



Socially conscious software at scale

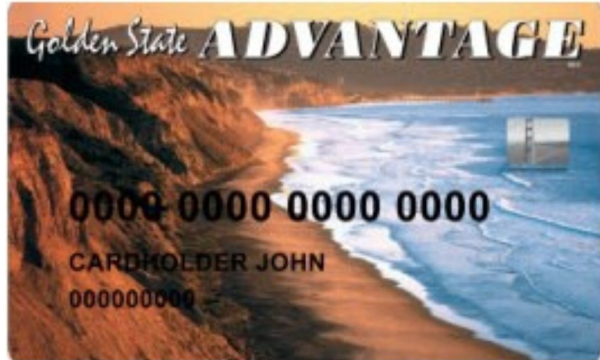
Ram Mehta, CTO Propel Inc

Supplemental Nutrition Assistance Program



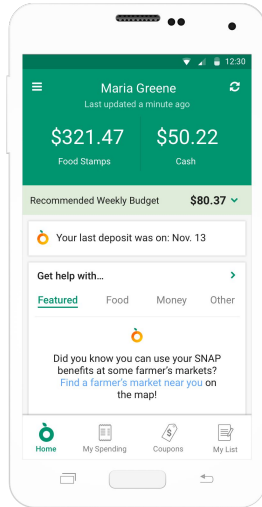
- More commonly known as Food Stamps
- 40 million Americans receive SNAP benefits each month*
- Average benefit amount of \$125/month*

Electronic Benefits Transfer (EBT)



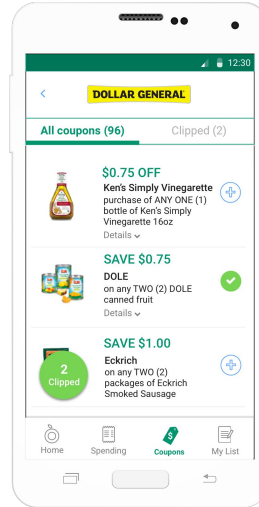
Fresh EBT helps low-income Americans manage their EBT benefits, save money, and earn income

MANAGE



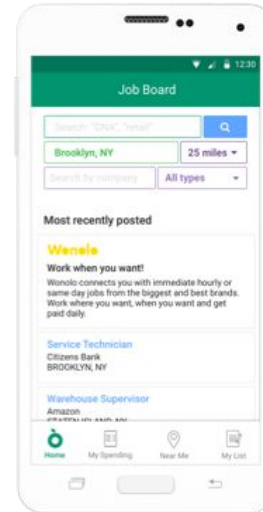
Check balance and see past transactions and deposits

SAVE



Clip coupons and find savings on useful products and services

EARN



Search the job board and discover jobs, gigs, and other ways to earn



FRESH EBT TODAY

1M+ monthly active users

9 sessions per user per month

IN 2018...

\$2.5M saved through in-app coupons

10K new jobs applied for

5 months of human time saved by not calling the IVR

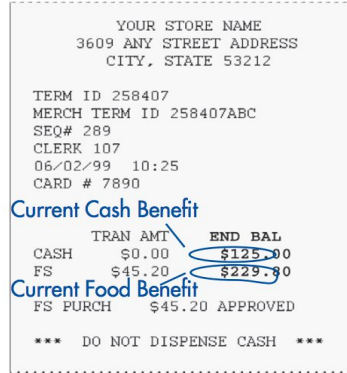
Fresh EBT began with a problem: EBT cardholders had no easy way to check their balance

1

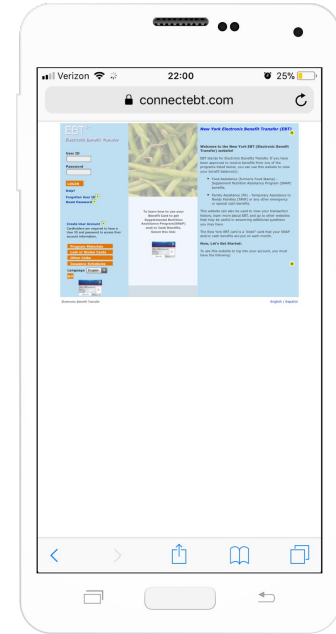


- Most states require entry of full 16-19 digit card number after navigating a phone tree
- Nearly impossible to get transaction history
- Calls take up to a minute, use phone minutes

2



3



- Have to keep very close track to make sure you have correct balance
- Easy to lose receipts

Early Technical Decisions

- Monolithic codebase with multiple services
- Services run on the same instance using Supervisord
 - Flask python server as a CMS
 - Twisted python server for scraping
- Continuous integration/deployment at day 1
- Next scaling step: bigger box

