
AWS
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COP315

# 3M: Architecting for innovation in regulated industries


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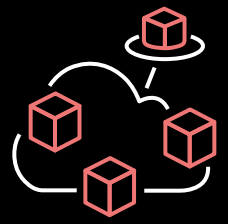

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“It takes 20 years to build a reputation and five minutes to ruin it. If you think about that, you’ll do things differently.”

**Warren Buffet**

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# Agenda



Use cases for cloud in regulated industries



Governance at scale challenges

3M

The 3M approach

aws

Building your regulated environment on AWS

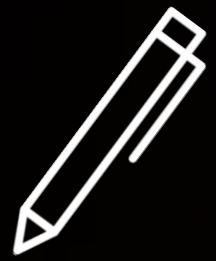
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# Your journey to operating at cloud scale

**Get started with AWS Cloud Operations**

## Set up



Establish a secure foundation for governance and compliance

## Build and migrate



Migrate applications to the cloud, or build new applications

## Operate



Simplify ops management with an integrated experience to manage and monitor resources and applications to detect and remediate risks quickly

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# Customers across regulated industries choose AWS

## Healthcare

3M

PHILIPS Healthcare

NHS Digital

omada

NEW YORK STATE Department of Health

## Life Sciences

Bristol-Myers Squibb

Baxter

moderna

AstraZeneca

BAYER

## Finance

BNP PARIBAS

HSBC



experian

STANDARD &POOR'S

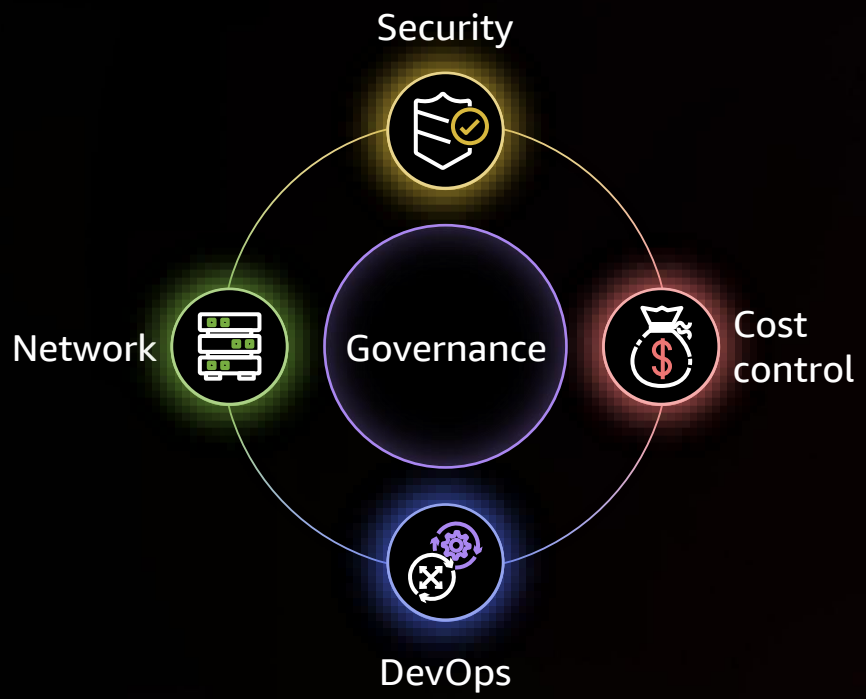
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# Governance at scale: Requirements




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# Governance at scale: Requirements




X

{Regions, Accounts, Projects}

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# Governance at scale: High-level approach

Data sovereignty

Security boundaries

Scaling and repeatability
(Infrastructure as code)

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# How 3M used AWS to build its consistent and controlled global environment

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# 3M Health Care

IMPROVE EVERY LIFE BY ADVANCING HEALTHCARE DELIVERY AND INNOVATING LIFE SCIENCE SOLUTIONS

Our Vision

3M Technology Advancing Every Company
3M Products Enhancing Every Home
3M Innovation Improving Every Life

