

Leaping from Mainframes to AWS

TECHNOLOGY TIME TRAVEL IN THE GOVERNMENT

ANDY BRODY
@alberge

JAMES PUNTENEY

U.S. DIGITAL SERVICE // MARCH 2018

Who is the U.S. Digital Service

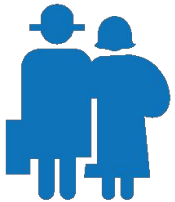
The U.S. Digital Service is a group that uses design and technology to **deliver better services to the American people**.



WHO WE ARE



WHO WE'RE HELPING



IMMIGRANTS AND REFUGEES



VETERANS



MILITARY SERVICE MEMBERS



STUDENTS



MEDICARE/ MEDICAID RECIPIENTS



FARMERS



SMALL BUSINESS OWNERS



THE U.S. DIGITAL SERVICE

HOW DO YOU ACHIEVE THIS?



How long did it take us to spin up **a single VM** on one agency's "private cloud"?

A. 1 hour
B. 4 days
C. 1 month
D. 6 months
E. 1 year
F. Still not done

Six Months

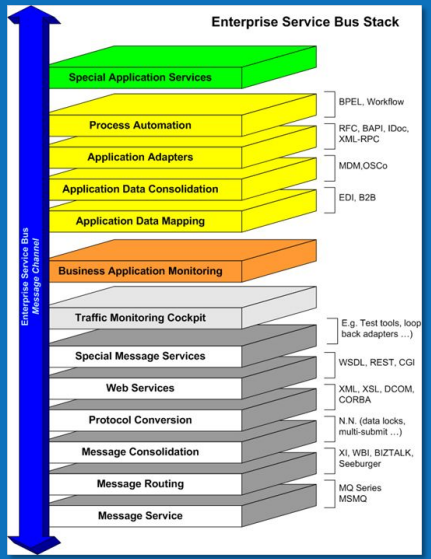
Six Months: One VM

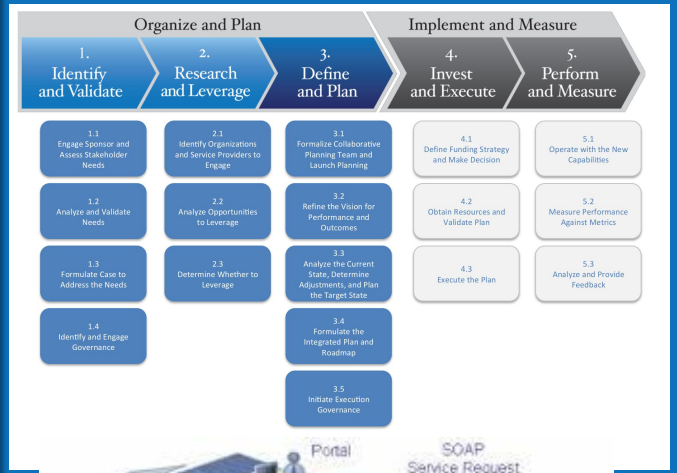
1. Study the contract to find the server and labor line items
2. Issue a task order for your exact hardware needs
3. Fill out the PAR form
4. Fill out the RAR form
5. Take Privileged User Training course
6. Wait for next Infrastructure Change Control Board (ICCB) meeting
7. Create network change request to ask for an IP address
8. Wait for next ICCB meeting
9. Create firewall change request
10. Wait for approval from RAC
11. Fill out DNS change request form
12. Wait for next ICCB meeting
13. Wait for the Infrastructure Change Moratorium to end
14. If anyone made any mistakes in the above, rinse and repeat

Why it feels like you're working in 1999

THE STATE OF GOVERNMENT TECHNOLOGY

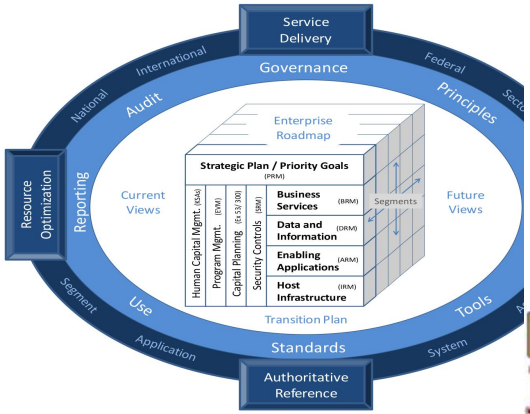
30+ years of tech debt



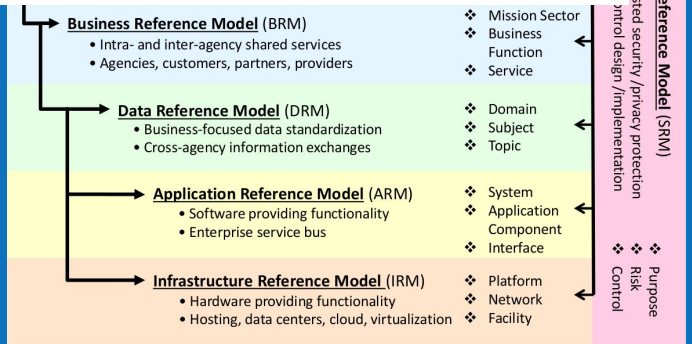














microservices on serverless?

The three hardest things in government

Hiring
Firing
Buying

The three hardest things in government

Hiring

- ➔ Everyone suffers with a poor hire
- ➔ Favoritism and Nepotism
- ➔ Capped salaries
- ➔ Lots of Paperwork!

The three hardest things in government

Firing

- ➔ Measuring performance is hard
- ➔ Political Protections
- ➔ Whistleblower Protections
- ➔ Lots of Paperwork!

The three hardest things in government

Buying

My friend Joe will sell you chairs for $1 million each!



The three hardest things in government

Buying

We buy complex software services the same way we buy chairs.

Typical Government Launch

HEALTHCARE.GOV IS THE NORM

Typical Government Launch

Planned Years in Advance

- ➔ Requires mountains of paperwork
- ➔ Gradual launches and beta testing are unheard of