Day 1

Technology

- Android app
- Python Servers

Team

Non Eng: 2
Eng: 1

MAUs: 0

States supported: 1

Development

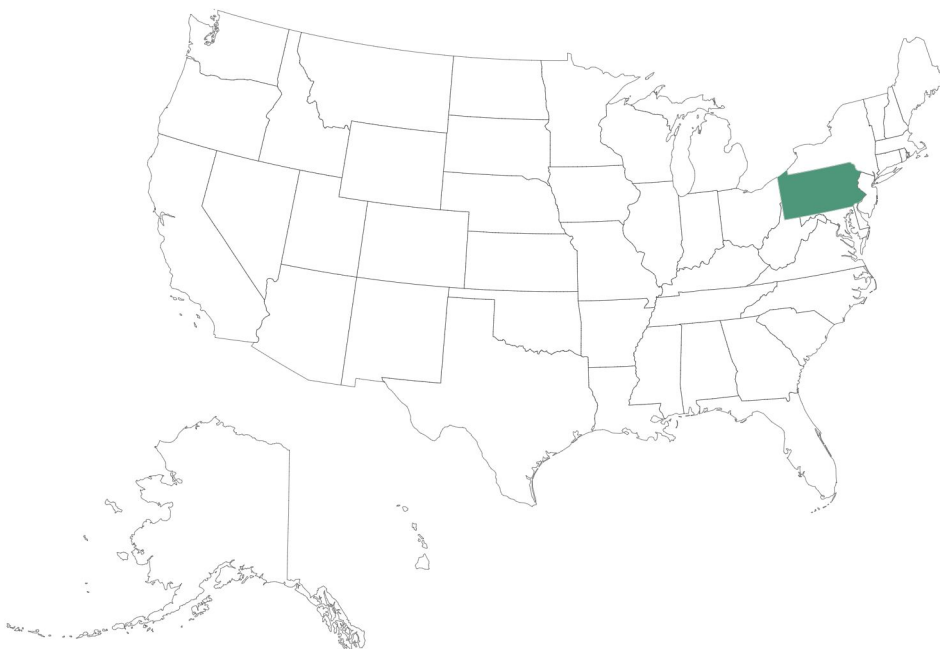
Vagrant

Infrastructure

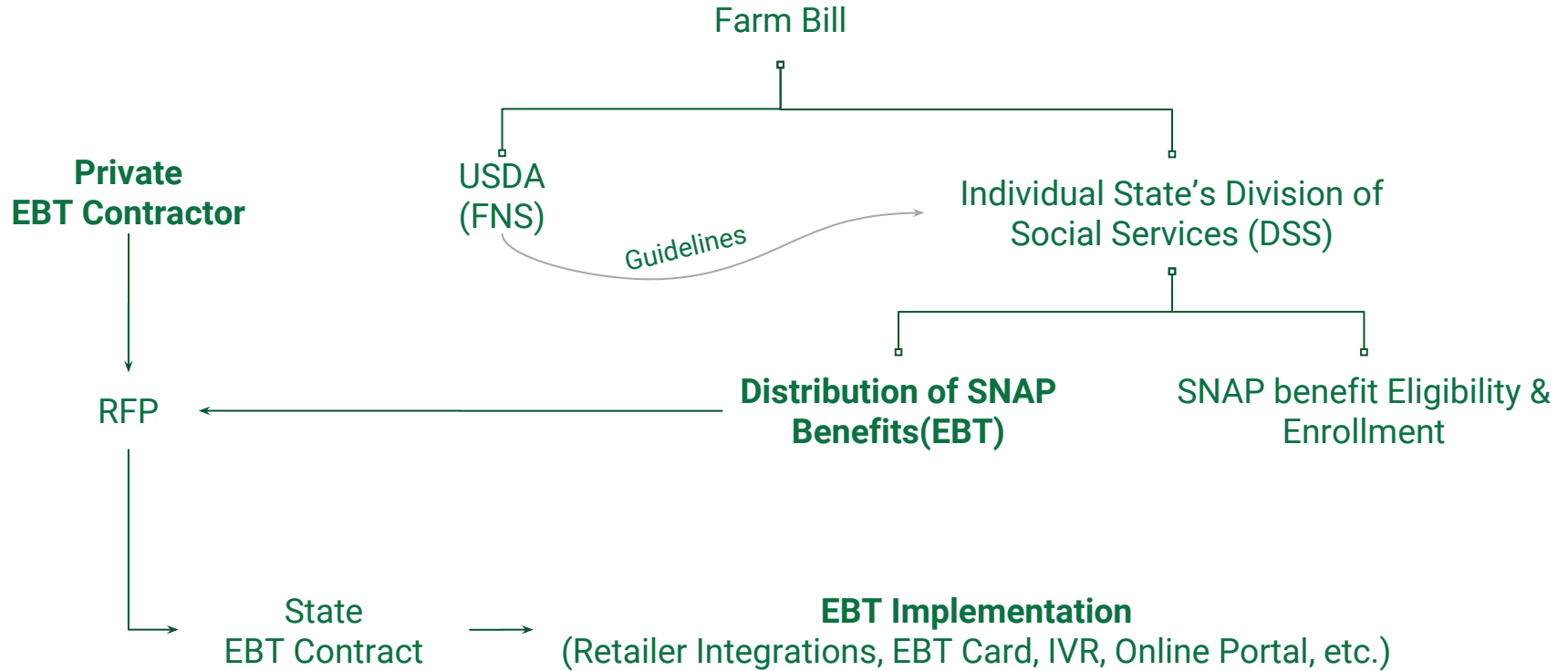
1 EC2 instance (Small)

Deployment

Ansible, CI with Jenkins




SNAP program at a glance



Forgot password?

