



# Devops enterprise summit '22

# What is CEnters for medicare and

**CMS's mission is to serve Medicare & Medicaid beneficiaries**

- We provide medicare and medicaid benefits to 133 Million People Nationwide
- Primary recipients are over 62 years old, or those with low/no income and are most at risk.



**The CMS vision** is to become the most energized, efficient, customer friendly Agency in the government. CMS will strengthen the health care services & information available to Medicare & Medicaid beneficiaries & the health care providers who serve them.

# Robert Wood

cISO, Centers for Medicare and Medicaid



## Background

- Joined CMS in 2020 as CISO
- Leads the Information Security and Privacy Group
- Group supports 234 FISMA systems that are fully or partially assessed each year.
- Spent 10 years in the private cybersecurity space in Silicon Valley and the NYC Area
- Started career as Security Engineer and ran Red Team Ops for physical and cybersecurity efforts



# CHALLENGES

- **GES** Security, Governance, Risk, and Compliance have become large resource drains on the software development cycle
- Cloud technology and cloud native applications are numerous and difficult to stay up to date on
- Waterfall and water-scrum-fall software development processes used in the government are still slow



# CHALLENGES

- Greater than 8,500 contracted engineers support our systems in comparison to 46 ISPG staff and 423 OIT staff members that manage the services delivery.
- Due to this, there is a lack of integrations and automation with numerous data silos that make managing and keeping CMS secure difficult.

# SOLUTIO

The batCAVE aims to be CMS's devsecops platform as a service (PaaS) that accelerates the time to value for mission owners by automating away a significant portion of the security, infrastructure, and project startup workloads.