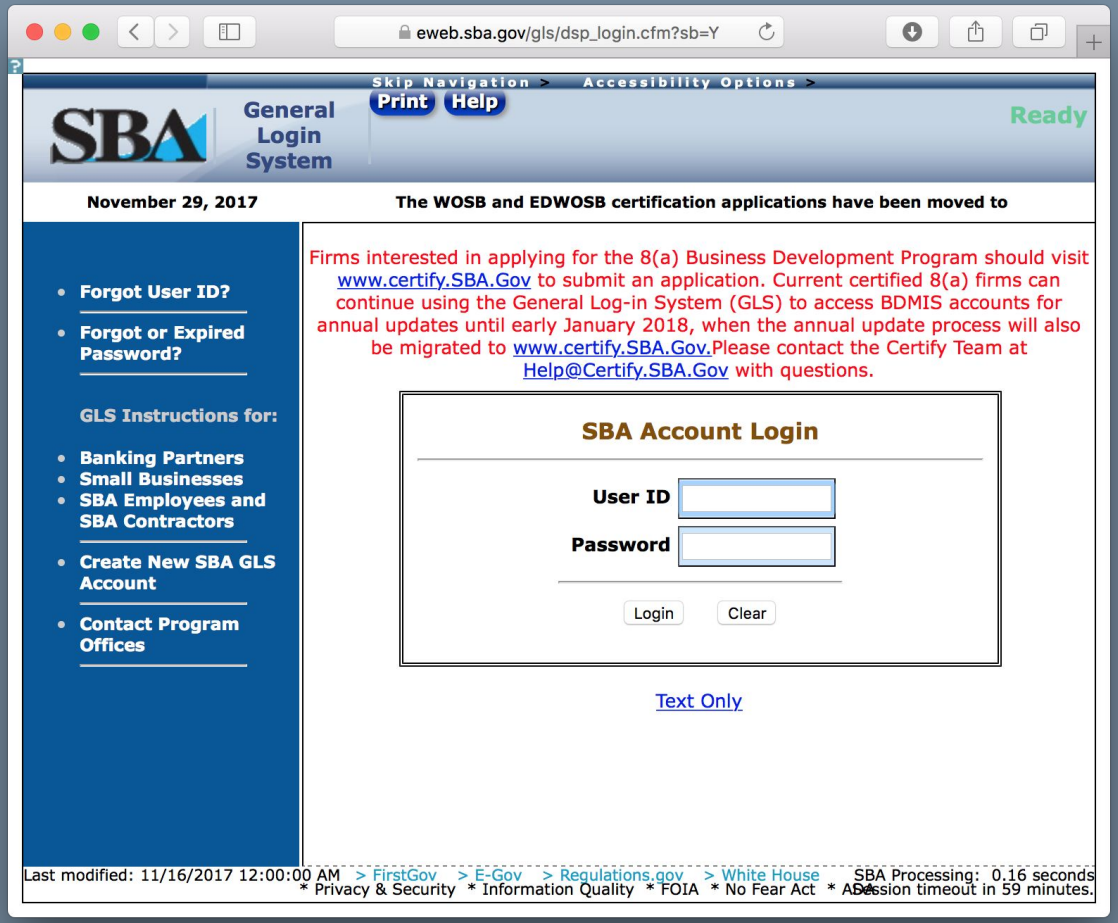

SEAT SECURE
SEAT SECURE
EXIT
RH BUMPER

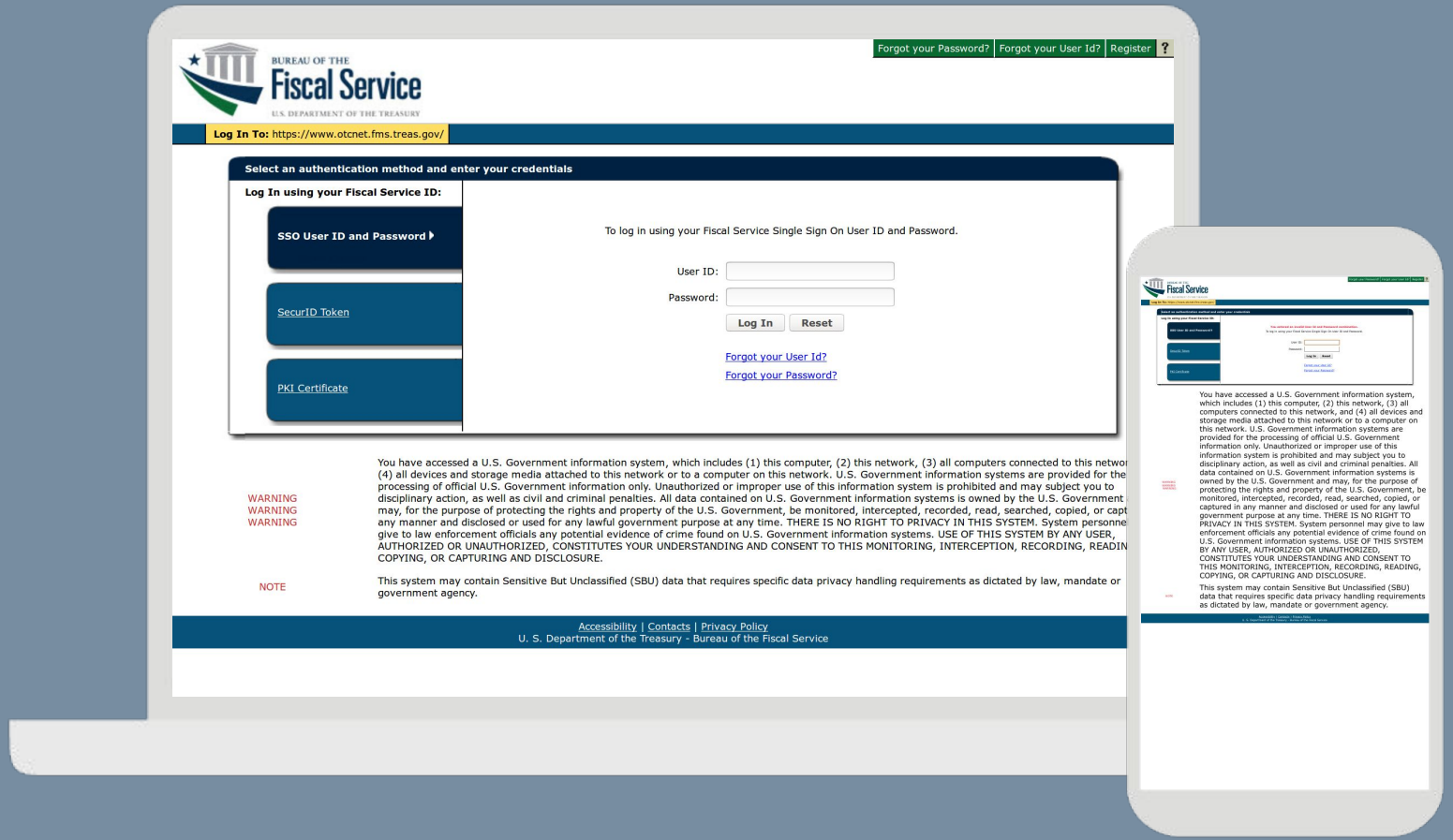
Trusted Traveler & Login.gov

A Launch Story

Why Login.gov

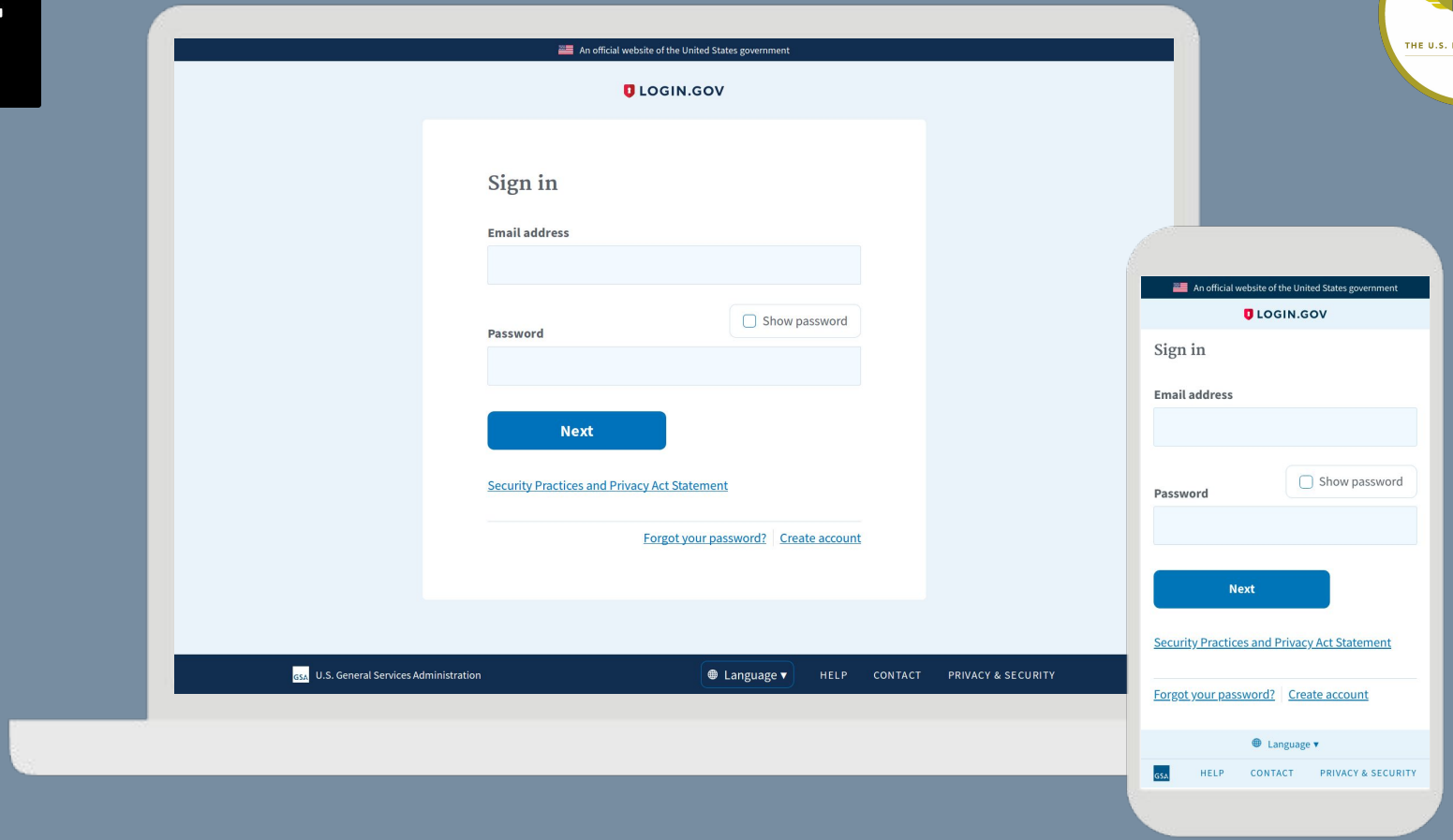
- ➔ 1000s of separate government login systems
- ➔ Login for healthcare.gov cost $100 million and caused 70% of the first year's downtime
- ➔ Many services are not offered online because identity proofing is too hard

