10 Aprile 2025

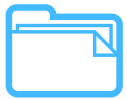
Pratiche DevOps in AWS

AXELERANT

WWW.AXELERANT.IT

Migliora la tua esperienza nel webinar

Invia una domanda



Scarica i documenti

Riguarda on demand

Due Parole su di me...

Sono il **CTO** e co-fondatore di **Archeido**. Da sempre appassionato di infrastrutture distribuite e metodologie **DevOps**, mi occupo di progettare soluzioni affidabili e scalabili. In Archeido coordino un team di professionisti che sviluppa prodotti innovativi in diversi settori tra cui Fintech e WealthTech.

Chi siamo

Archeido è una Software House specializzata nella realizzazione di **software su misura Cloud-Native** e infrastrutture Cloud su **AWS**.

Il nostro obiettivo

sfruttare al massimo il potere del **Cloud** per creare **software** disruptive e performanti, in grado di dare un **vantaggio competitivo** al business dei nostri clienti.

Le nostre certificazioni

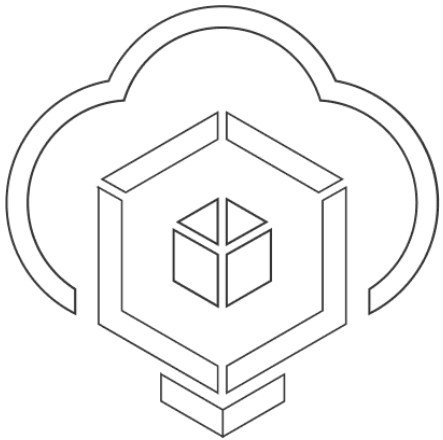
Il nostro team di sviluppatori Cloud è **certificato Amazon Web Services (AWS)** Cloud provider primo al mondo per affidabilità e varietà dei servizi offerti.

aws

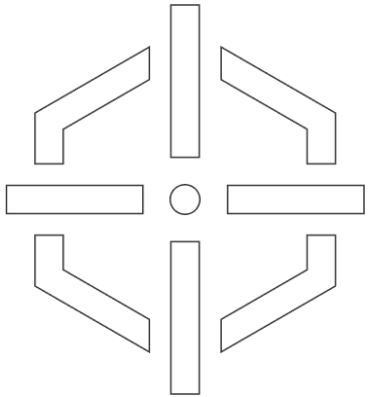
AXELERANT

Le nostre soluzioni

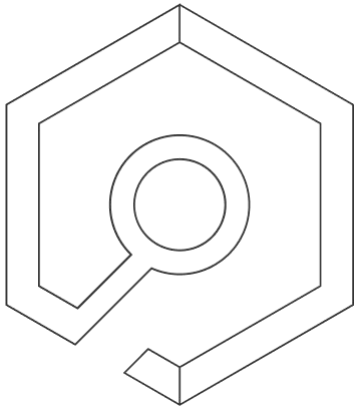
I nostri servizi per la tua Cloud Transformation