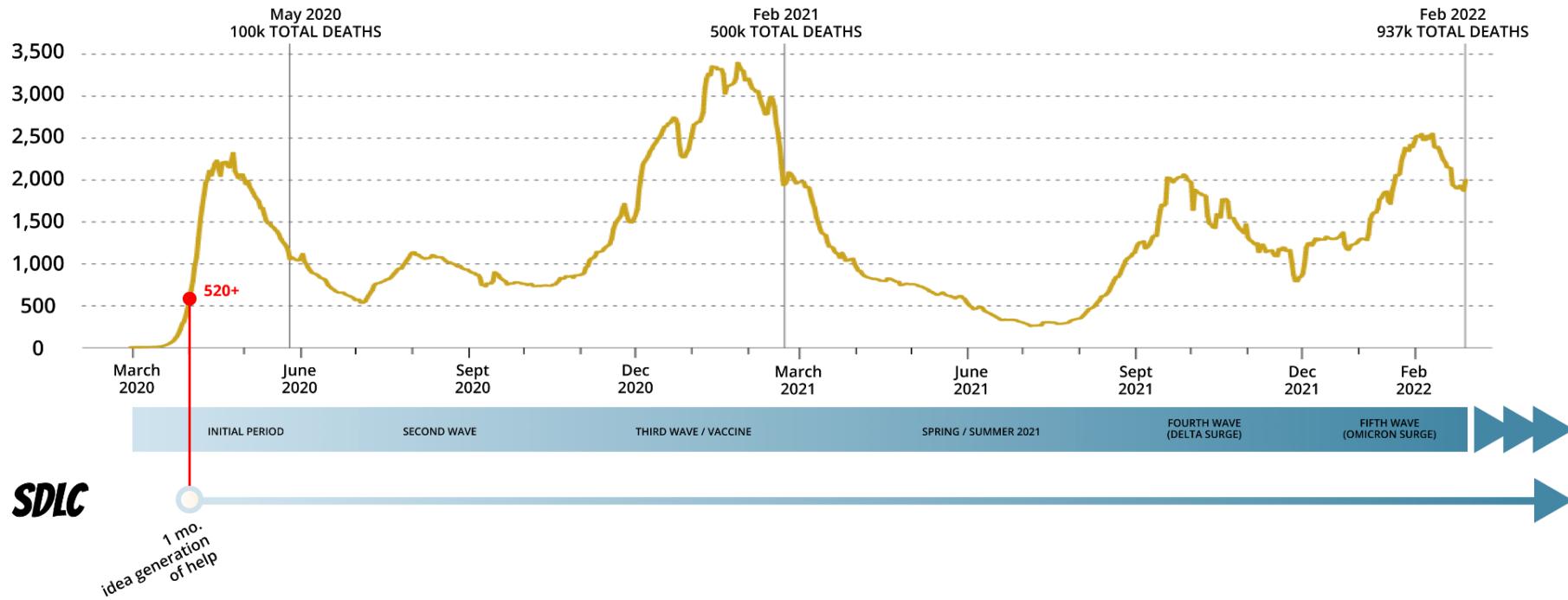


# Our Goals

- Reduce the time spent on CMS's ATO and SIA processes
- Reduce the security and infrastructure burden on teams allowing them to focus on the software.
- Ensure true continuous monitoring and security compliance all while providing continuous updates of the software
- Reduce the cost of an end to end application development and from idea to deployment at CMS
- Provide the ability to capture user feedback in a timely manner in order to improve and add features
- Reduce the cost of hosting apps on CMS cloud by enabling dynamic scaling of apps through the power of Kubernetes.
- Provide a simple onboarding process for ADO's that want DevSecOps and don't want to manage their infrastructure and associated security burden.
- **Allow continuous delivery. Get value to the American people faster.**

# COVID-19 DEATHS

Average number of daily reported coronavirus deaths in the US



## SHUTDOWNS 2020

### MARCH

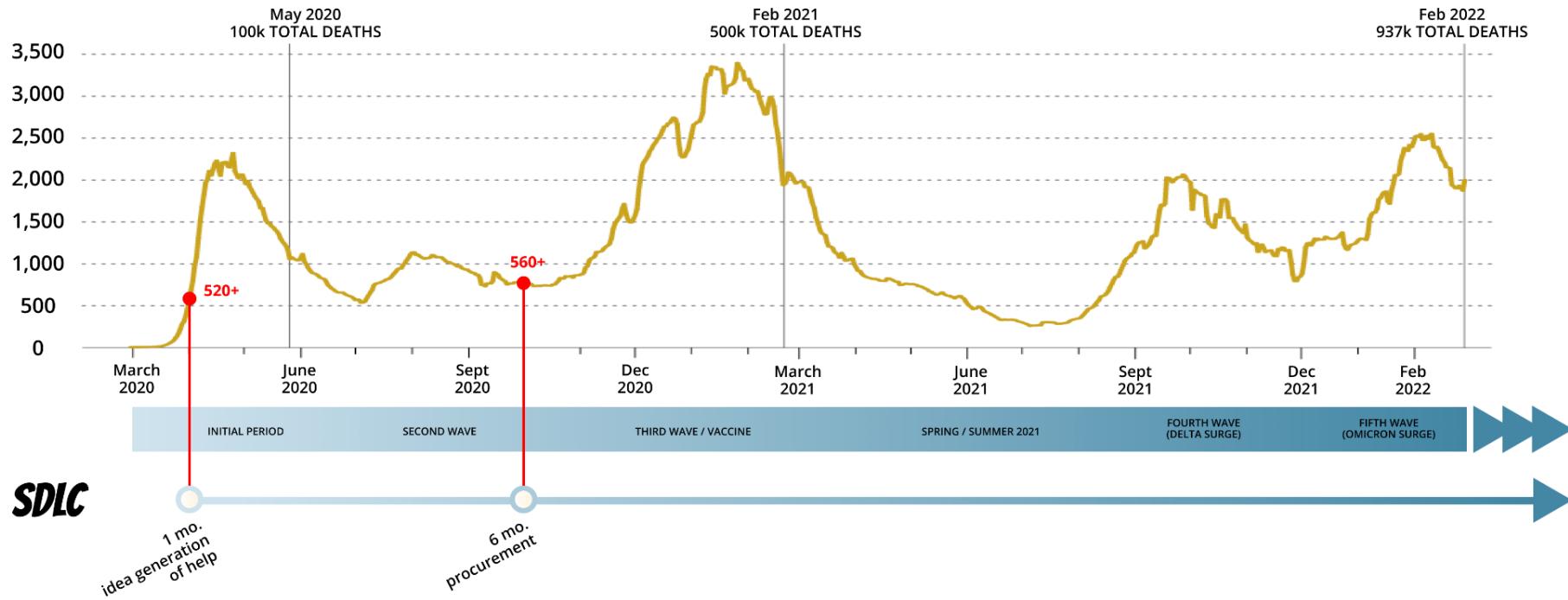
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| 03/19        | 03/22         | 03/24           | 03/25        | 03/27           | 03/30            | 04/01          | 04/03         | 04/06            |
| • California | • New York    | • Delaware      | • Hawaii     | • Minnesota     | • Kansas         | • D.C.         | • Georgia     | • Missouri       |
| 03/21        | 03/23         | • Indiana       | • Idaho      | • New Hampshire | • Maryland       | • Nevada       | • Florida     | 04/07            |
| • Illinois   | • Connecticut | • Massachusetts | • Wisconsin  | • Vermont       | • North Carolina | • Pennsylvania | • Mississippi | • South Carolina |
| • New Jersey | • Louisiana   | • Michigan      | • New Mexico | • Alaska        | • Virginia       | 04/02          | 04/04         | • Alabama        |
|              | • Ohio        | • West Virginia | • Colorado   | • Montana       | • Arizona        | • Maine        |               |                  |
|              | • Oregon      |                 | • Kentucky   | • Rhode Island  | • Tennessee      | • Texas        |               |                  |
|              | • Washington  |                 |              |                 |                  |                |               |                  |