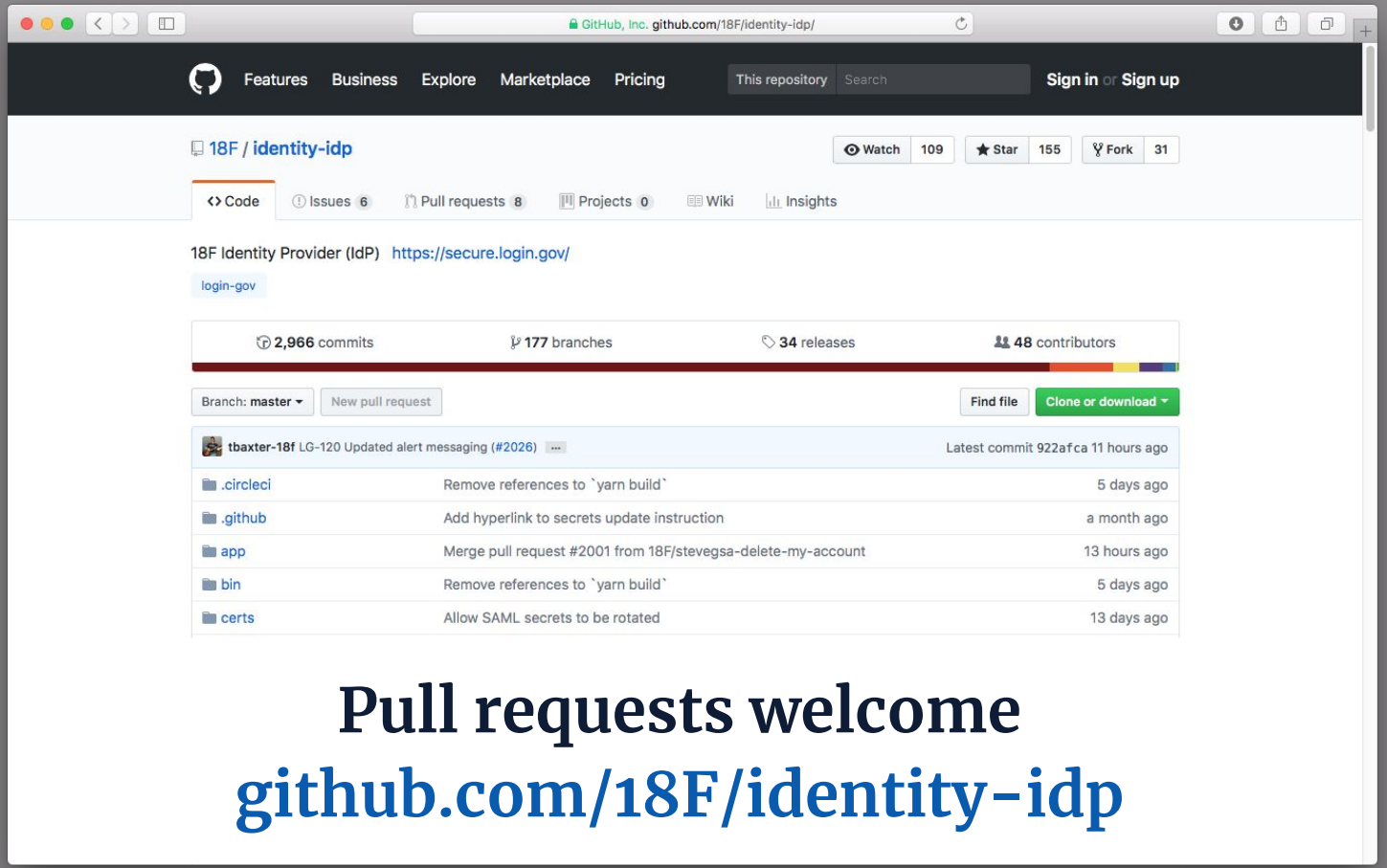

eweb.sba.gov/gls/dsp_login.cfm?sb=Y
Skip Navigation > Accessibility Options >
Print Help
SBA
General Login System
Ready
November 29, 2017
The WOSB and EDWOSB certification applications have been moved to
Forgot User ID?
Forgot or Expired Password?
GLS Instructions for:
Banking Partners
Small Businesses
SBA Employees and SBA Contractors
Create New SBA GLS Account
Contact Program Offices
Firms interested in applying for the 8(a) Business Development Program should visit www.certify.SBA.Gov to submit an application. Current certified 8(a) firms can continue using the General Log-in System (GLS) to access BDMIS accounts for annual updates until early January 2018, when the annual update process will also be migrated to www.certify.SBA.Gov.Please contact the Certify Team at Help@Certify.SBA.Gov with questions.
SBA Account Login
User ID
Password
Login
Clear
Text Only
Last modified: 11/16/2017 12:00:00 AM
> FirstGov > E-Gov > Regulations.gov > White House
SBA Processing: 0.16 seconds
* Privacy & Security * Information Quality * FOIA * No Fear Act * Accessibility
Session timeout in 59 minutes.


Forgot your Password?
Forgot your User Id?
Register
?
BUREAU OF THE
Fiscal Service
U.S. DEPARTMENT OF THE TREASURY
Log In To: https://www.otcnet.fms.treas.gov/
Select an authentication method and enter your credentials
Log In using your Fiscal Service ID:
SSO User ID and Password
SecurID Token
PKI Certificate
To log in using your Fiscal Service Single Sign On User ID and Password.
User ID:
Password:
Log In
Reset
Forgot your User Id?
Forgot your Password?
WARNING
WARNING
WARNING
You have accessed a U.S. Government information system, which includes (1) this computer, (2) this networ
(4) all devices and storage media attached to this network or to a computer on this network. U.S. Government information systems are provided for the
processing of official U.S. Government information only. Unauthorized or improper use of this information system is prohibited and may subject you to
disciplinary action, as well as civil and criminal penalties. All data contained on U.S. Government information systems is owned by the U.S. Government
may, for the purpose of protecting the rights and property of the U.S. Government, be monitored, intercepted, recorded, read, searched, copied, or capt
any manner and disclosed or used for any lawful government purpose at any time. THERE IS NO RIGHT TO PRIVACY IN THIS SYSTEM. System personne
give to law enforcement officials any potential evidence of crime found on U.S. Government information systems. USE OF THIS SYSTEM BY ANY USER,
AUTHORIZED OR UNAUTHORIZED, CONSTITUTES YOUR UNDERSTANDING AND CONSENT TO THIS MONITORING, INTERCEPTION, RECORDING, READIN
COPYING, OR CAPTURING AND DISCLOSURE.
NOTE
This system may contain Sensitive But Unclassified (SBU) data that requires specific data privacy handling requirements as dictated by law, mandate or
government agency.
Accessibility | Contacts | Privacy Policy
U. S. Department of the Treasury - Bureau of the Fiscal Service