Cloud Engineering



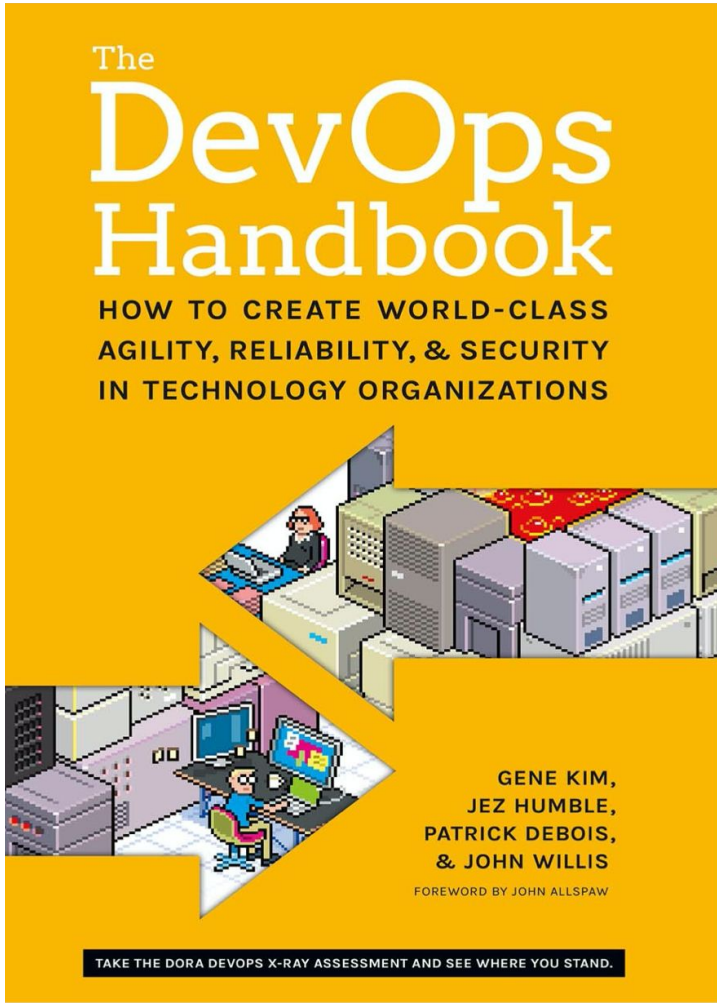
Software su misura

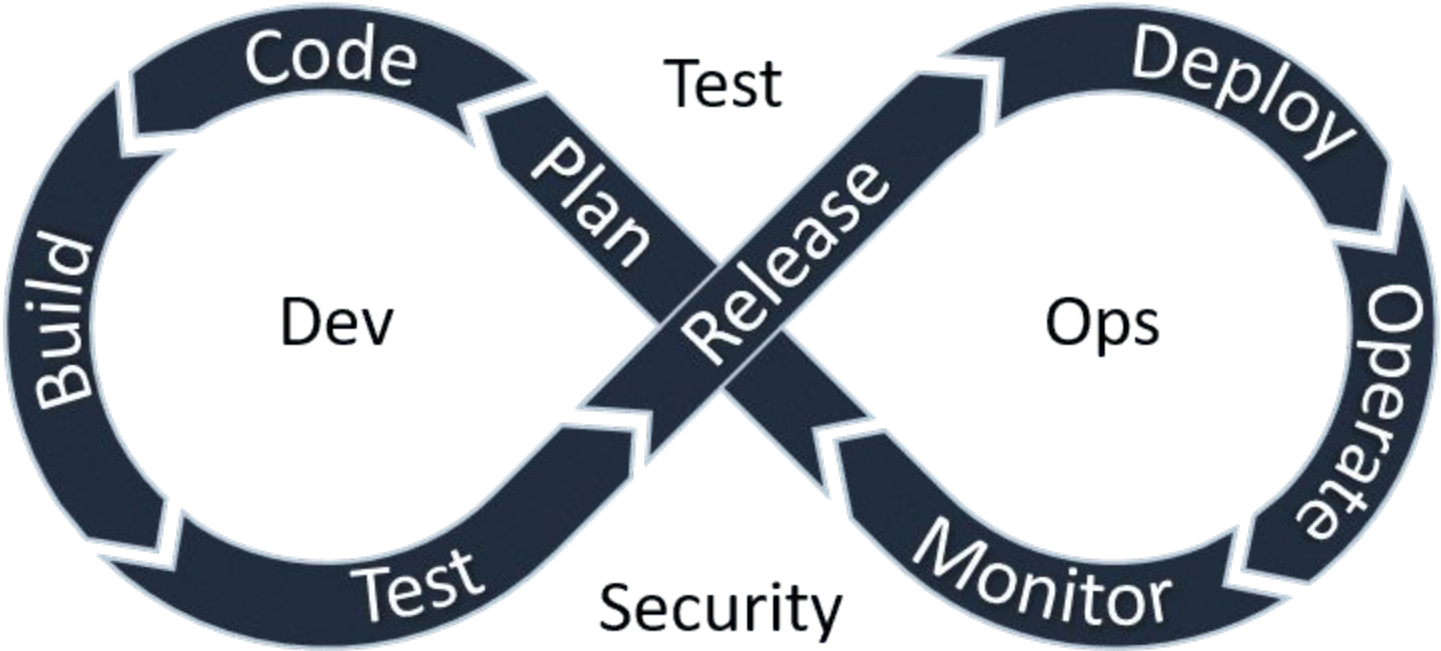


Consulenza IT

Introduzione e Contesto

i principi DevOps e il ruolo di AWS nel cloud


The
DevOps
Handbook
HOW TO CREATE WORLD-CLASS
AGILITY, RELIABILITY, & SECURITY
IN TECHNOLOGY ORGANIZATIONS
GENE KIM,
JEZ HUMBLE,
PATRICK DEBOIS,
& JOHN WILLIS
FOREWORD BY JOHN ALLSPAW
TAKE THE DORA DEVOPS X-RAY ASSESSMENT AND SEE WHERE YOU STAND.