### APRIL

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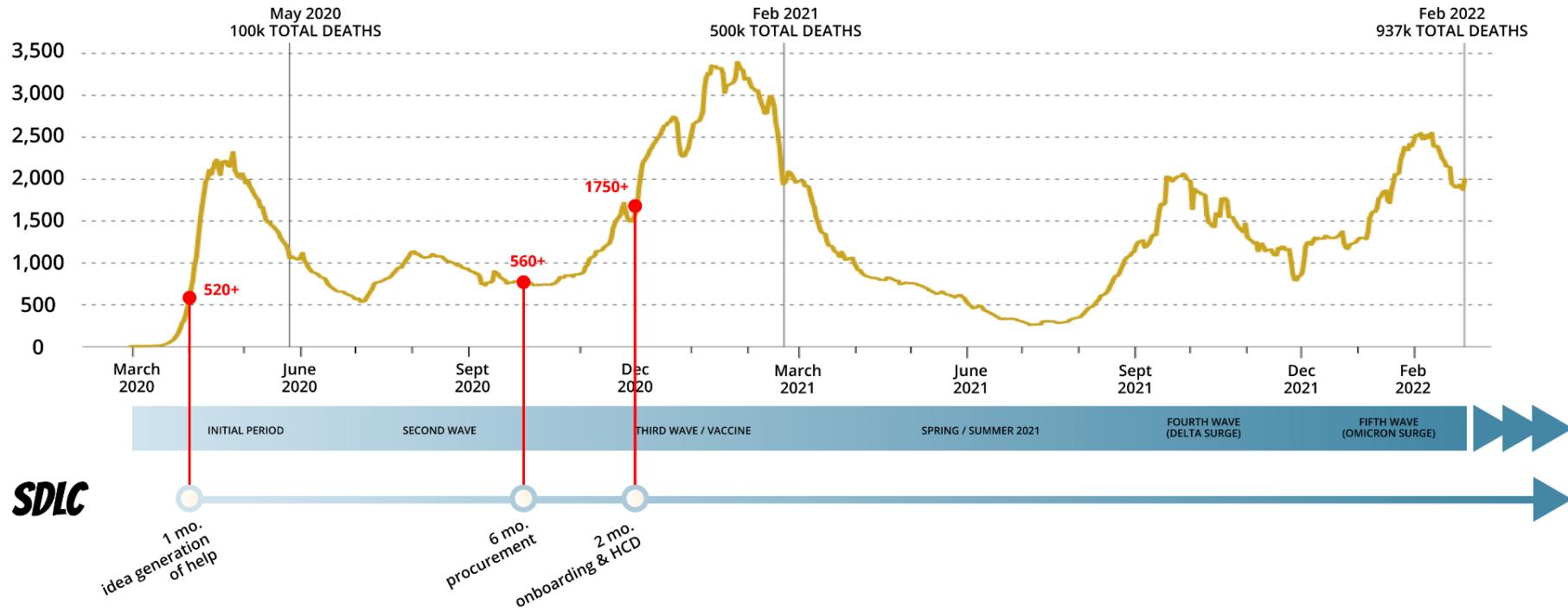
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| 03/21                      | 03/23      | • Connecticut<br>• Louisiana<br>• Ohio<br>• Oregon<br>• Washington                          | • Colorado<br>• Kentucky   | • Arizona<br>• Tennessee                | 03/31  | 04/02                                | 04/04                                   | 04/07            |
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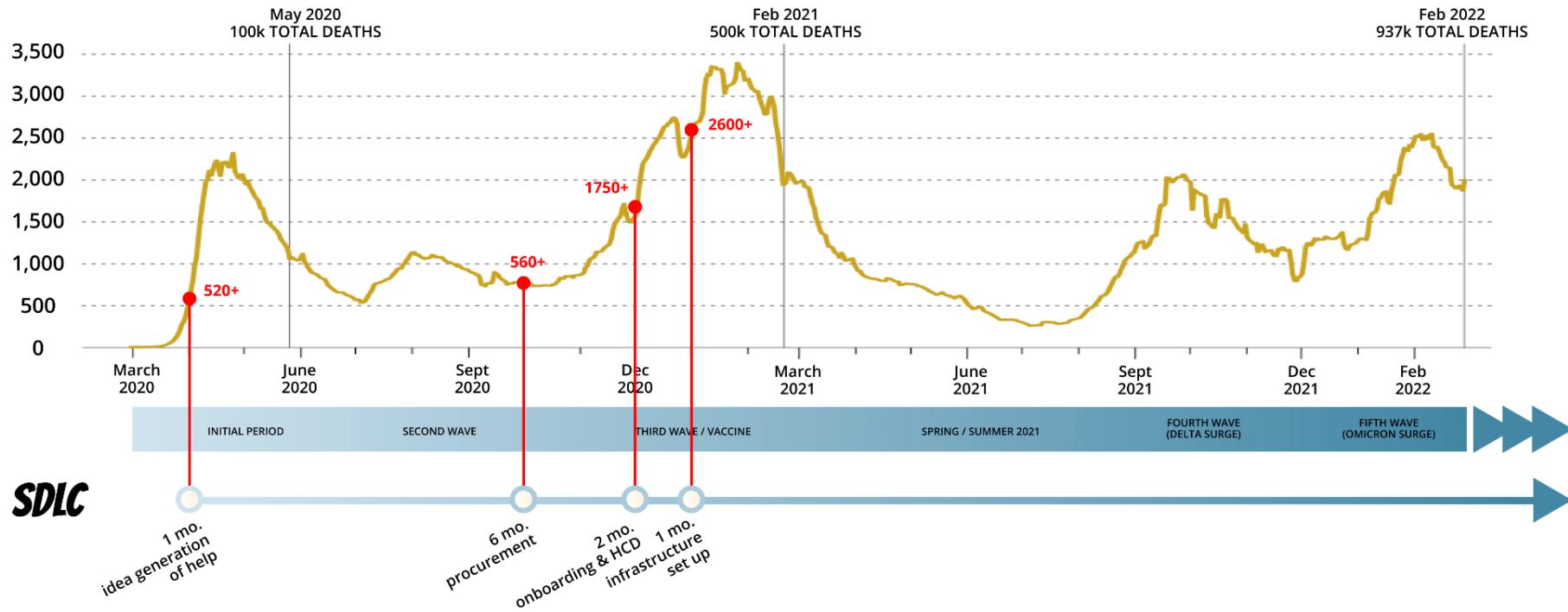