18F

THE U.S. DIGITAL SERVICE





Pull requests welcome

github.com/18F/identity-idp

Trusted Traveler & Login.gov

Travel is the most frequent interaction with the Federal Government

- Customs & Border Protection (CBP) screened over 390 million passengers
- Have over 6 million members

U.S. Customs and Border Protection
Securing America's Borders

DHS.gov

GOES GLOBAL ONLINE ENROLLMENT SYSTEM

Select a Language: English Français Español

Q&A: Frequently Asked Questions

Welcome to GOES - the Official U.S. Government Web Site

The Global Online Enrollment System allows registered users to enter their own applications for U.S. Customs and Border Protection (CBP) Trusted Traveler Programs, and approved members to edit their information as needed (mistakes on the original application cannot be corrected once the application is certified - your mistakes will need to be brought to the attention of CBP during your interview).

Once a completed application is certified by the applicant and the non-refundable payment is successfully processed, CBP will review it and determine whether or not to conditionally approve the application. If your application is conditionally approved, your GOES account will be updated to instruct you to schedule an appointment for an interview. Every individual who would like to apply for membership - children included and multiple applicants in one household- must create a separate account within GOES, submit a separate application, and schedule a separate interview appointment upon conditional approval.

Trusted Traveler Programs

For more information regarding the CBP Trusted Traveler Programs, please click on the logos below. Thank you for your interest in Customs and Border Protection.

GLOBAL ENTRY TRUSTED TRAVELER NETWORK

Sentri

NEXUS

FAST Free And Secure Trade

You are about to access a Department of Homeland Security computer system. This computer system and data therein are property of the U.S. Government and provided for official U.S. Government information and use. There is no expectation of privacy when you use this computer system. The use of a password or any other security measure does not establish an expectation of privacy. By using this system, you consent to the terms set forth in this notice. You may not process classified national security information on this computer system. Access to this system is restricted to authorized users only. Unauthorized access, use, or modification of this system or of data contained herein, or in transit to/from this system, may constitute a violation of section 1030 of title 18 of the U.S. Code and other criminal laws. Anyone who accesses a Federal computer system without authorization or exceeds access authority, or obtains, alters, damages, destroys, or discloses information, or prevents authorized use of information on the computer system, may be subject to penalties, fines or imprisonment. This computer system and any related equipment is subject to monitoring for administrative oversight, law enforcement, criminal investigative purposes, inquiries into alleged

NEWS

Posted on May 19, 2017

Application/ membership issues? It is highly recommended you email us your question here.

Login Problems?

What is Paternal/Maternal Name?

What is my Application Status?

Can't make an appointment at my closest Enrollment Center for the interview?

How do I update Information/Documents on my account?

TTP Project

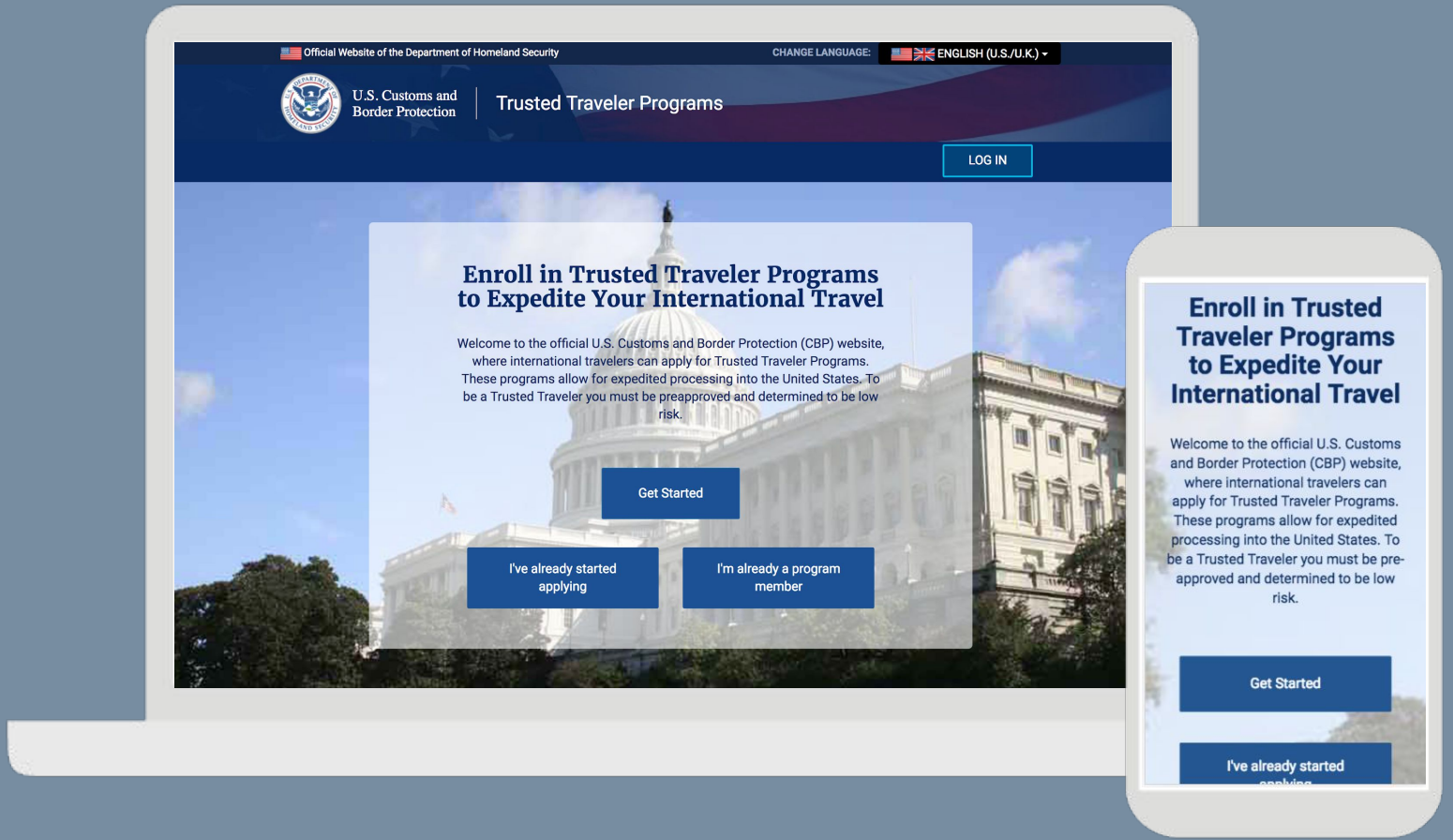
9 Months working with Customs & Border Protection and their contract engineering team

- ➔ System Architecture
- ➔ Development process
- ➔ **CI/CD Pipeline**
- ➔ Usability Study
- ➔ **Real time Monitoring and Metrics**

Trusted Traveler Launch

YAY! Launch Day!