Code
Test
Deploy
Plan
Release
Build
Dev
Ops
Operate
Test
Monitor
Security

The benefits of DevOps

Agility

Rapid delivery

Reliability

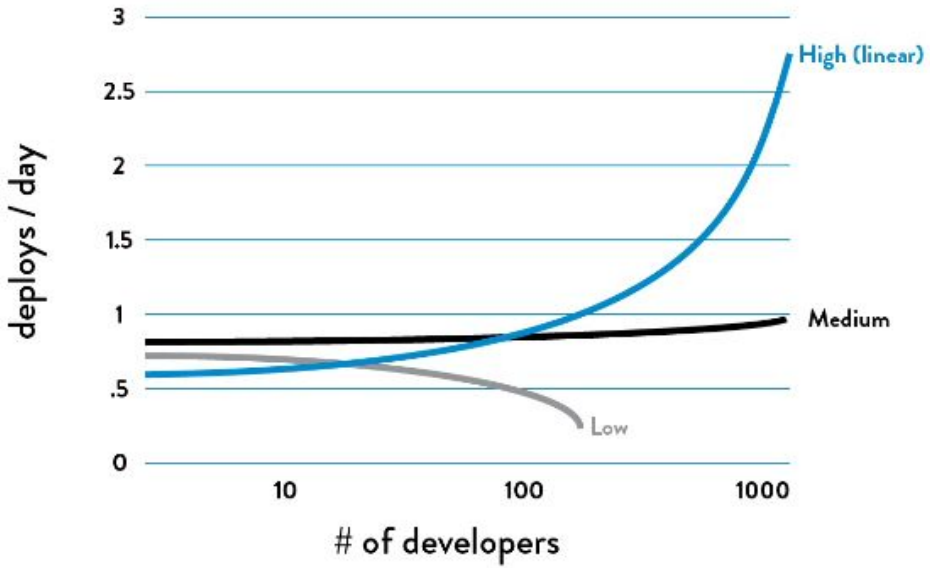
Scale

Improved collaboration

Security

DevOps also helps scale developer productivity

Organizations adopting DevOps are able to linearly increase the number of deploys per day as they increase their number of developers, just as Google, Amazon, and Netflix have done.