- Care pathways innovation for improved and cost-effective outcomes
- Differentiated solutions for critical life science applications



## Medical

Preventing complications, protecting skin and healing wounds



## Oral Care

Promoting lifelong oral health



## Separation and Purification Sciences

Increasing speed to clinicals and lowering manufacturing costs



## Health Information Systems

Strengthening the utility of health information

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# 3M Health Information Systems

**2,800+**
Facilities send data through our AI-based NLP/NLU engine every day*

**225 million**
Clinical documents processed every month*

**300+**
Active industry partnerships

**20 countries**
use 3M HIS products

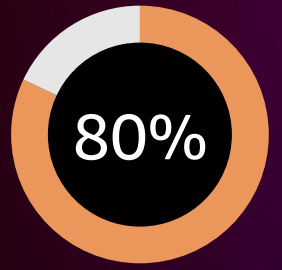
**41 states**
Use 3M methodologies as their basis of payment

**30 day**
Brand promise for regulatory updates

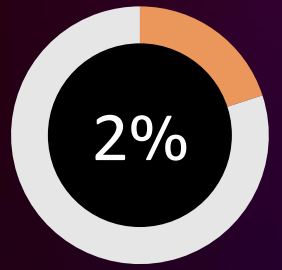
**35+ years**
In contract with CMS and other government agencies

**40 years**
Of medical coding expertise

**100 nosologists**
Applying expertise in clinical development, engine tuning, etc.




of US hospitals use the 3M encoder software




of the US GDP is risk adjusted with a 3M methodology

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*Data from 3M™ 360 Encompass™ System

# 3M Health Care cloud use cases

- Enable scaled research and experimentation leading to new innovations
- Support transition to software-as-a-service delivery model
- High volume AI/ML workloads

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# Governance at scale: Challenges for 3M

| | | |
|---|---|---|
| Data sovereignty |  | **Scale from US to 6 countries**<br>**Global versus Regional resources**<br>**Restrict accounts to specific AWS Regions** |
| Security boundaries |  | **Ensure least privilege access**<br>**Self-serve IAM roles**<br>**Set account and role boundaries** |
| Scaling and repeatability |  | **Go from 18 accounts to 300+ accounts**<br>**Automate account setup**<br>**Minimize operational workload** |

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# When we started the project

**4+ weeks**

Creating a new, compliant, governed account

**4+ weeks**

Get new VPC up and running

**42 days**

Application with least privileged roles and policies

**US only**

Supported AWS Regions

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# Key components of the workflow