EBTSM

Electronic Benefit Transfer



Virginia Electronic Benefit Transfer (EBT)

Forgotten User ID

If you have forgotten your User ID, please enter the last 4 digits of the **SSN**, **Date of Birth** and the **Card Number** used during registration. Click the SUBMIT button and you will be taken to a screen where you can select the correct questions and enter the security answers you entered during Account Creation. When you enter the correct answers your User ID will be emailed to you

If you have forgotten your password and/or your User ID, please select the appropriate link from the Main Landing page, by clicking on the Virginia EBT card icon on the left panel, to retrieve your password or User ID.

Please call **1-866-281-2448** if you are still having trouble accessing the Cardholder Portal or trying to use the Forgotten User ID function.

Reset Password


Create User Account

Security Question

What is your favorite sports team?

Security Answer

SUBMIT



Electronic Benefit Transfer

English / Español

Security Question

- ✓ What is your favorite sports team?
- What is your favorite color?
- What is your favorite flavor of ice cream?
- What is your mother's birthday?
- What is your father's birthday?
- What is your favorite sport?
- What is your favorite book?
- What is your father's middle name?

Speaking of registration flows...

Create User Account

Social Security Number

Date of Birth (mm/dd/yyyy)
 / /

Card Number

USER ID

Enter New Password

Confirm Password

2. Your password must be at least 8 characters long but no more than 12 characters long. You can use any combination of letters or numbers in the password, with at least one capital letter, one lower case letter, and one number.

CREATE NEW ACCOUNT

ZIP Code (Mailing Address)

Personal Identification Number(PIN)

Card Number

USER ID

Enter New Password

Confirm Password

Your User ID will not change once selected. The password must be at least 6 characters long and no more than 8 and may have any combination of letters or numbers.

Register®

Golden State

Enter Card Number *

Enter EBT Case Number *

Birth Month & Year *

Birth Month Birth Year

Select Language

English Español

Email Address

johnsmith@gmail.com

User ID *

User ID

Password *

Password

Re-Enter Password *

Re-Enter Password

Social Security Number:

- -

Date of Birth (mm/dd/yyyy):

/ /

PIN (4 Digits):

or Card Number:

Empower those who do not wish to write code

... by making them maintain configuration instead.

```
98  [-]  "CA": {  
99  [-]    "register": [  
100      {"field": "pan", "minlength": 16, "maxlength": 16, "luhn": true, "step": 1},  
101      {"field": "dob", "step": 2},  
102      {"field": "suid", "minlength": 6, "maxlength": 15, "step": 2},  
103      {"field": "login", "minlength": 4, "maxlength": 35, "step": 3},  
104      {"field": "password", "minlength": 8, "maxlength": 16, "strong": true, "step": 3}  
105    ]  
106  },
```

☰

🔦 Step 1 of 3

Let's get started.

My CalFresh EBT card number is

9213 8203 8210 3921

Please enter a valid card number

16 / 16

Cancel

NEXT >

☰

🔦 Step 2 of 3


Now let's confirm some personal information required by California.

My date of birth is

Aug201978

My SUID is

See example card below



Golden State **ADVANTAGE**

1234 5678 9012 3456

JOHN P. CARDHOLDER

123456789012345 ← SUID

Back

NEXT >

☰

🔦 Step 2 of 3


Now let's confirm some personal information required by California.

