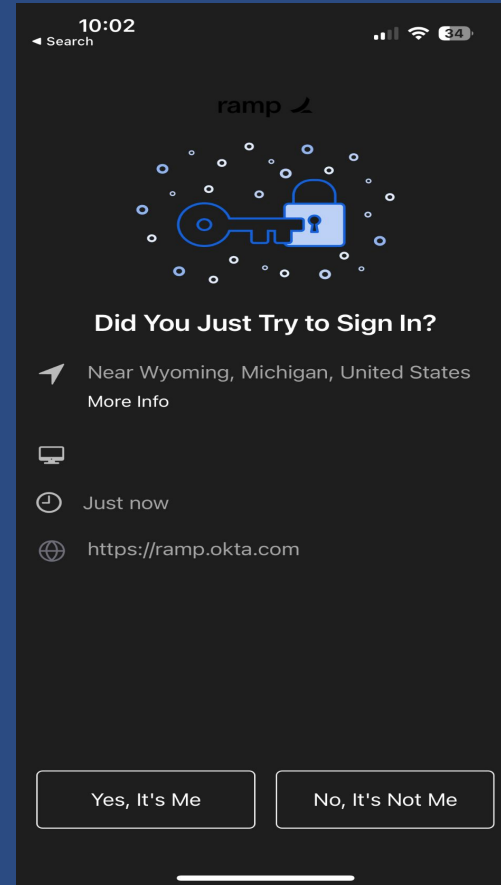
- Sent to API endpoint

- Triggers Slack bot



Skeleton Key - How It Works

- Lookup User Info
- POST Call - Push Notification
- Verify Result



Skeleton Key - How It Works

- Find Devices
- Post FileVault Key with instructions on how to use
- Most importantly: Self-Destruct

If you're still having difficulty accessing your laptop after trying that, and this is an emergency, please use our on call system, which you can trigger by emailing it-emergency@ramp.com OR the IT Emergency Workflow in [#team-it](#). Otherwise, we will respond to your request as soon as we can during normal business hours (8am-6pm M-F).
Sorry, for security reasons the FileVault Recovery Key has been wiped from Slack.

So what are some
lessons from
Skeleton Key?

API Usage

- Different types of calls
- Utilizing API Responses

Get

Post

Put

Patch

Delete

Looping

- Looped to verify result
- Looped through all devices assigned to a user in Kandji
- Looped through table results



Looping..

- Looped to verify result
- Looped through all devices assigned to a user in Kandji
- Looped through table results



Looping....

- Looped to verify result
- Looped through all devices assigned to a user in Kandji
- Looped through table results



Help...I'm stuck in
a loop

Wiping Secure Information

- Too many tools don't clean up after themselves
- It's not just about how you retrieve/send data.



Lumiere - Director of Animate Assets

Rapid Asset Movement Pipeline (R.A.M.P.) aka - Lumiere (Director of Animate Assets)

- A fully automatic sync between Kandji & Snipe-IT



Lumiere - Asset Manager APP 3:18 PM

Over 50 actions were taken, please see the CSV file located in IT Shared Drive for the list:

[Asset Automation Backup CSV](#)



1 reply 2 months ago



Lumiere - Asset Manager APP 1:06 PM

Created device

Serial

in Snipe-IT and assigned to

User

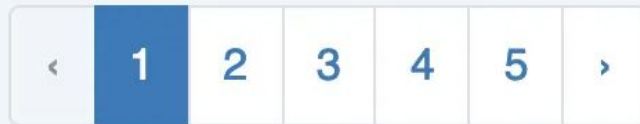
[illegible]

Lumiere - Pagination

- The first time I experienced pagination necessity
- Struggled to figure out how to utilize API response

Lumiere - Looping

- Pagination involved loops...again...we're definitely stuck in some sort of loop



Code-Aid Mixer



Starting code...without starting code

- Custom Logic needed
- UI needed

Channel ID *

Enter value

[How to find Slack Channel ID](#)

Make Channel Public

!

Important:
All use of this tool is logged. Do not abuse this tool. Confidential/Sensitive Data is a protected data class with consequences. See data policy for more details.

{ }

GetChannelMembers

JS

CheckListofUsers

...