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  - Maryland
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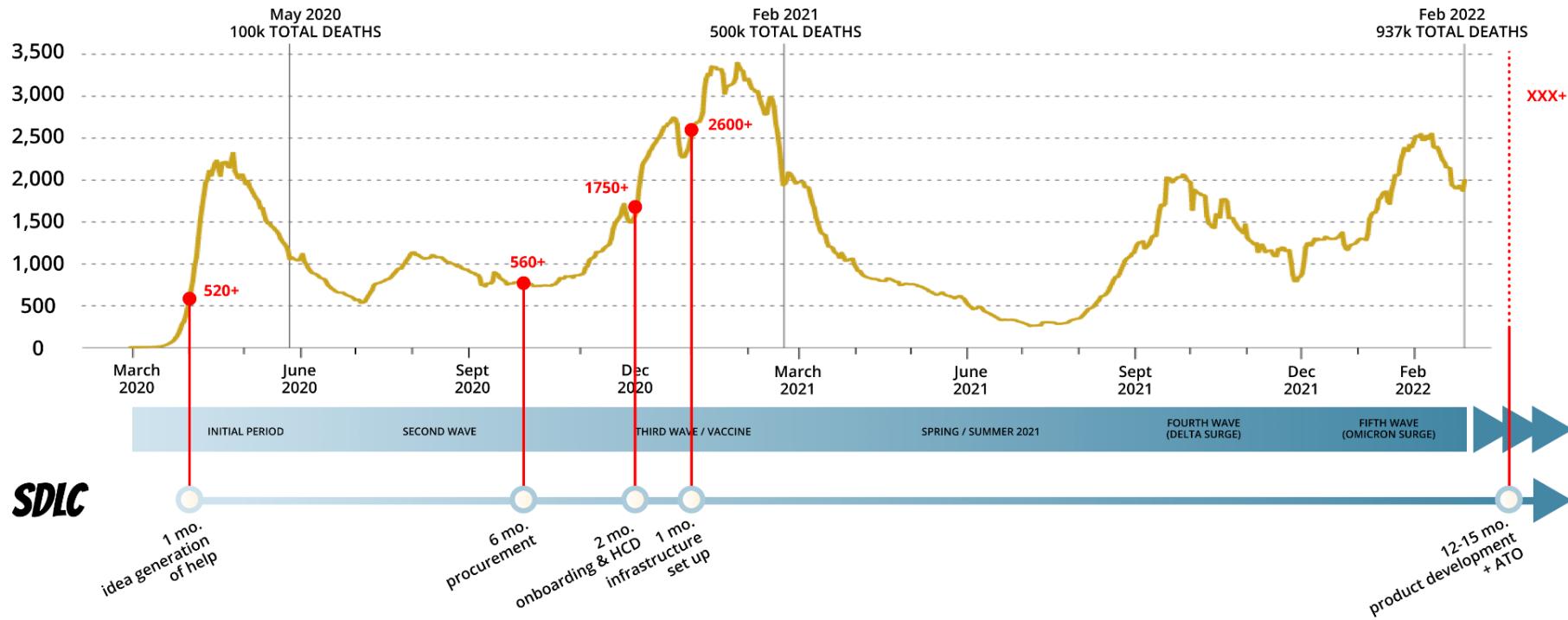
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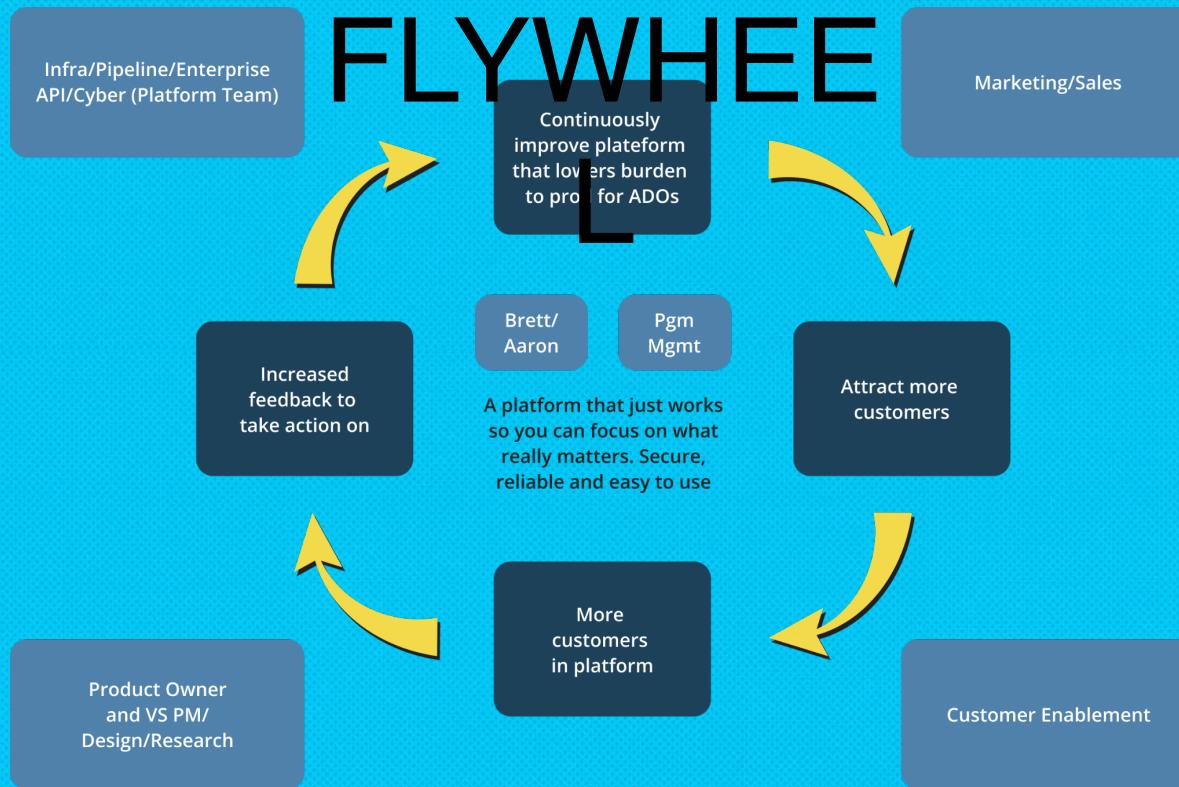
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# THE FLYWHEEL