Global account model



Account provisioning



Identity and access management

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# Global account model

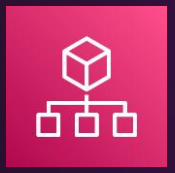
## Goals

Create Region-locked accounts for application teams

Connect these to central, global network

Apply global and regional controls

## AWS services used



AWS Organizations



AWS Control Tower



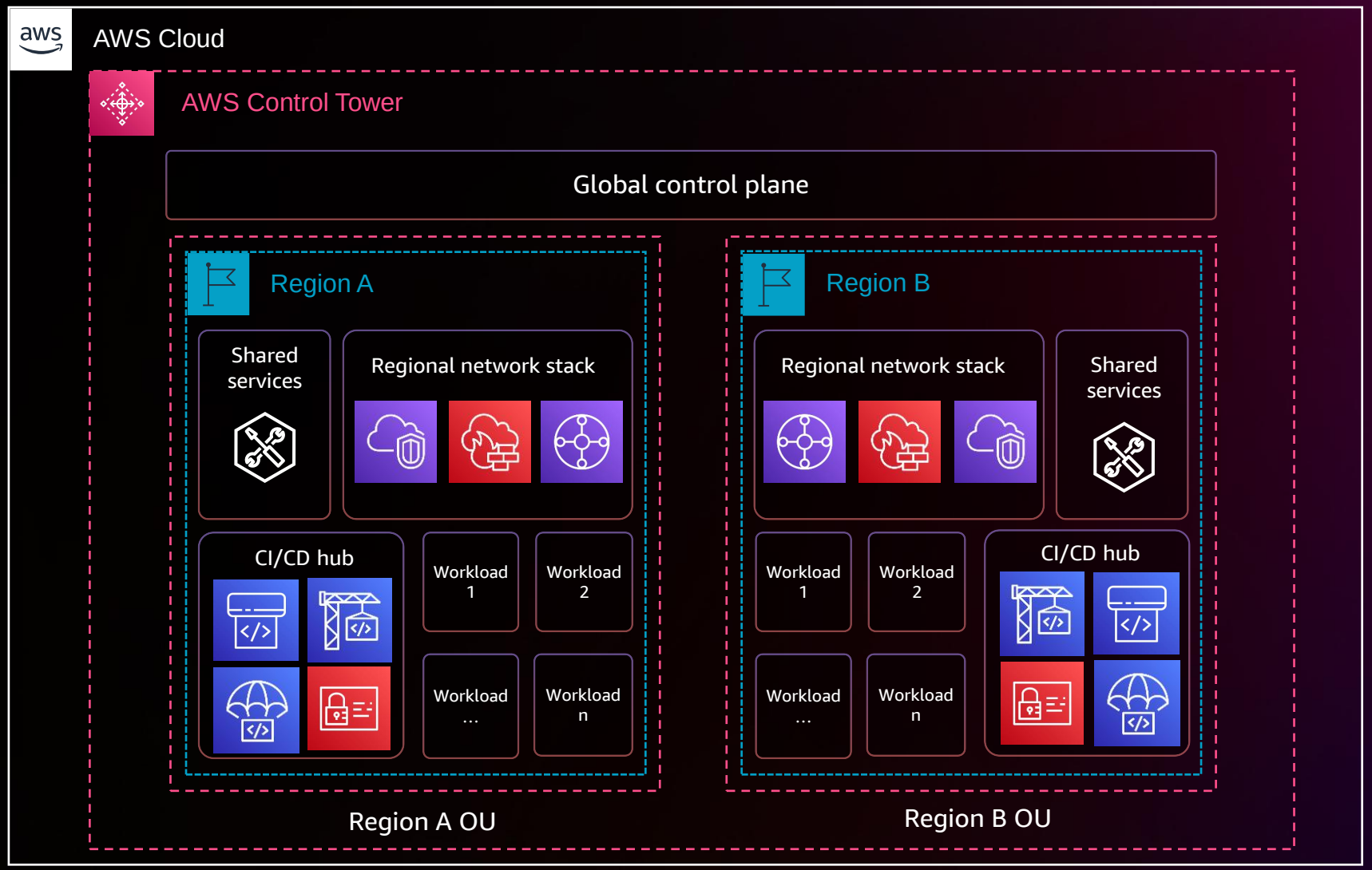
AWS Service Catalog



AWS Transit Gateway

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# Global account model




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# Account provisioning

## Goals

Automated creation of new baselined accounts

Implement idempotent workflow with dependency management