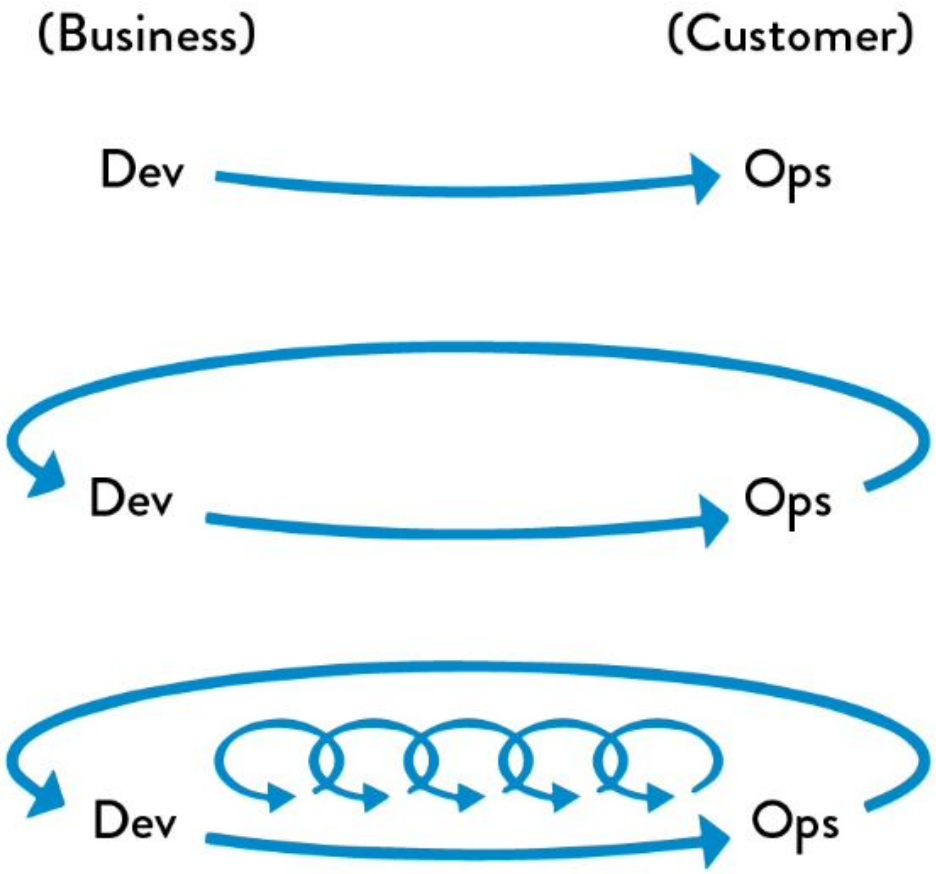
DevOps also helps scale developer productivity

2011 → 7 000 dpd*

2015 → 130 000 dpd*

* dpd: deploys per day

The Three Ways



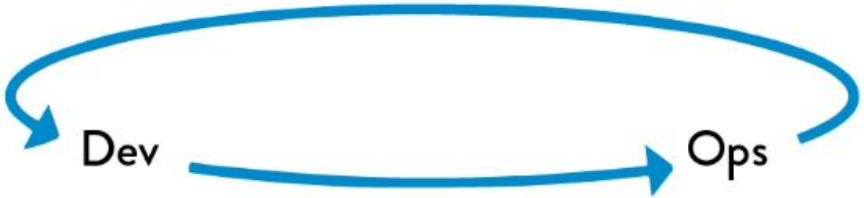
The Three Ways

The **First Way: Flow & System Thinking** enables **fast left-to-right flow** of work from Development to Operations to the customer

The resulting practices include continuous build, integration, test, and deployment processes; creating environments on demand; limiting work in process (WIP); and building systems and organizations that are safe to change.

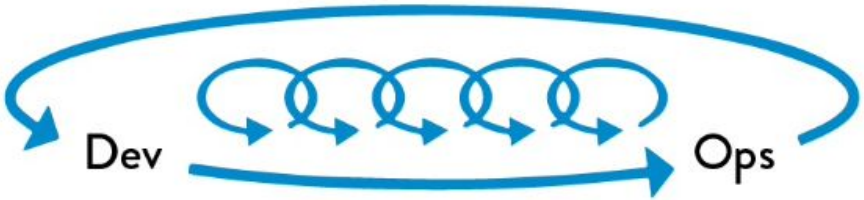
The Three Ways

The **Second Way** enables the fast and constant **flow of feedback** from right to left at all stages of our value stream.



The Three Ways

The **Third Way: Continual Experimentation & Learning** enables the creation of a generative, **high-trust culture** that supports a **dynamic**, **disciplined**, and **scientific approach** to experimentation and **risk-taking**, facilitating the creation of **organizational learning**, both from our successes and failures.