## SUCCESS STORY: MOHAN FROM EPPE

### Mohan Gowda

Sr. Computer Systems Architect  
EPPE

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Features of batCAVE that exceeded your expectations:  
***The pipeline and the utility belt takes the pressure off the ADO.***

EPPE highlighted the following benefits:

- *Integration is better and the timeline to production is a lot shorter.*
- Ability to focus on our application code requirements.
- batCAVE works with us closely to update our work integrations to better suit the pipeline and how we can benefit from our continuous standing and ATO that is part of the pipeline.
- *The security aspect and compliance is key*



# TECHNOLOGY

## batCAVE Virtual Private Cloud (VPC)

### EKS Cluster

Core Services  
\*Runs on every ADO cluster

|            |            |
|------------|------------|
| Falco      | Karpenter  |
| Fluent Bit | Kiali      |
| Flux       | Kyverno AC |
| Grafana    | Loki       |
| Helm       | Prometheus |
| Istio      | Velero     |
| Jaeger     |            |

Cluster/ADO Services  
\*Hosted by batCAVE; access by ADOs

|                   |
|-------------------|
| GitLab            |
| Rapid Fort        |
| (Future Services) |

Gitlab EBS  
Temp Data  
(via minio)

Gitlab EBS  
Repo Data  
Not HA  
(gitally)

### Pipeline Tools

|             |           |
|-------------|-----------|
| ArgoCD      | OWASP ZAP |
| ClamAV      | SemGrep   |
| Gitleaks    | Snyk      |
| Grype       | Syft      |
| Kyverno CLI | TestRail  |

### S3 Buckets

|                       |                    |             |
|-----------------------|--------------------|-------------|
| GitLab Gitaly Backups | GitLab Runner Data | Log Storage |
| Terraform State Files | Velero Backups     |             |

### RDS

|             |
|-------------|
| GitLab PSQL |
|-------------|

## ADO Virtual Private Cloud (VPC)

### EKS Cluster

Core Services  
\*Runs on every ADO cluster

|            |            |
|------------|------------|
| Falco      | Karpenter  |
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| Grafana    | Loki       |
| Helm       | Prometheus |
| Istio      | Velero     |
| Jaeger     |            |

### Cluster/ADO Services

|                    |
|--------------------|
| ado-ui             |
| ado-backend        |
| other ado services |

### S3 Buckets

|             |                       |
|-------------|-----------------------|
| Log Storage | Terraform State Files |
|-------------|-----------------------|

### RDS

|             |
|-------------|
| GitLab PSQL |
|-------------|

## CMS Cloud Services

|                   |
|-------------------|
| Artifactory       |
| GitHub.com/CMSgov |
| Nucleus           |
| OKTA              |
| Splunk            |