A phased launch!
(sort of)


Official Website of the Department of Homeland Security
CHANGE LANGUAGE:
ENGLISH (U.S./U.K.)
U.S. Customs and Border Protection
Trusted Traveler Programs
LOG IN
Enroll in Trusted Traveler Programs to Expedite Your International Travel
Welcome to the official U.S. Customs and Border Protection (CBP) website, where international travelers can apply for Trusted Traveler Programs. These programs allow for expedited processing into the United States. To be a Trusted Traveler you must be preapproved and determined to be low risk.
Get Started
I've already started applying
I'm already a program member
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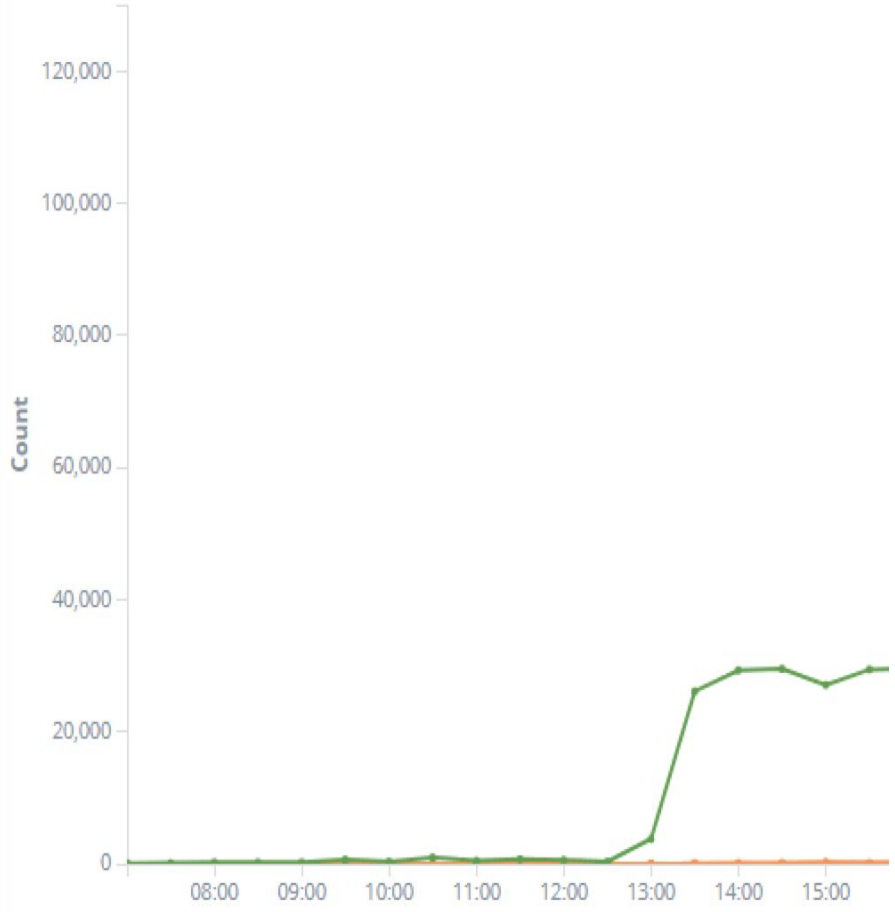
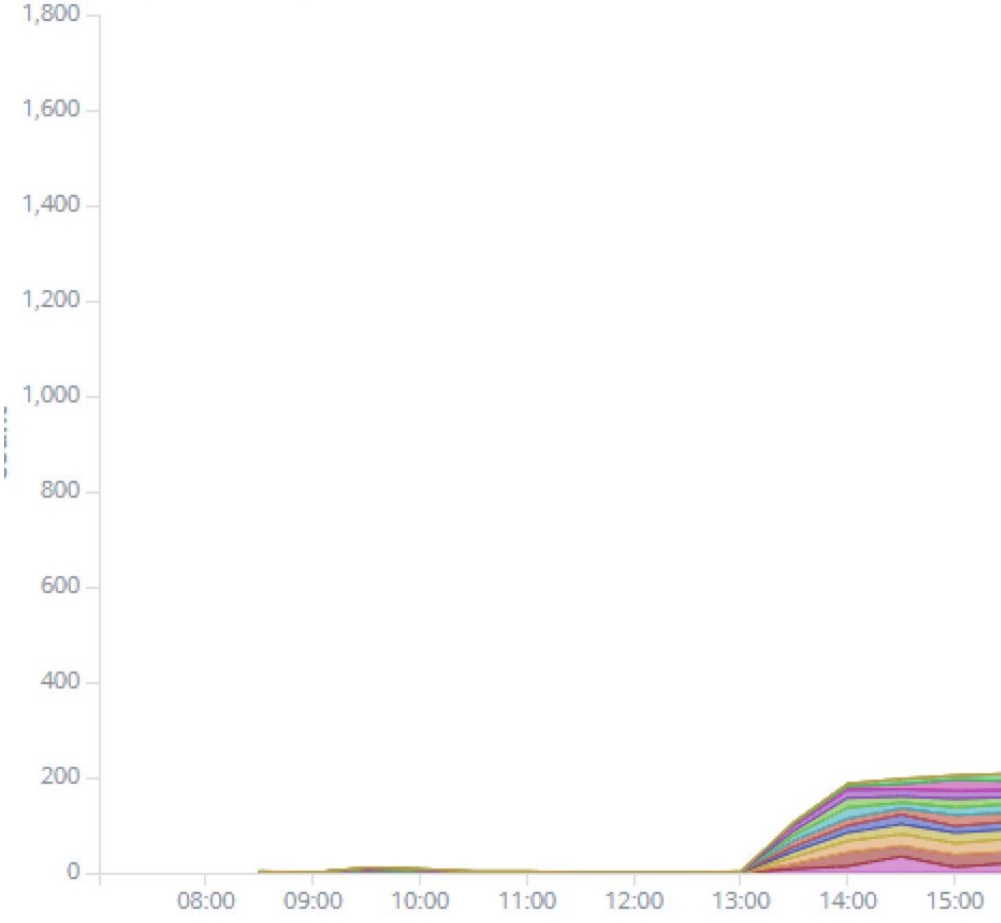
I've already started