My date of birth is

Aug201978

My SUID is

See example card below



Golden State **ADVANTAGE**

1234 5678 9012 3456

JOHN P. CARDHOLDER

123456789012345 ← SUID

Back

NEXT >

Day 35

Technology

- Android app
- Python Servers
 - Flask & Twisted
- + Redis, Postgres, nginx

Development

Vagrant

Infrastructure

1 EC2 instance (Medium)

Deployment

Ansible

CI with Jenkins

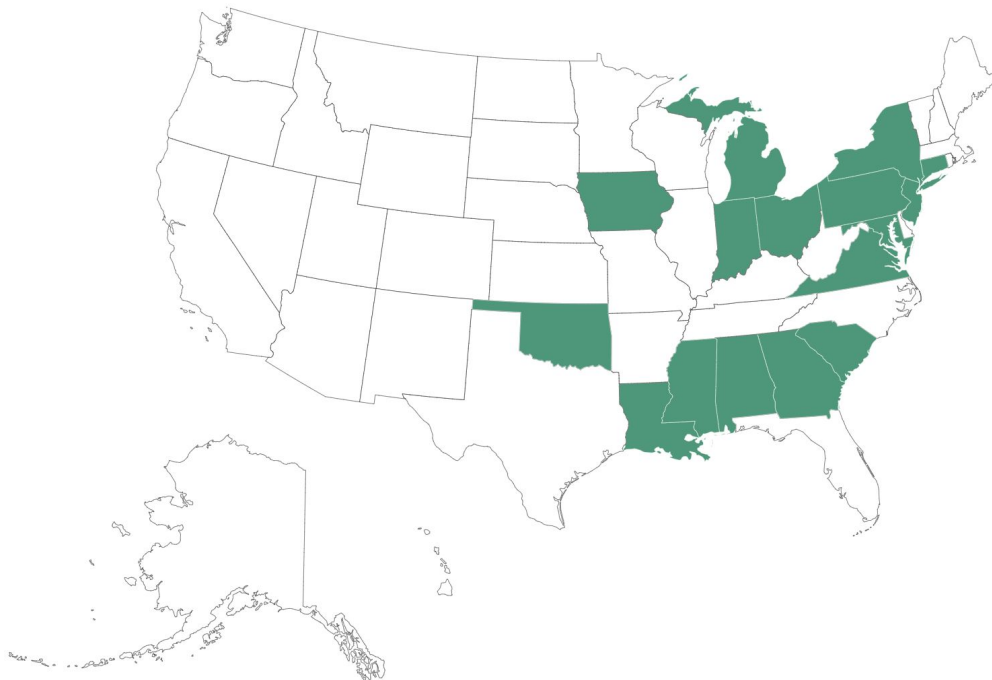
Team

Non Eng: 2

Eng: 1

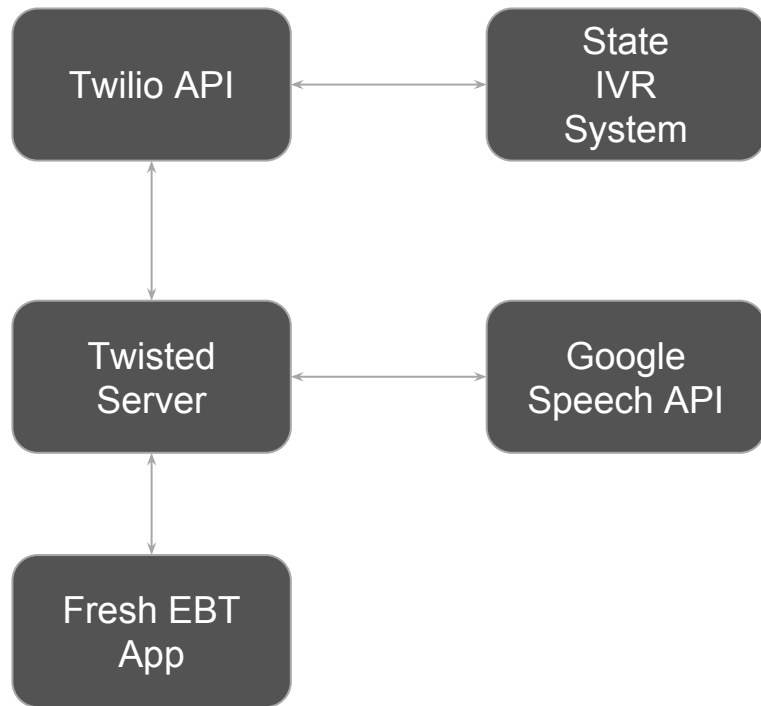
MAUs: 600