Pre-configure the account with Infrastructure as Code

Manage resources outside AWS

## AWS Services Used



AWS Control Tower



AWS Service Catalog



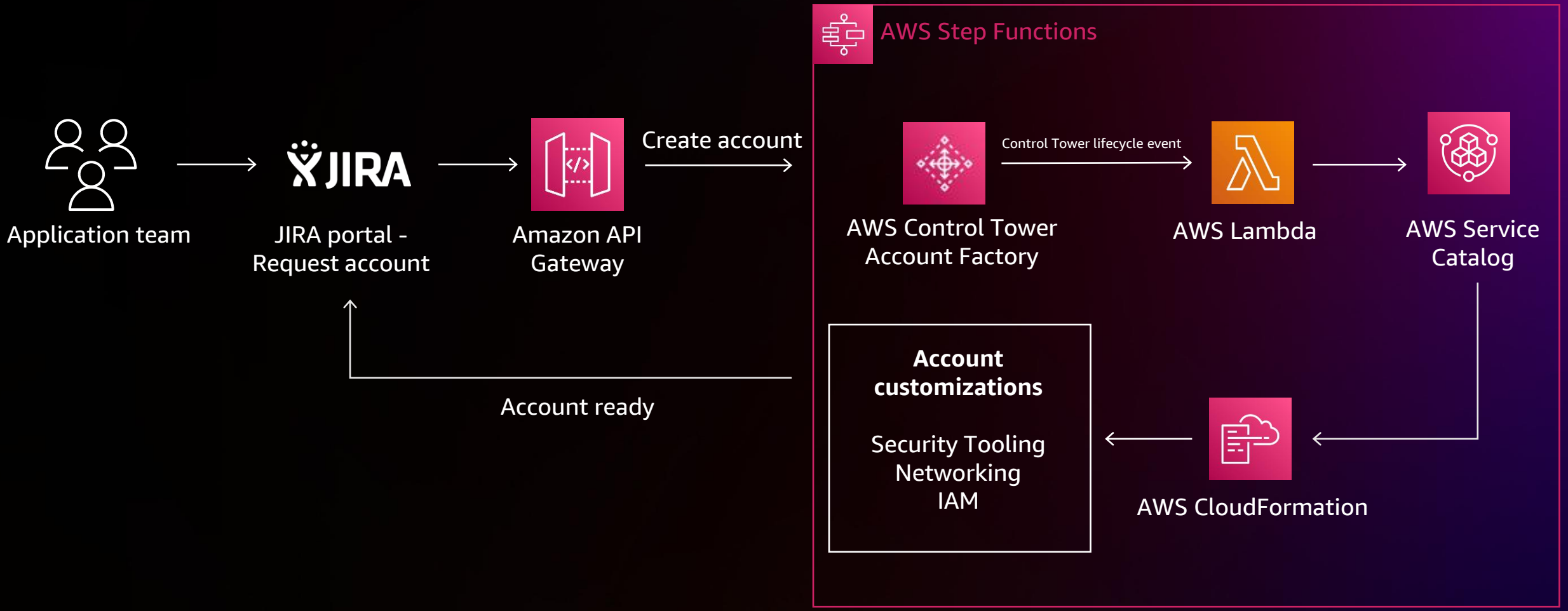
AWS CloudFormation



AWS Step Functions

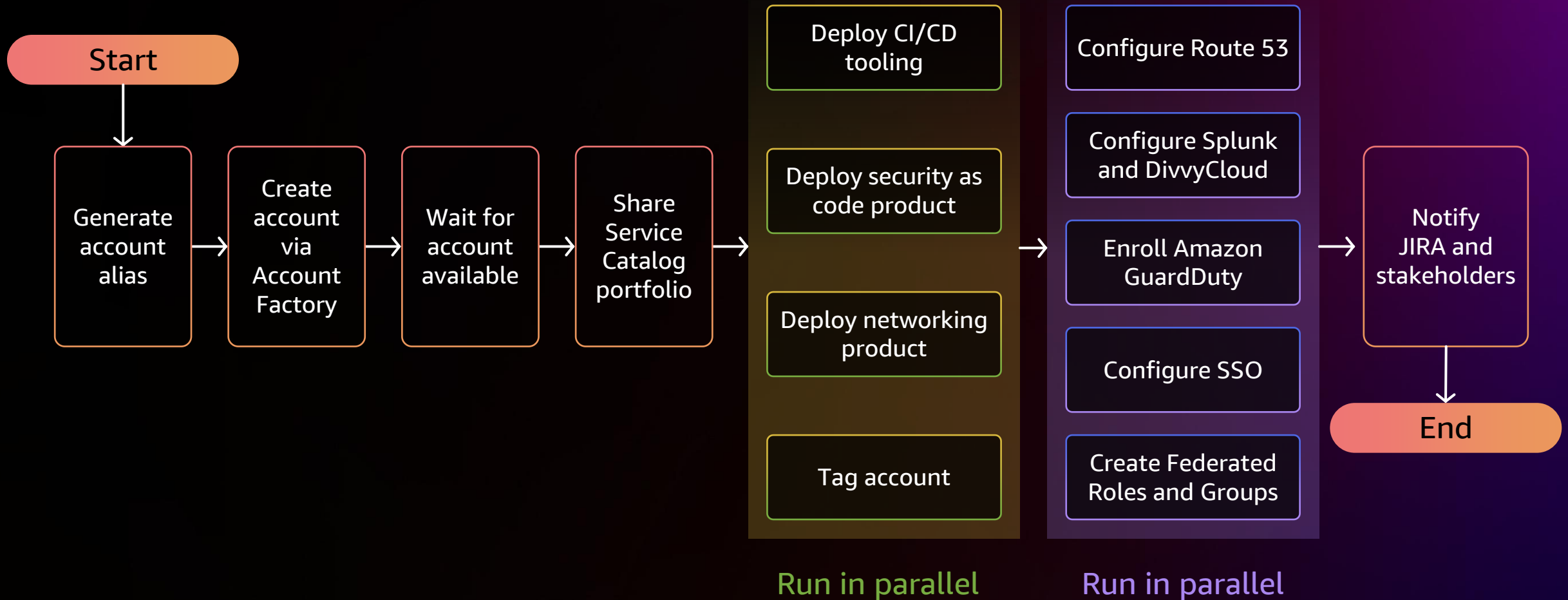
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# Account provisioning workflow