TTP Prod - Response Codes

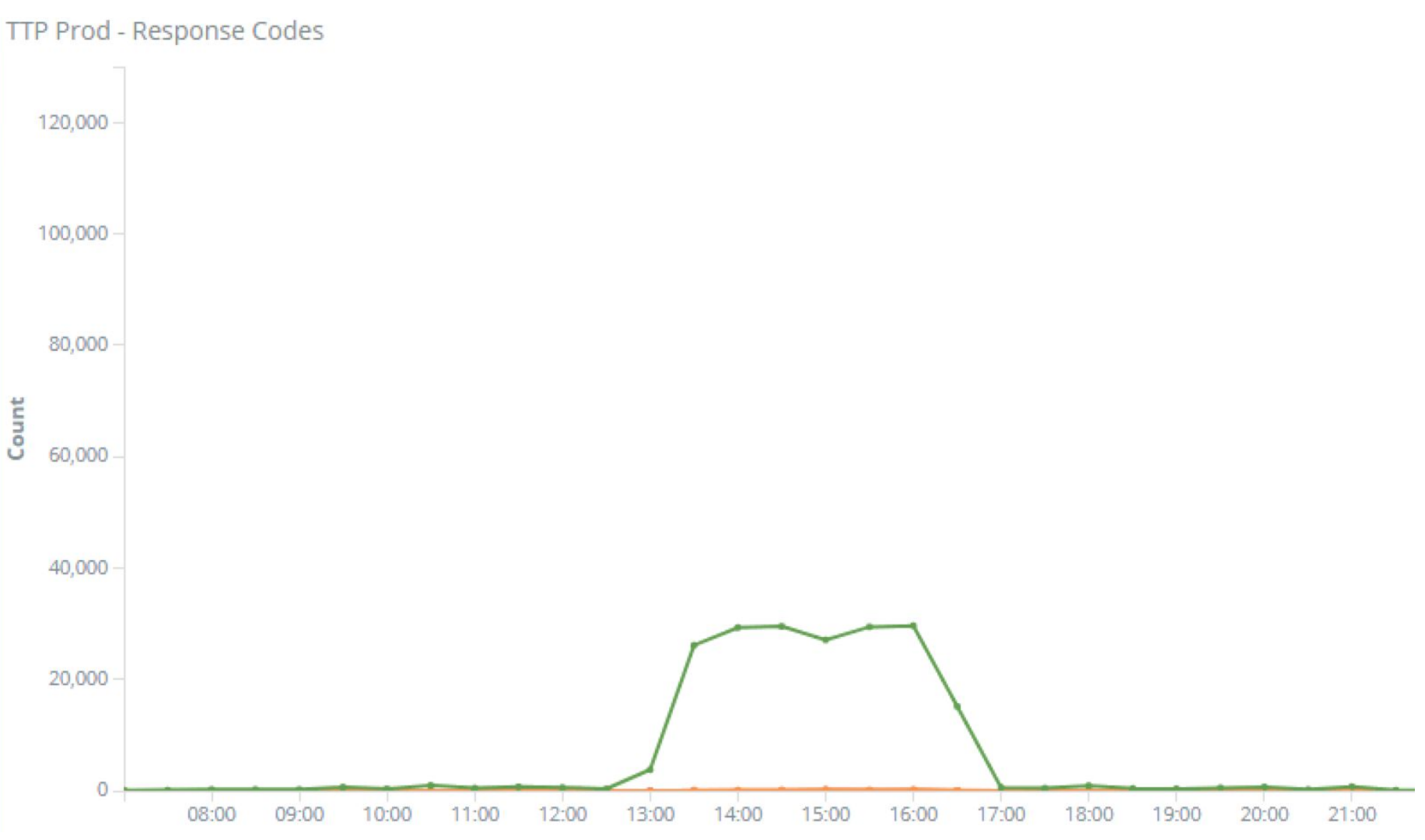


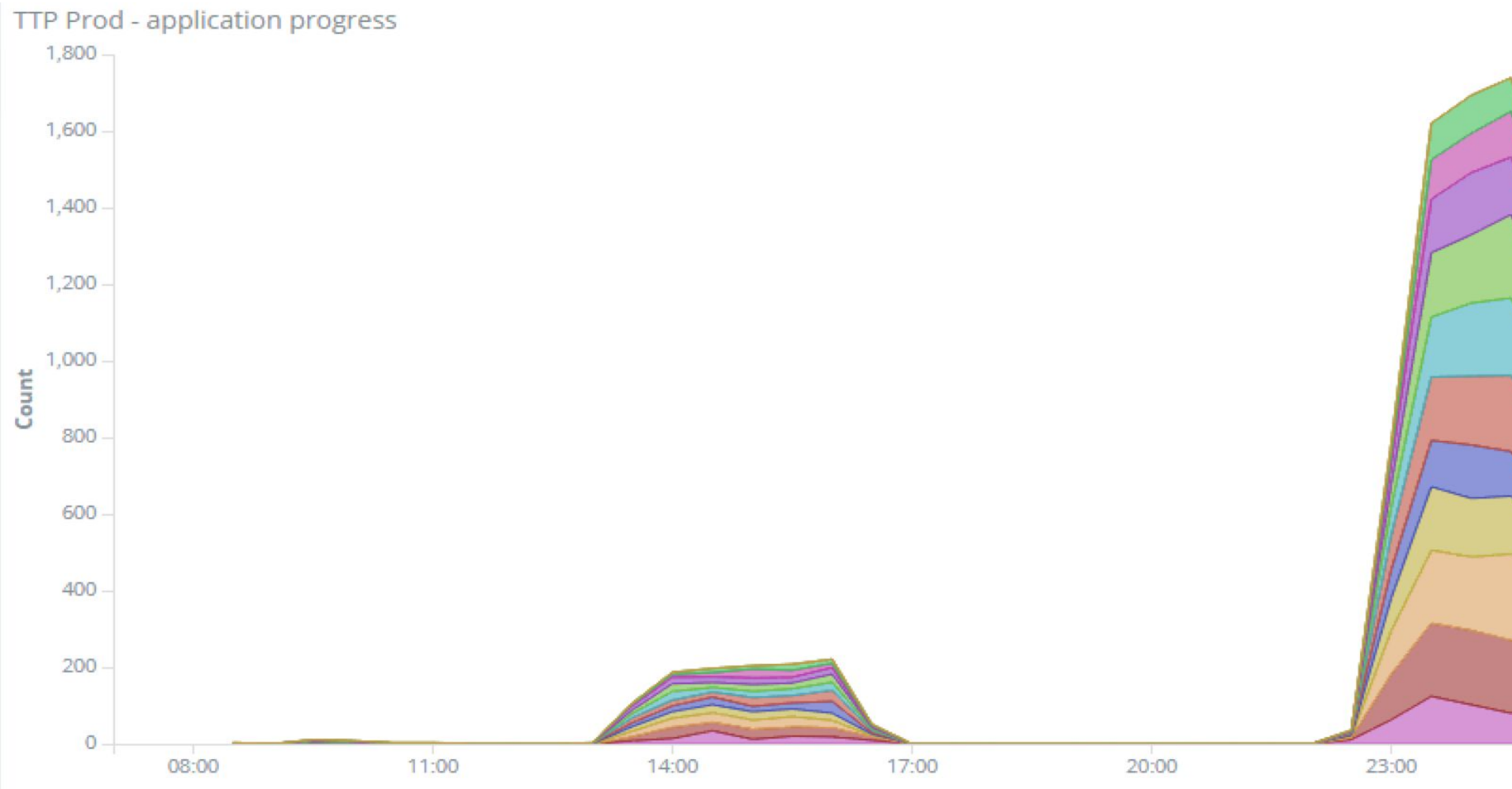
TP Prod - application progress



“@punteney I need you to get the site off the internet”

- Andy Brody, USDS Engineer
via Slack


TTP Prod - Response Codes
120,000
100,000
80,000
60,000
40,000
20,000
0
Count
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00