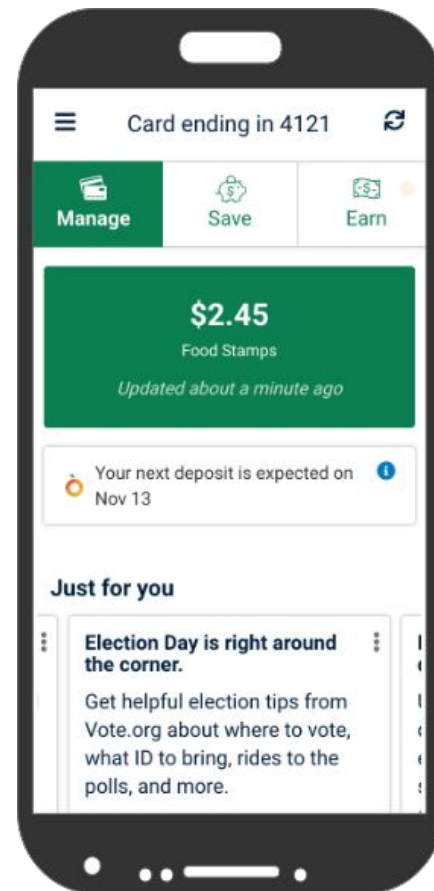
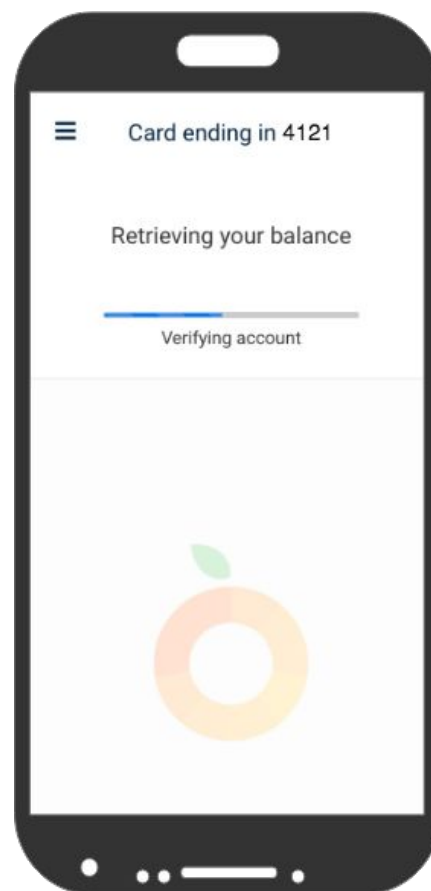
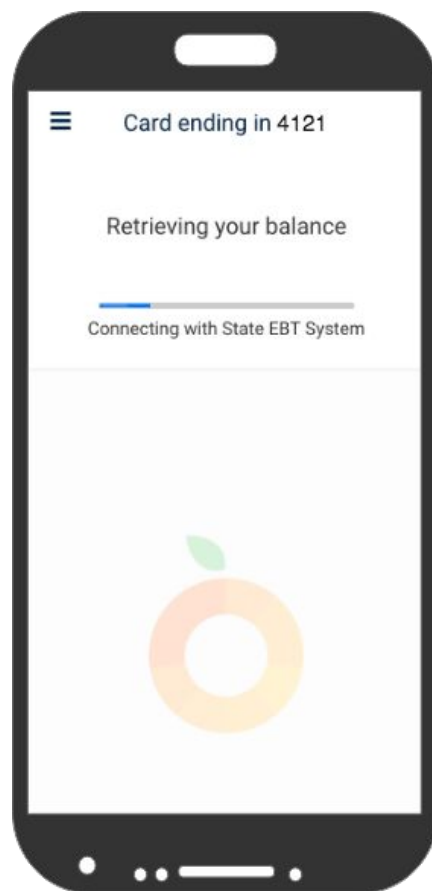
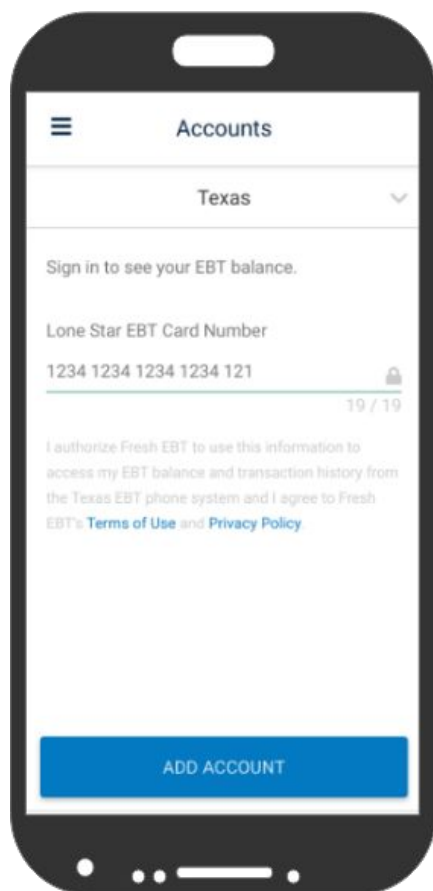
States supported: 16



“You have two dollars and twelve cents...”

- Texas and Mass. did/do not have an online portal for checking EBT balance
- So we built a phone based system to retrieve the balance for Texans





Day 90

Technology

- Android + iOS
- Spanish Translation
- Python Servers
 - Flask & Twisted
- + Redis, Postgres, nginx