{ }

FlipChannelToPublic

{ }

RemoveBotFromChannel

JS

showNotification

JS

showFailNotification

Code Snippets

- Utilizing a new low-code tool came with challenges
- Needed to write some code
- Lots of Stack Overflow & even some ChatGPT

```
1  const FindUserIDResponse = FindUserID.data
2
3
4  const GetChannelMembersResponse = GetChannelMembers.data
5  const callSucceeded = GetChannelMembersResponse.ok == true
6
7  const channelMembers = GetChannelMembers.data.members
8  const currentUserID = FindUserID.data.user.id
9
10
11 // Check if the current user ID is present in the array
12 const isCurrentUserPresent = channelMembers.includes(currentUserID);
13
14 if (isCurrentUserPresent) {
15
16   utils.showNotification({
17     title: "Found User in Channel",
18     description: `Found ${current_user.email} in ${ChannelId.value}`,
19     notificationType: "success",
20     duration: 5
21   })
22
```


Converting Slack Channels

- A lot of “Make this channel public” requests
- Takes Slack ID
- Looks up Channel Member List
- If found, makes public, if not, does nothing.



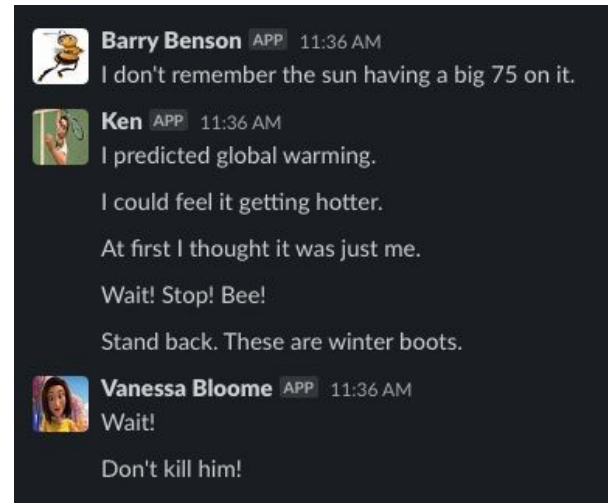
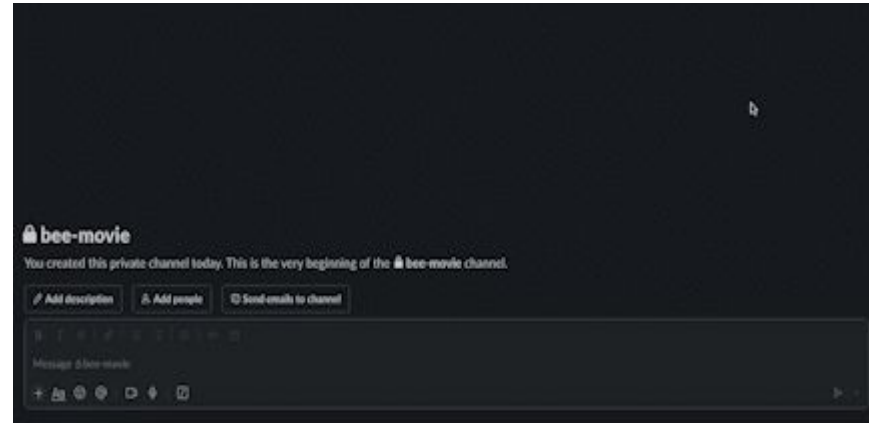
My Magnum Opus

What about my favorite?

- Dmitri Motion Pictures Presents
- The Bee Movie: An Okta Workflow

But what did I learn?

- A whole lot of nothing.





The start of Code



Why Move to Code?

- Limitations in the IPaaS Architecture
- Reliance on vendor updates
- Selfish Self-Preservation