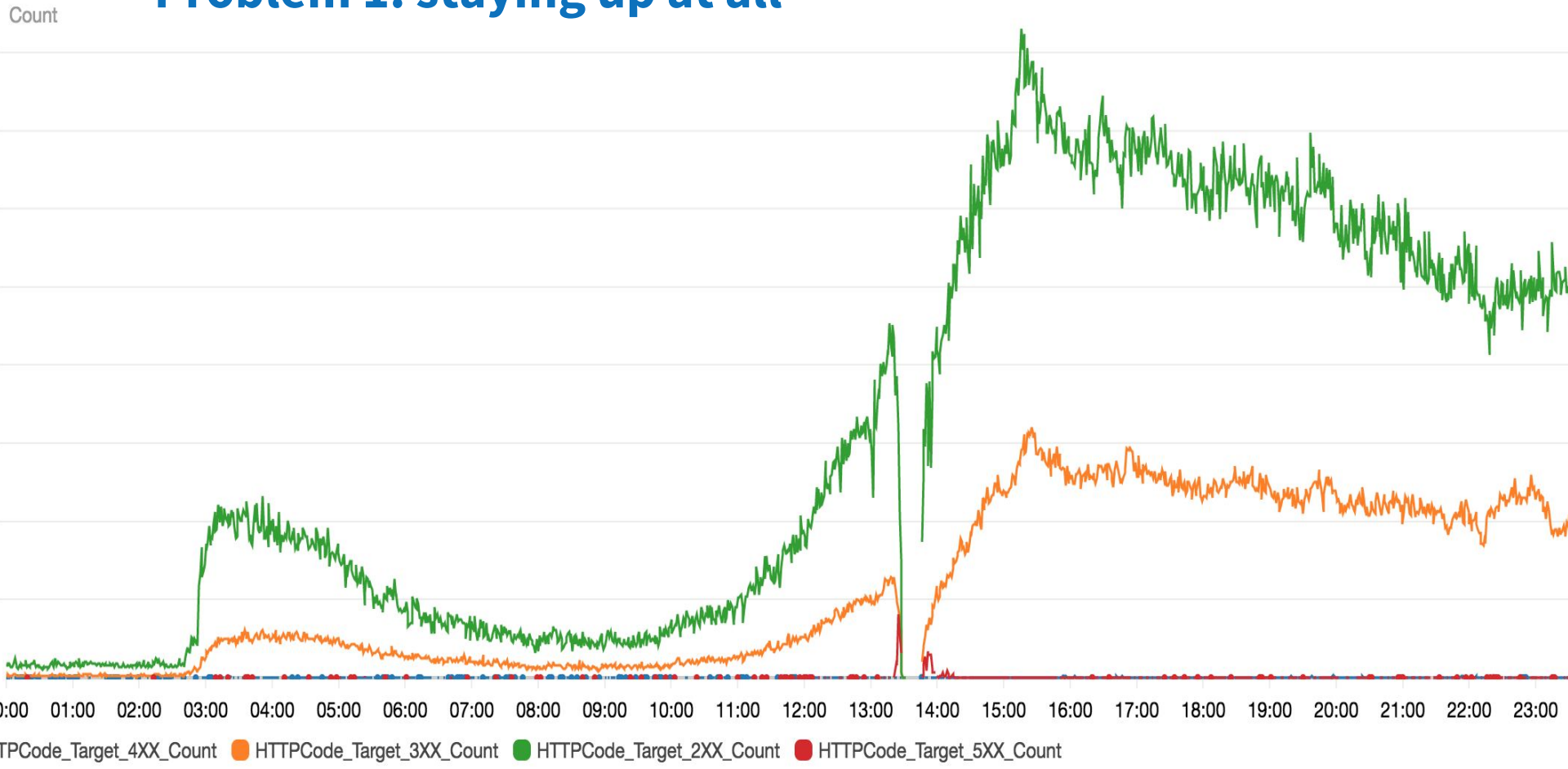

TTP Prod - application progress
Count
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
08:00
11:00
14:00
17:00
20:00
23:00

Fast forward to Monday

TTP Launch day, as seen from Login.gov


secure.login.gov
502 Bad Gateway

Problem 1: staying up at all



Problem 2: third party API rate limits

Start Date & Time | End Date & Time | From

To | All status | Filter

DATE	SERVICE	DIRECTION	FROM	TO	# SEGMENTS	STATUS	MEDIA
14:22:14 UTC 2017-10-02	—	Outgoing API	(202) 888-		1	Queued	—
14:22:14 UTC 2017-10-02	—	Outgoing API	(202) 888-		1	Queued	—
14:22:14 UTC 2017-10-02	—	Outgoing API	(202) 888-		1	Queued	—
14:22:14 UTC 2017-10-02	—	Outgoing API	(202) 888-		1	Queued	—
14:22:14 UTC 2017-10-02	—	Outgoing API	(202) 888-		1	Queued	—

Problem 3: the Heisenbug

Hei·sen·bug (n)
A bug that disappears when one attempts to isolate it.

Named after the Heisenberg Uncertainty Principle

An official website of the United States government

LOGIN.GOV

Oops, something went wrong. Please sign in again.

Sign in

Email address

user@example.com

Show password

Password

••••••••••••••••

Next

Mission accomplished

CBP and GSA execute a successful launch


THE U.S. DIGITAL SERVICE
playbook.cio.gov
Digital Services Playbook
The American people expect to interact with government through digital channels such as websites, email, and mobile applications. By building digital services that meet their needs, we can make the delivery of our policy and programs more effective.
Today, too many of our digital services projects do not work well, are delivered late, or are over budget. To increase the success rate of these projects, the U.S. Government needs a new approach. We created a playbook of 13 key “plays” drawn from successful practices from the private sector and government that, if followed together, will help government build effective digital services.

Digital Service Plays: 1-6

1. Understand what people need
2. Address the whole experience, from start to finish
3. Make it simple and intuitive
4. Build the service using agile and iterative practices
5. Structure budgets and contracts to support delivery
6. Assign one leader and hold that person accountable

https://playbook.cio.gov

Digital Service Plays: 7-13

7. Bring in experienced teams
8. Choose a modern technology stack
9. Deploy in a flexible hosting environment
10. Automate testing and deployments
11. Manage security and privacy through reusable processes
12. Use data to drive decisions
13. Default to open

https://playbook.cio.gov

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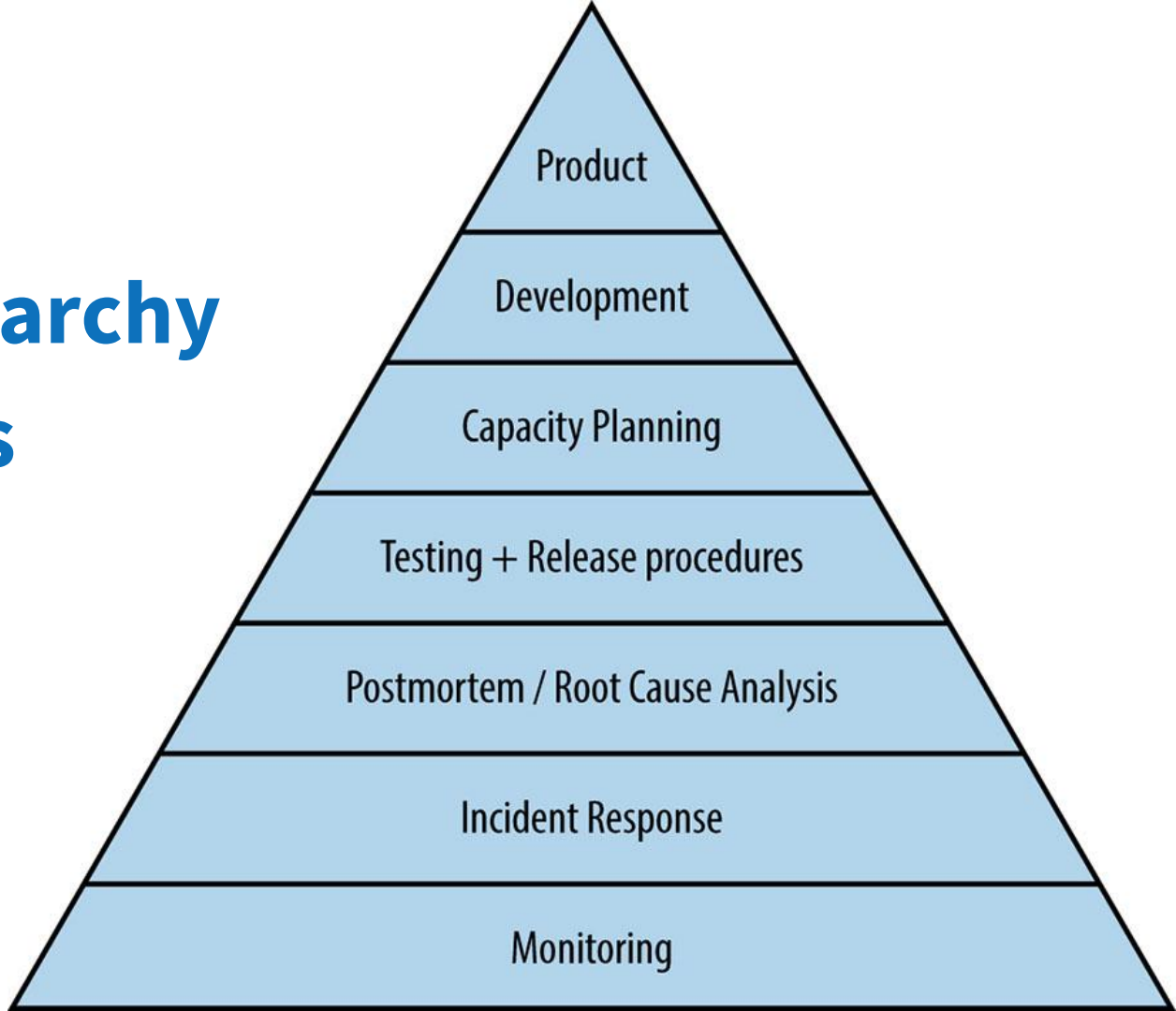
https://playbook.cio.gov

~~Maslow's~~ Mikey's Hierarchy of SRE needs



How do things stand now

PROGRESS SINCE LAUNCH

HOW DO THINGS STAND NOW

Trusted Traveler

- ➔ 50+ production pushes in first 30 days
- ➔ Over 500,000 completed applications
- ➔ Team addicted to the real time metrics and dashboards


LOGIN.GOV
Total accounts as of March 1, 2018
3.0M
2.8M
2.6M
2.4M
2.2M
2.0M
1.8M
1.6M
1.4M
1.2M
1.0M
800k
600k
400k
200k
0.0

HOW DO THINGS STAND NOW

Login.gov today

- ➔ A few million more users
- ➔ Traffic has grown another 10x
- ➔ Now powers sign in for USAJobs.gov
- ➔ Online identity proofing is next

This is just the beginning of what a government can do with technology that works.