Development

Vagrant

Infrastructure

1 EC2 instance (Medium)

Deployment

Ansible

CI with Jenkins

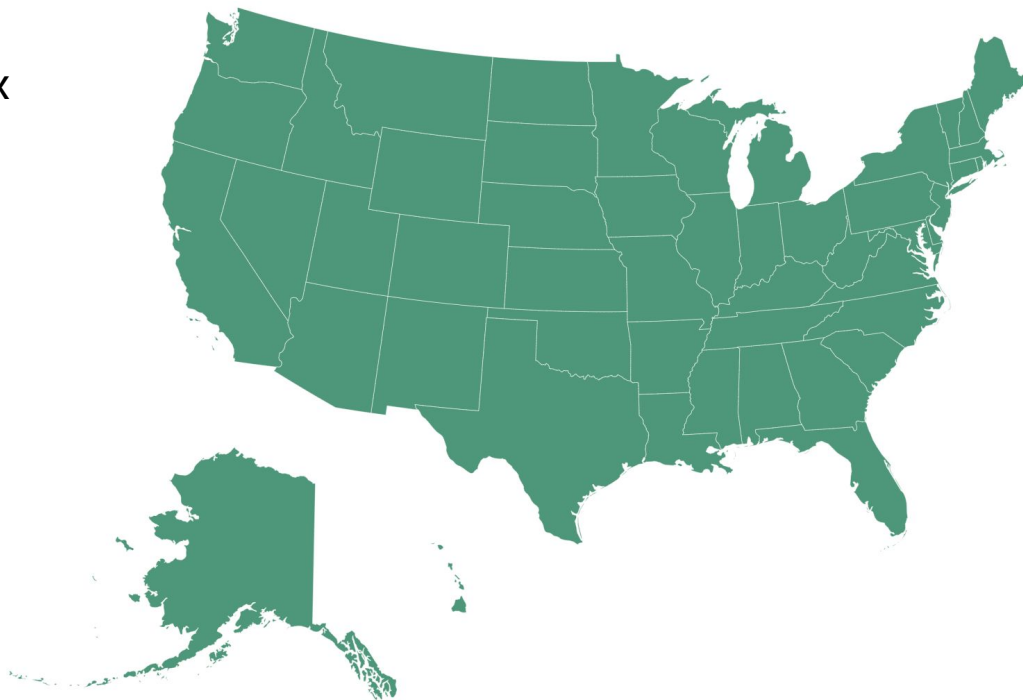
Team

Non Eng: 3

Eng: 1

MAUs: 7,000

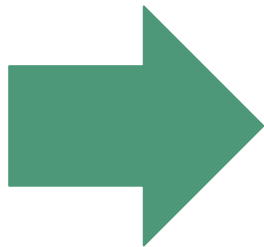
States supported: 52



Serving low-income consumers requires understanding specific needs and constraints

Our approach to user research:

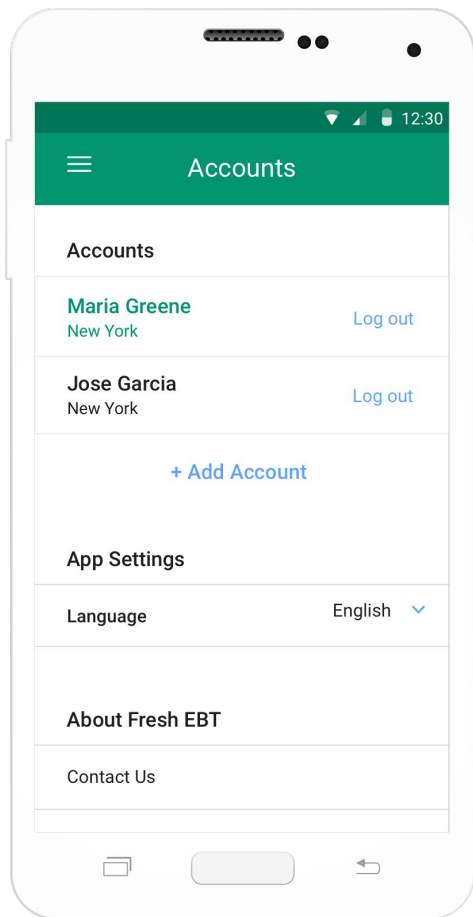
- Meet people where the product is relevant
- Avoid NYC (or local) bias
- Include the whole team



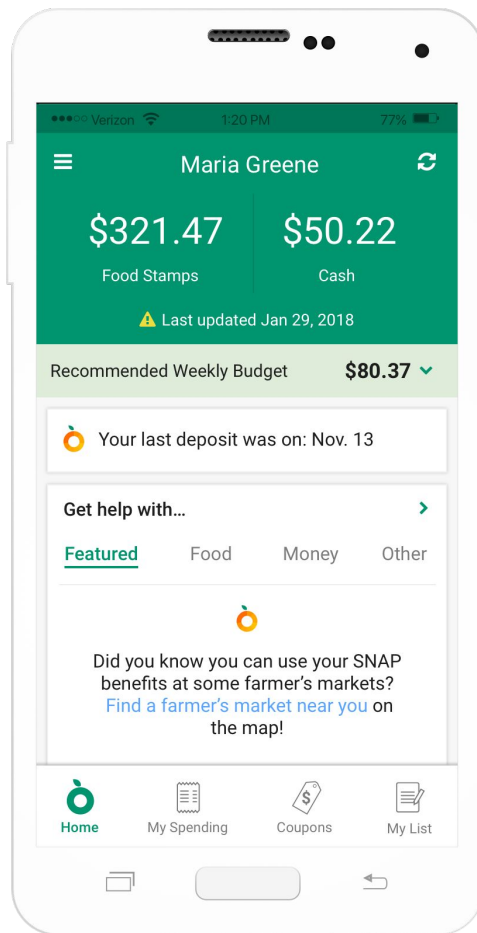
Problems we heard:

- *"I share a smartphone with my roommate"*
- *"I often run out of data"*
- *"I shop very conservatively so I don't go over my balance at checkout"*