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# State machine orchestration




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# Identity and access management

## Goals

Enforce least privilege access

Developer-created IAM roles and policies across accounts

Allow self-service of IAM roles

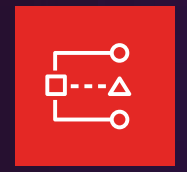
## AWS Services Used



AWS IAM



AWS Config



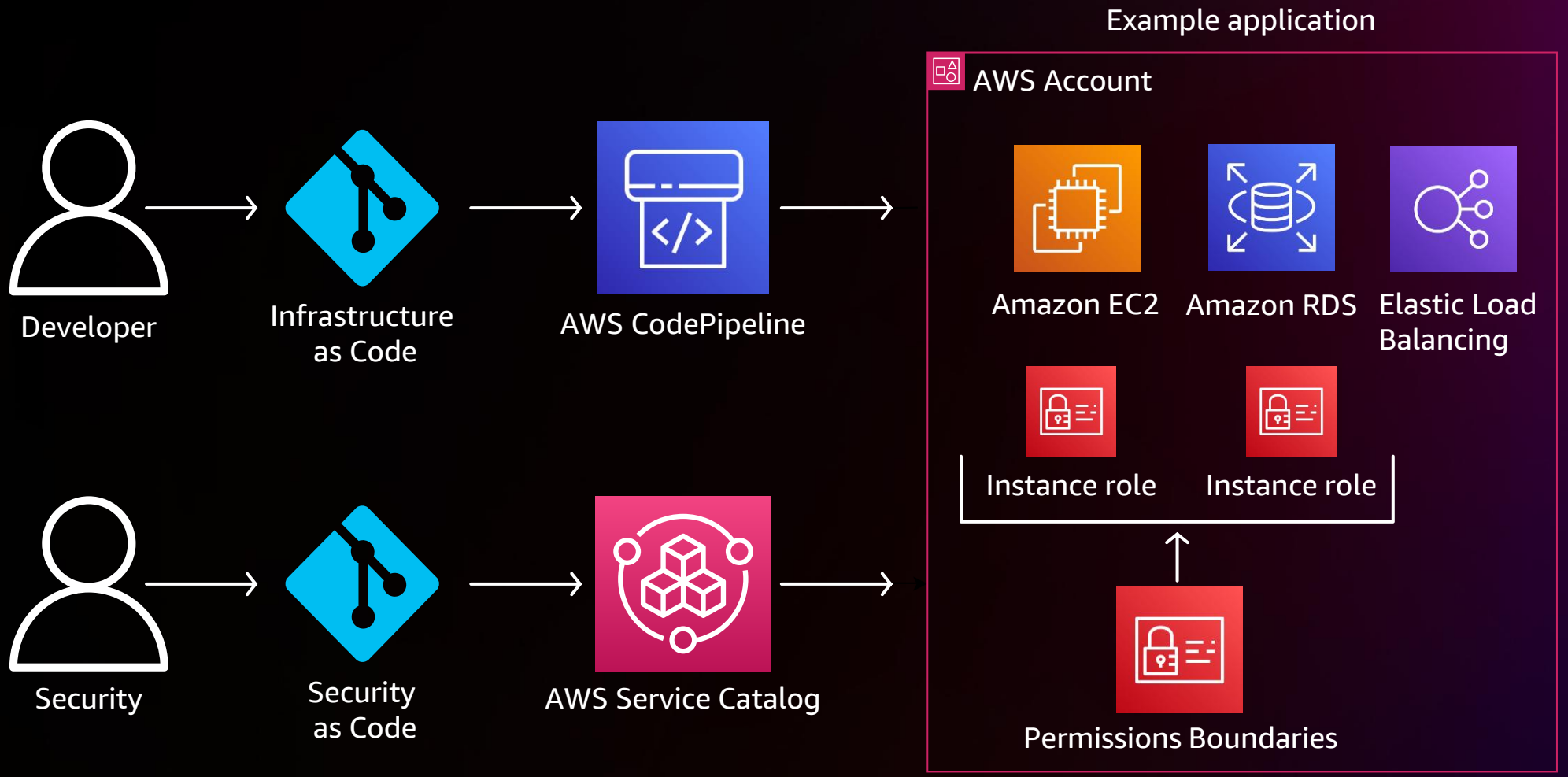
IAM Access Analyzer



AWS Service Catalog

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# IAM Deep Dive




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# Before and after

**4+ weeks**

Creating a new compliant, governed account

**4+ weeks**

Get new VPC up and running

**42 days**

Application with least privilege roles and policies

**US only**

Supported AWS Regions

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# Before and after

| 4+ weeks | 4+ weeks | 42 days | US only |
| --- | --- | --- | --- |
| **25 mins** | **4 mins** | **1 day** | **Fully automated global** |
| 1,600x gain | 10,000x gain | 42x gain | |
| Creating a new compliant, governed account | Get new VPC up and running | Application with least privilege roles and policies | Supported AWS Regions |

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# Application team feedback

"Provisioning accounts and creating CI-CD pipelines which took weeks is down to few hours. Creating our own roles replaced the long process of opening Jira tickets and waiting on security staff to implement."

3M Telesis team

"The success of the self service IAM product has spurred a self-service movement within 3M, with teams looking into ways to provide the same painless path to adoption."

360 Managed Services team

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# Future vision

- Aggregate provisioning of regional foundation account environments (network ingress/egress, tooling, security, shared services) in one motion
- Automate provisioning of development, intermediate, and production environments via internal Telesis development framework
- Auto-provision appropriate user access into environments