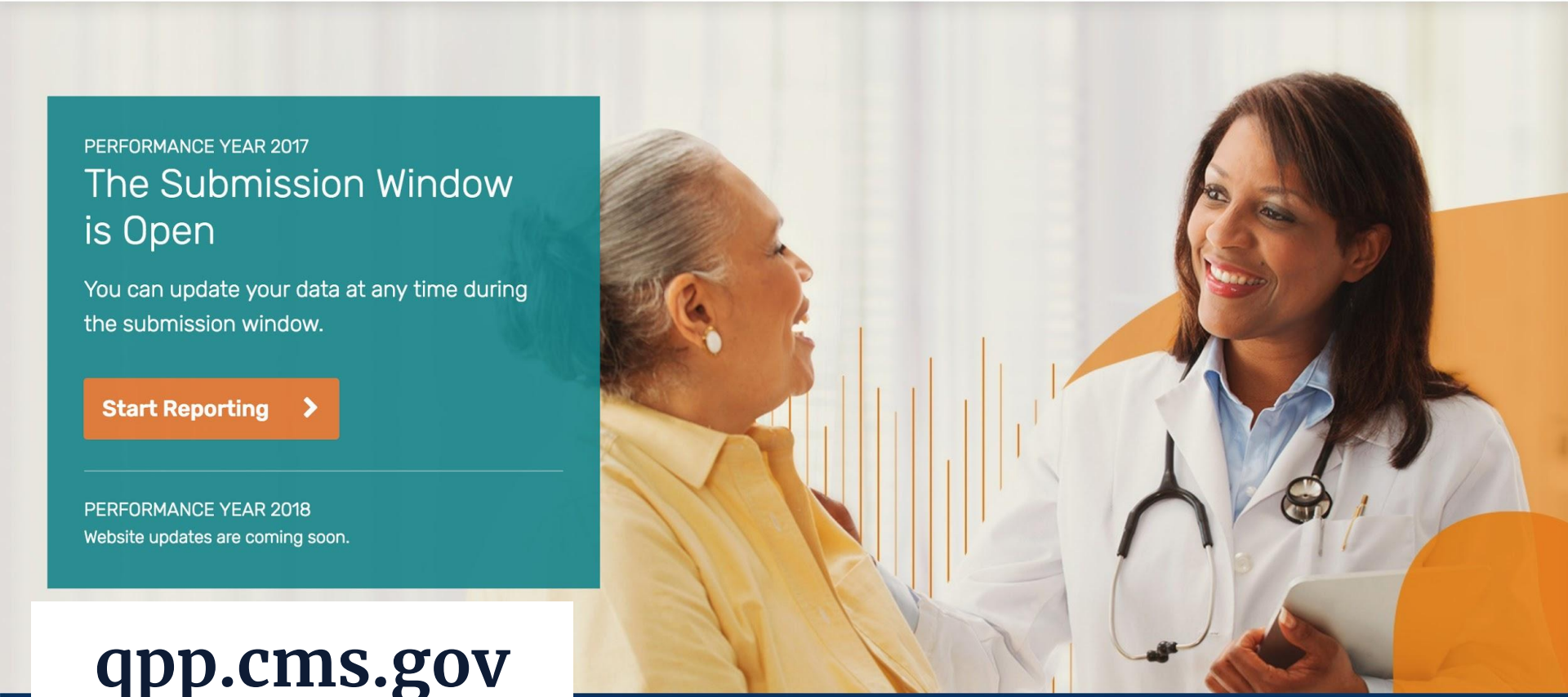
Quality Payment PROGRAM

MIPS
Merit-based Incentive Payment System

APMs
Alternative Payment Models

About
The Quality Payment Program

Sign In
Submit and Manage Data



PERFORMANCE YEAR 2017

The Submission Window is Open

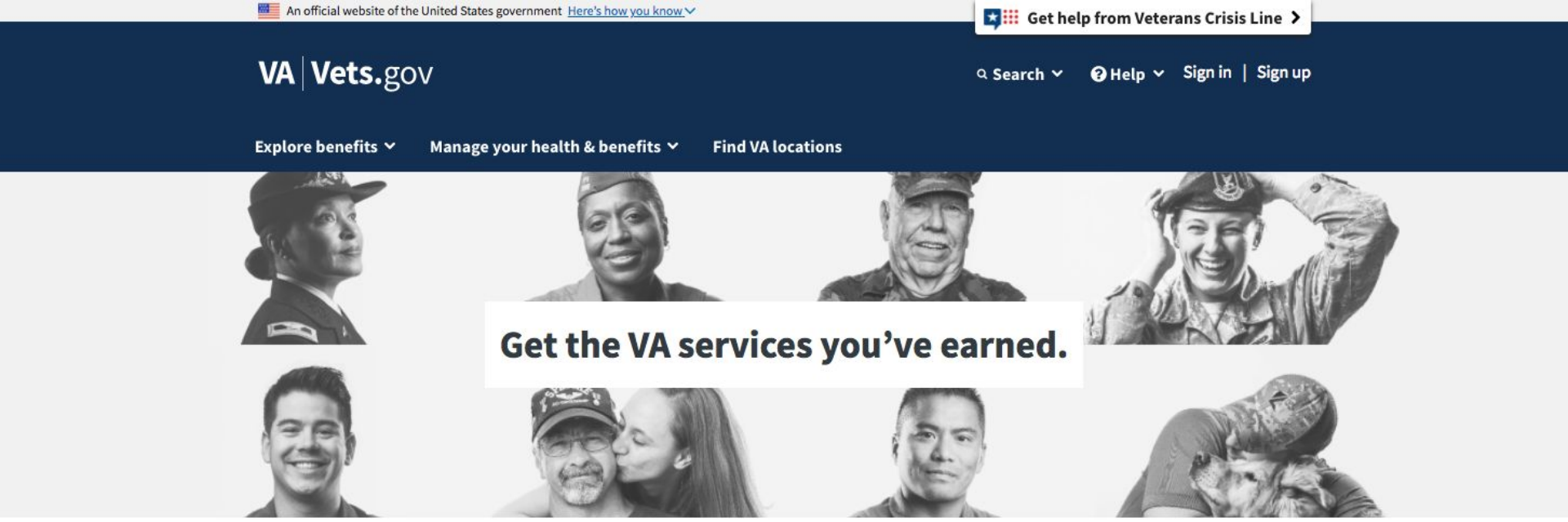
You can update your data at any time during the submission window.

Start Reporting ›

PERFORMANCE YEAR 2018

Website updates are coming soon.

qpp.cms.gov



vets.gov

benefits for conditions related to your military service.

Health Care Benefits



Hack the Pentagon

Official website of the Department of Homeland Security

U.S. Citizenship and Immigration Services

Explore Resources



myUSCIS makes immigration simpler

ou navigate the immigration process.
nformation about the application
to help you prepare for naturalization,
aration classes and doctors in your

Try us on mobile

You can use myUSCIS anytime and on any device.

my.uscis.gov



Thank you.

usds.gov/join

Andy Brody
@alberge

James Punteney