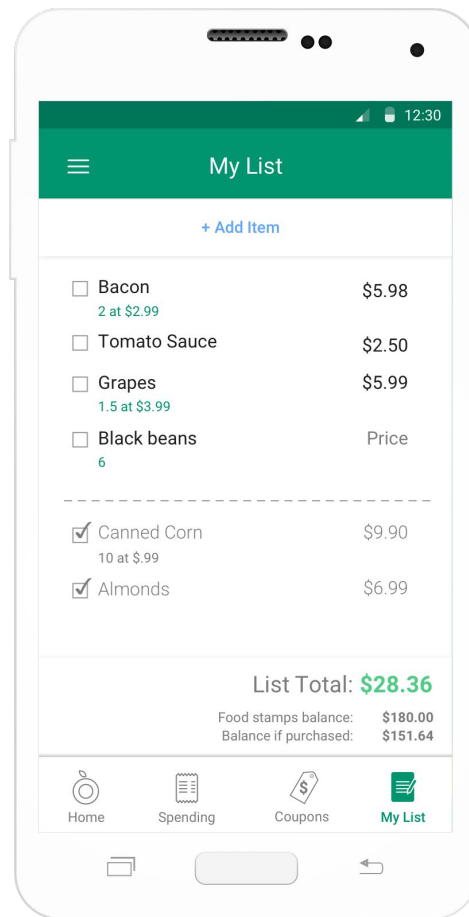
"I share a smartphone with my roommate"



"I often run out of data"



"I shop very conservatively so I don't go over my balance at checkout"



Month 9: Preparing to Scale

Technology

- Python Servers
 - Flask & Twisted
- Android + iOS
- Spanish Translation
- + Redis, Postgres, nginx

Development

Vagrant

Infrastructure

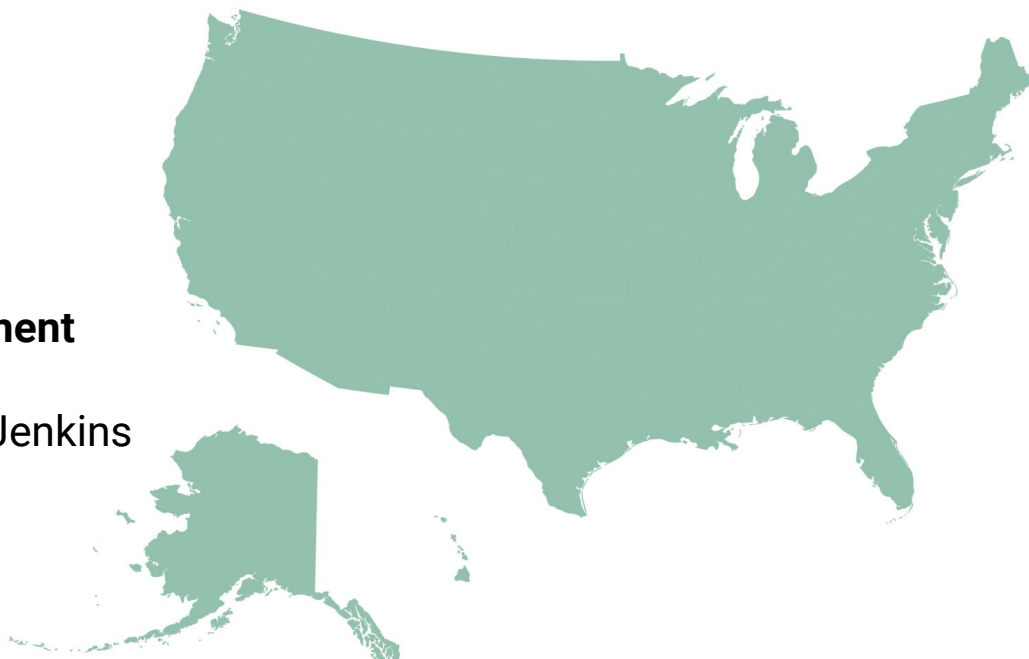
1 EC2 instance
AWS RDS postgres
AWS ElastiCache

Team

Non Eng: 5
Eng: 2

MAUs: ~150k

States supported: 53



Deployment

Ansible
CI with Jenkins

Infrastructure vs Product

- Scaling Technology vs Scaling number of features
- Be prepared for your next scaling step.
- Operationalize features by making them configurable and empowering the team to manage the configurations
- Use infrastructure automation tools like terraform and ansible early.

Year 2: Monolith + Microservices

Technology

- Python Servers
 - Flask & Twisted
- Android + iOS
- Spanish Translation
- + Redis, Postgres, nginx