Limitations in IPaaS

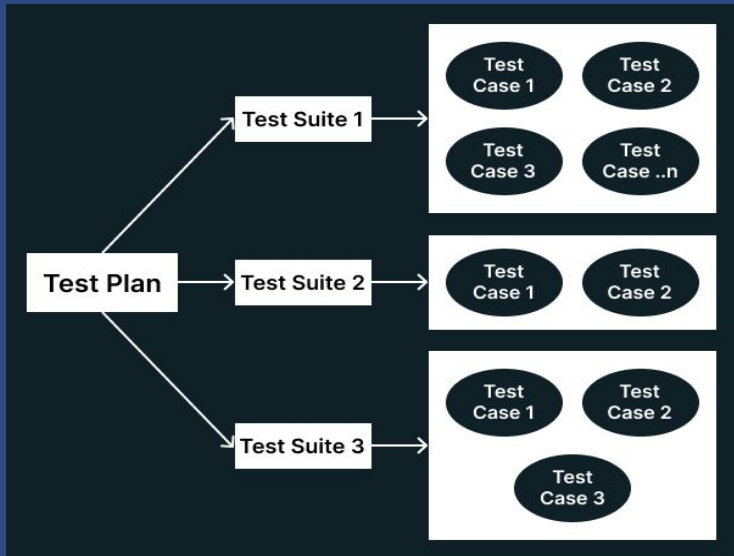
- RBAC was a big concern
- Data security
- Weird architecture quirks
- Version Control/Review

Workflows	W, C, B	H1	H2	1+ yr
Workflows for Customer Identity	C	●		
Workflows Templates	B	●		
Connector Builder	B	●	●	
Flow Versioning	B	●	●	
Searchable Flow History	B	●		
System Log Integration	B	●		
Workflows RBAC	B		●	
Public API	B		●	

Reliance on Vendors

- Broken cards
- API Updates
- Test Cases

```
},  
"message": "404 Not Found",  
"description": "HTTP Request Error",  
"steps": 7,  
"source": f
```



Selfish Self-Preservation

- You have to look out for yourself
- Career Transition Options
- Build your own brand



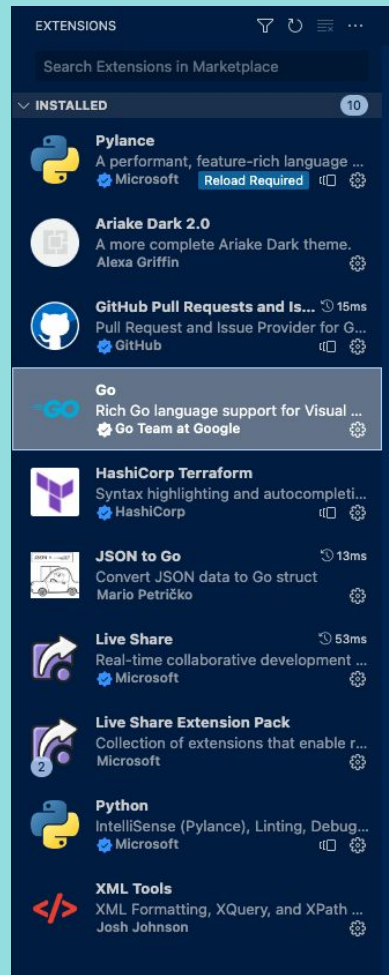
How did I start?

- Picking a language
- Setting a goal/task to accomplish
- Utilizing community members
- Plus...look at that cute mascot