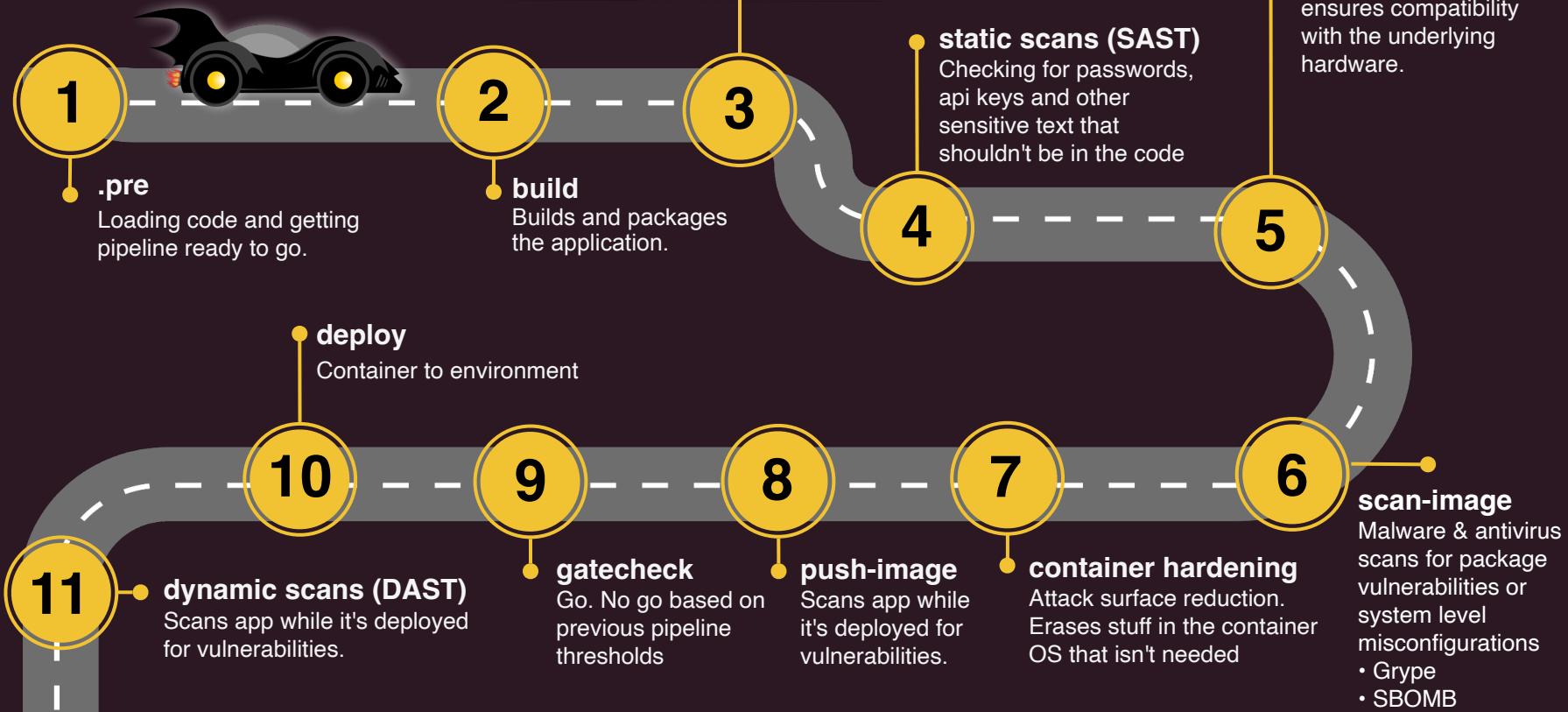
# UTILITY BELT

Our platform infrastructure will equip you with the tools you need for deployment



Utility Belt is deployed to both the batCAVE and ADO VPCs and accounts for a portion of the inherited security controls

# PIPELINE STAGES



# MAJOR MILESTONES

Onboarding of early adopters

Q4 - '22

Full & Independent ATO

Q4 - '22

Production-level Multi-tenancy

Q1 - '23

Enterprise Services Deployment  
(Secrets, ZT, GRC)

Q2 - '23

Security Data Lake Integration

Q2 - '23

CMS Cloud Automation

Ongoing Marketing & Education

Constant Cloud Product Owner Collaboration

Continuous User Research and Validation

## MAJOR ACCOMPLISHMENTS

1. 80% control mapping of CMS's NIST 800-53 implementation
2. Codification of key strategic policy moves into the batCAVE (SBOM, zero trust, etc.) that shift past checkbox compliance work
3. Multiple layers of value proposition for different stakeholders (cost, speed, security, standardization)
4. Deployment of CMS's first purple team working full-time inside of the batCAVE from day 1



## WHERE WE NEED HELP!

### Collaboration and boundary pushing

1. Agency partners willing to go out on a limb with us and actively collaborate
  - a. Open collaboration and standards setting
  - b. Engineering-level and data sharing of resources
2. Industry partners willing to partner in an open source model
  - a. Mission over “mine”





***THANK YOU!***