Team

Non Eng: 7
Eng: 3

MAUs: ~350k-1M

States supported: 53

Development

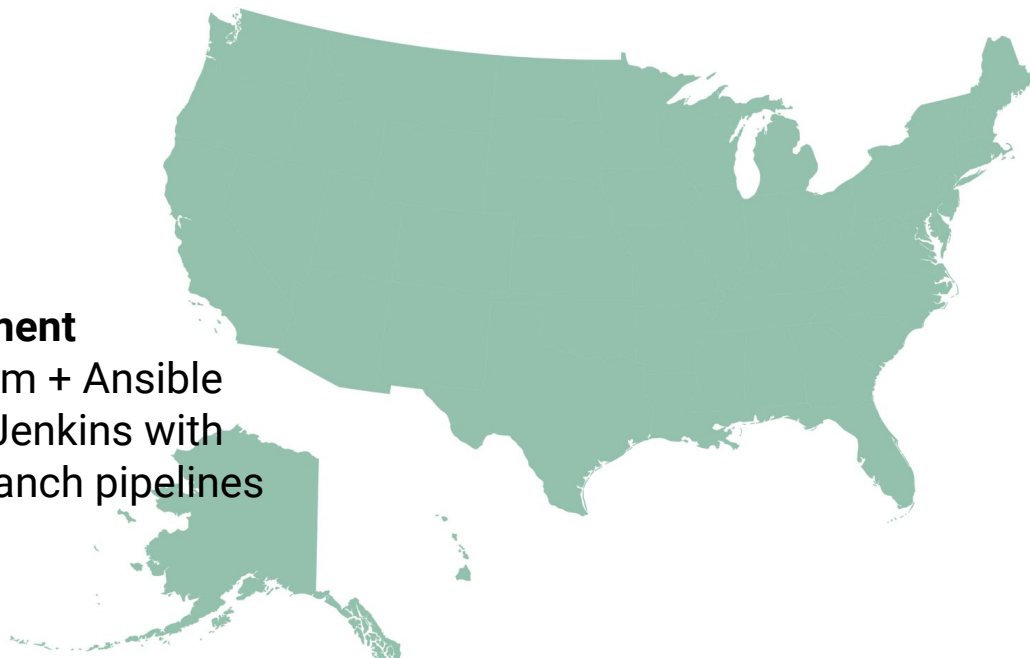
Docker-Compose

Infrastructure

ECS
RDS
ElastiCache
ELK*

Deployment

Terraform + Ansible
CI with Jenkins with
multi-branch pipelines



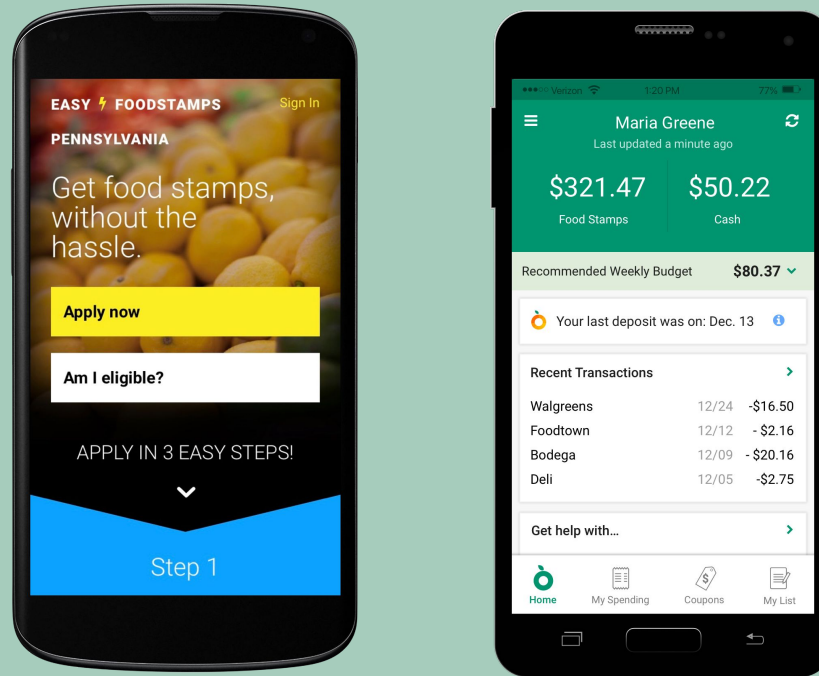
Scaling with a small team

Empower team members that do not code

Invest in continuous integration and deployment early

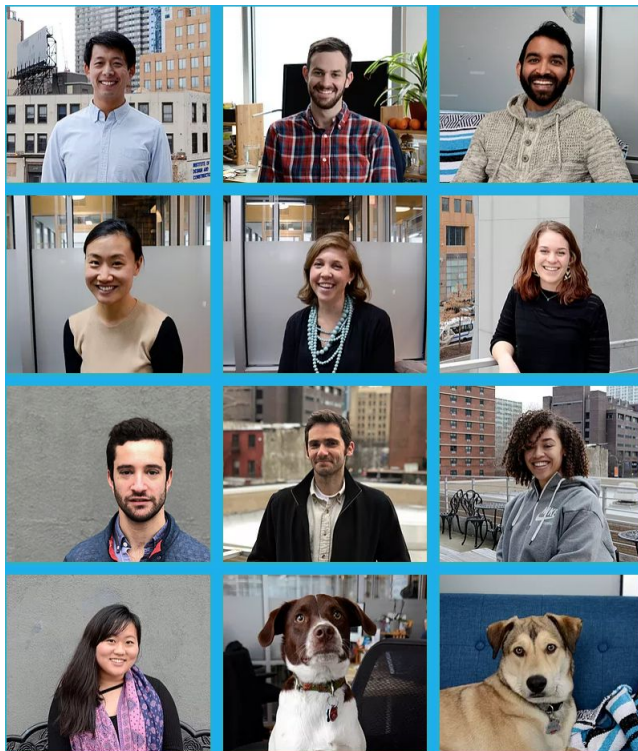
Be prepared for the next scaling step

Solve real problems



Find opportunities that scale...

The Propel Team Today





Thank you! Questions?