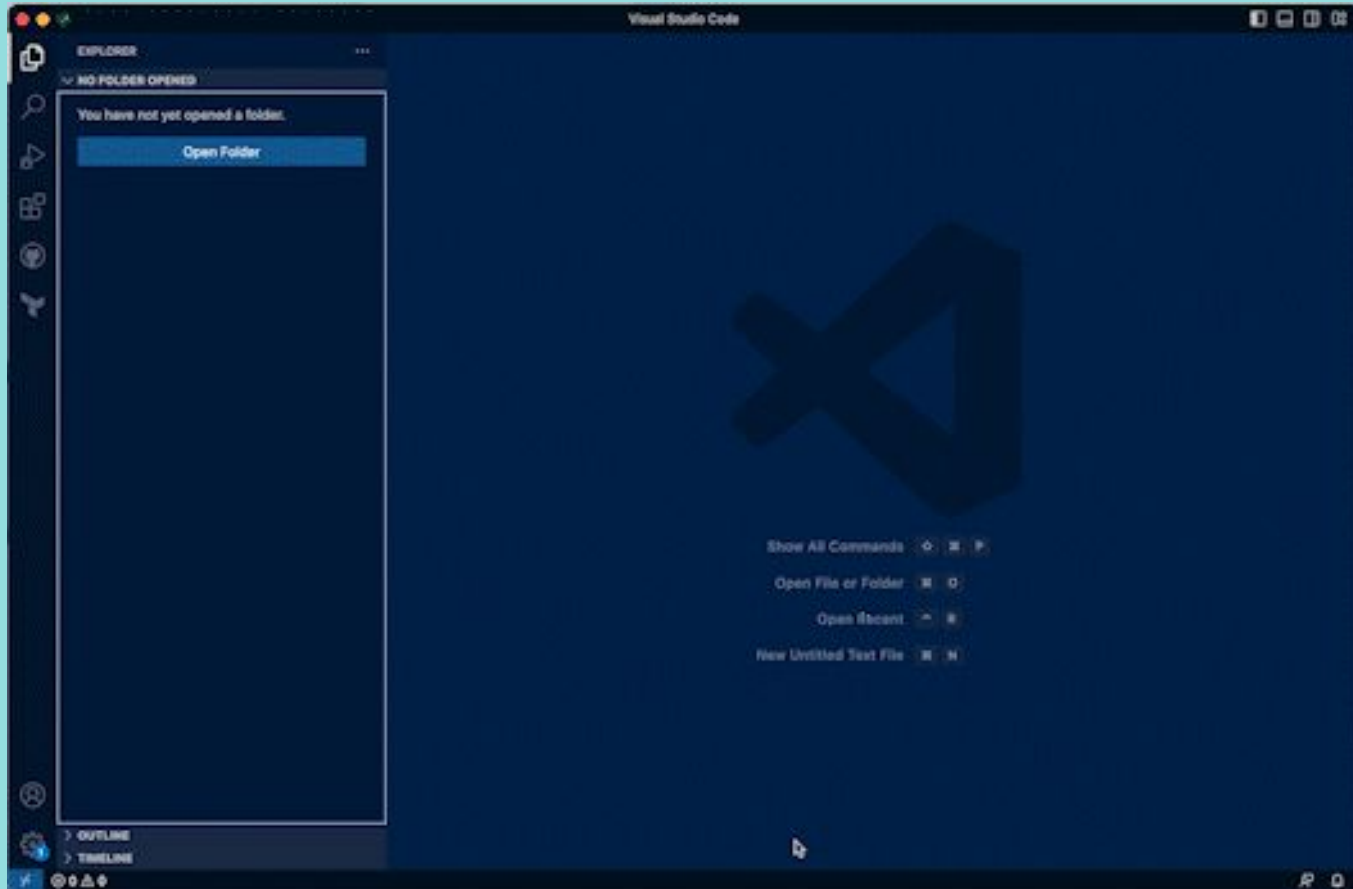


Picking Tools

- Find an IDE (integrated development environment) you enjoy
- Find useful extensions



But what do you even look for?



Healthy (Coding) Habits

- Comment on everything!
- Consistent Formatting
- Meaningful Naming of Variables
- DRY (Don't Repeat Yourself)
- Modularization