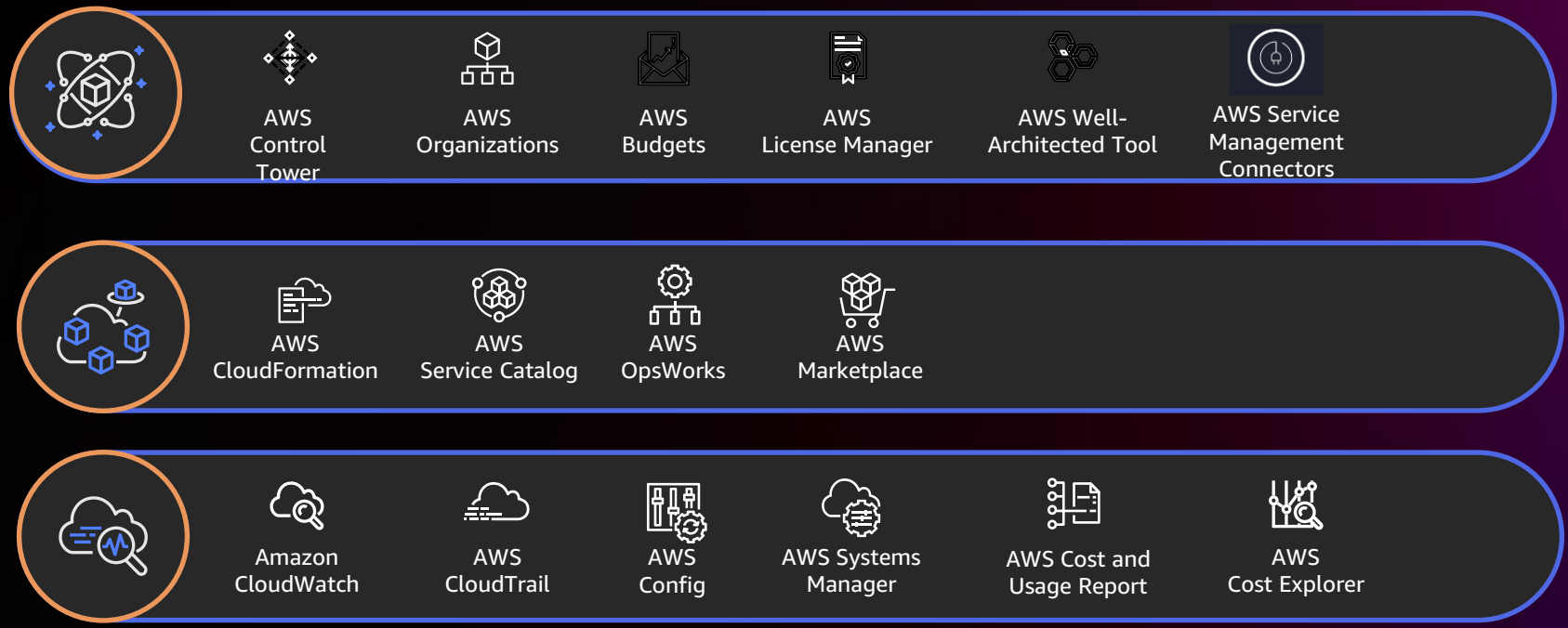
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# This sounds great – how do I get started?

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# AWS Cloud Operations

Security and IAM




**BUSINESS AGILITY + GOVERNANCE CONTROL**

Automation

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# Why AWS Cloud Operations?



## Return on Investment (ROI)

**241% ROI over 3** years*



## Staff productivity

**62%** more efficient IT infrastructure staff



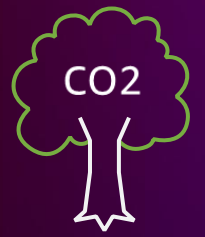
## Operational resilience

**57%** decrease in downtime



## Business agility

**37%** decrease in time to market




## Carbon savings

**88%** reduction in carbon footprint of IT operations

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Based on independent research of 1,500 AWS enterprise customers
*Source: "The Total Economic Impact of AWS Cloud Operations: Cost Savings And Business Benefits Enabled By Operation on AWS. May 2022. A commissioned study conducted by Forrester Consulting on behalf of Amazon Web Services."

# AWS Control Tower

Secure Multi-Account Environment

Custom Account Factory

Policy-as-code Controls



AWS Control Tower

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# AWS Service Catalog

Combine governance with self-service

Sharing across thousands of accounts

Versioning



AWS Service Catalog

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# AWS Service Management Connector

Connector for ServiceNow or Jira Service Management

## Integrated Services

- AWS Service Catalog
- AWS Config
- AWS Security Hub
- AWS Systems Manager
- AWS Support
- AWS Health



AWS Service Management Connector

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# Get started with these easy steps



Use AWS Control Tower to provision your accounts with a customizable blueprint



Use AWS Service Catalog to share best practice templates of AWS services into thousands of accounts and govern their usage



Use AWS Service Management Connectors (SMCs) to use AWS services from IT Service Management tooling such as ServiceNow and Atlassian

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“Good intentions never work, you need good mechanisms to make anything happen.”

Jeff Bezos

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# Thank you!



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