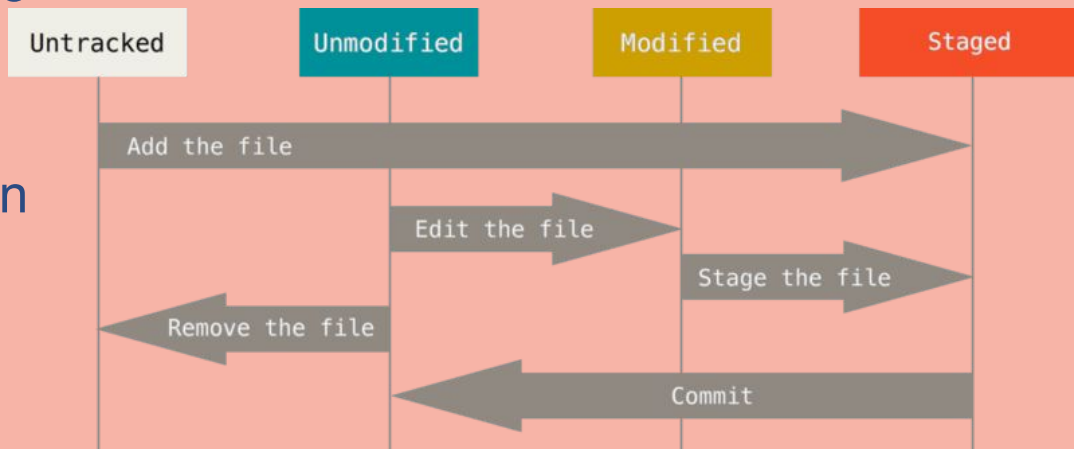
Helpful Habits ... Hints

- Find a logger you enjoy and use it alot.
- Find an environment configuration tool you enjoy.

```
{  
  "file": "/Users/daltum/Documents/Work GitHub Projects/it/paylocity_sync/pkg/paylocity/paylocity.go:268",  
  "func": "github.com/ramp/paylocity_sync/pkg/paylocity.(*PaylocityClient).GetAllPaylocityUsers",  
  "function": "GetAllPaylocityUsers",  
  "level": "debug",  
  "line": "268",  
  "msg": "invalid character '\\u003c' looking for beginning of value",  
  "sender": "paylocity_sync",  
  "time": "2023-02-02T14:39:08-05:00"  
}
```

Git

- Learn the “stages” of code
- Similar to “Suggestions” in Google Docs



Stumbling Points

- Code won't be perfect ... or even good
- Be willing to abandon a project



Perfectly accurate
representation of Dmitri

```
// Since order matters for this removal, we need to keep the elements in the same order and shift them left.
// As this decreases the index placement for all elements, we need to account for that by
// having an offsetting counter that increases when an element is removed which is subtracted from the index value to be removed.
b := 0
for _, a := range rL {
    mL = removeElement(mL, a-b)
    b += 1
}
```

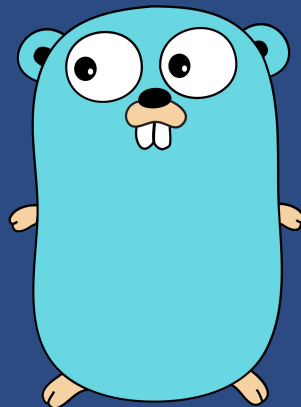
What about our AI Overlords?

- Massive influx of code
- Can't just take it for what it is
- If it puts a door in the wrong spot, would you recognize?



So you've got an environment, what now?

- Just dive in!
- Pick a project you've done elsewhere





Cuebert

Can we stop and get some **HRaaS?**

Mom: We have **HRaaS** at home

HRaaS at home:

```
06/06/2019 10:00:00 AM
Matching user found, the following attributes will be updated for jyang@ramp.com :
Okta Department to be updated to: IT
Okta Team to be updated to: IT
Okta SubTeam to be updated to: IT
Matching user found, the following attributes will be updated for cschmalle@ramp.co
Okta Department to be updated to: IT
Okta Team to be updated to: IT
Okta SubTeam to be updated to: IT
Matching user found, the following attributes will be updated for anguyen@ramp.com
Okta Department to be updated to: IT
Okta Team to be updated to: IT
Okta SubTeam to be updated to: IT
```

What did I notice from my first tool?

- Json Data - I was already familiar
- Modules = Functions
- Looping Logic
- If/Else Logic
- Error Handling
- Error Alerting

Imperfect Code

```
// Do something I don't yet understand  
func (b *brrr) call(ch chan paylocity.PaylocityAllUsers, wg *sync.WaitGroup, intCheck bool) {
```

- I found things I didn't understand, and followed the “template”
- It worked, so I went back to try and understand it.

Other Tools -

- Slack Channel Archiver
- Slack Channel Creator
- Slack Picture Downloader (Are we noticing a theme?)
- User Access Review

Where do I go from here?

- Continue to learn Go
- Start to branch out into new languages
- Potentially do some web-app dev?

Thank You

Jacob Waters - A dear friend who I have spent a lot of time worrying to

John Peterson - A brilliant person who has taught me an invaluable amount of code in the few months we've worked together

My Colleagues - Anna, Colin, Simon. Y'all are awesome. Without you being insanely good at your jobs, I wouldn't have the room to explore and grow

The MacAdmins Community!

You, yes you, for being here. I hope you took something from this.

Resources:

[Slack Block Kit Builder](#)

Pete Viri's Blog Post

[Cuebert](#)

[My Favorite Go Logger](#)

[My Blog with Slack Bot
Walkthroughs](#)