Servizi e Strumenti AWS per il DevOps

Integrazione degli strumenti nativi di AWS nel workflow DevOps

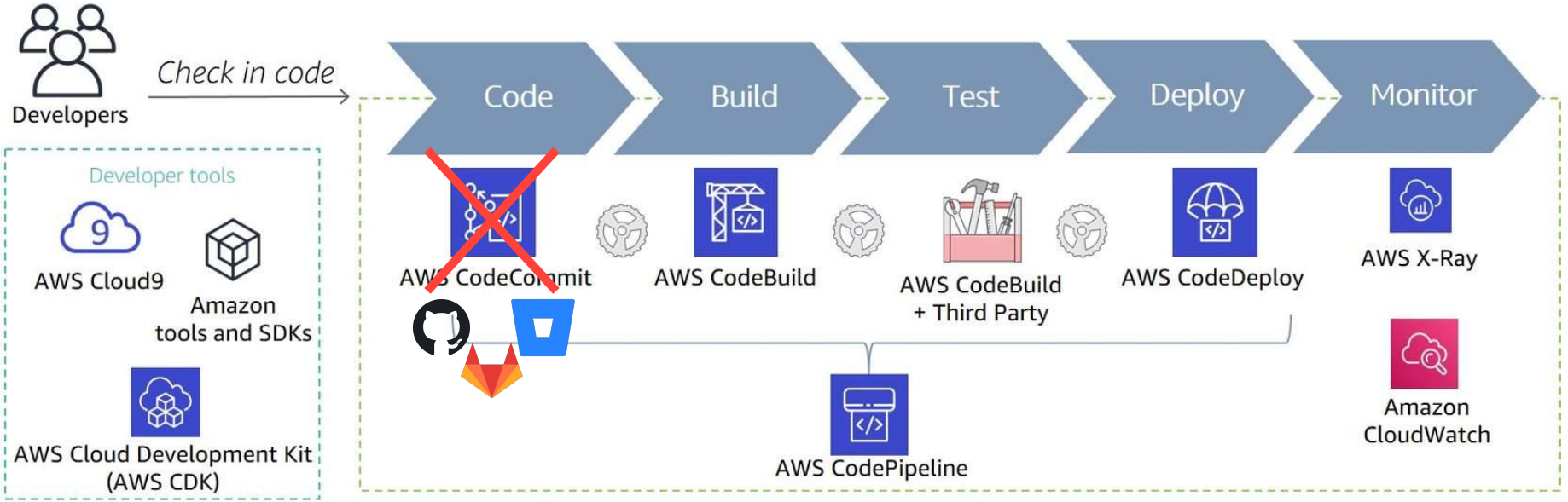
Fast left-to-right

Pipeline CI/CD

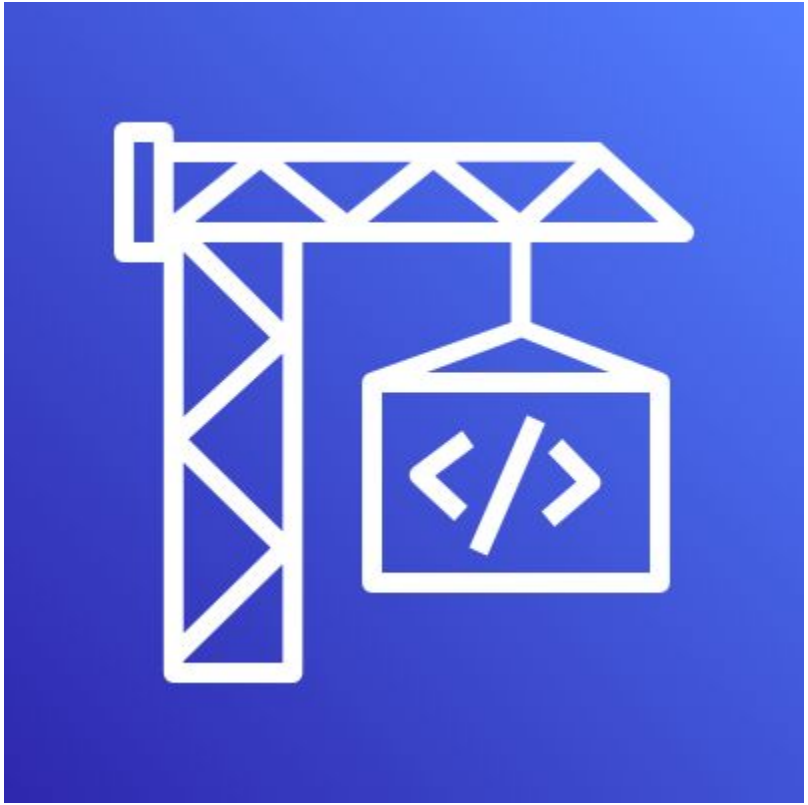
Automazione continua: creare, testare e distribuire applicazioni in modo efficiente

AWS CodePipeline

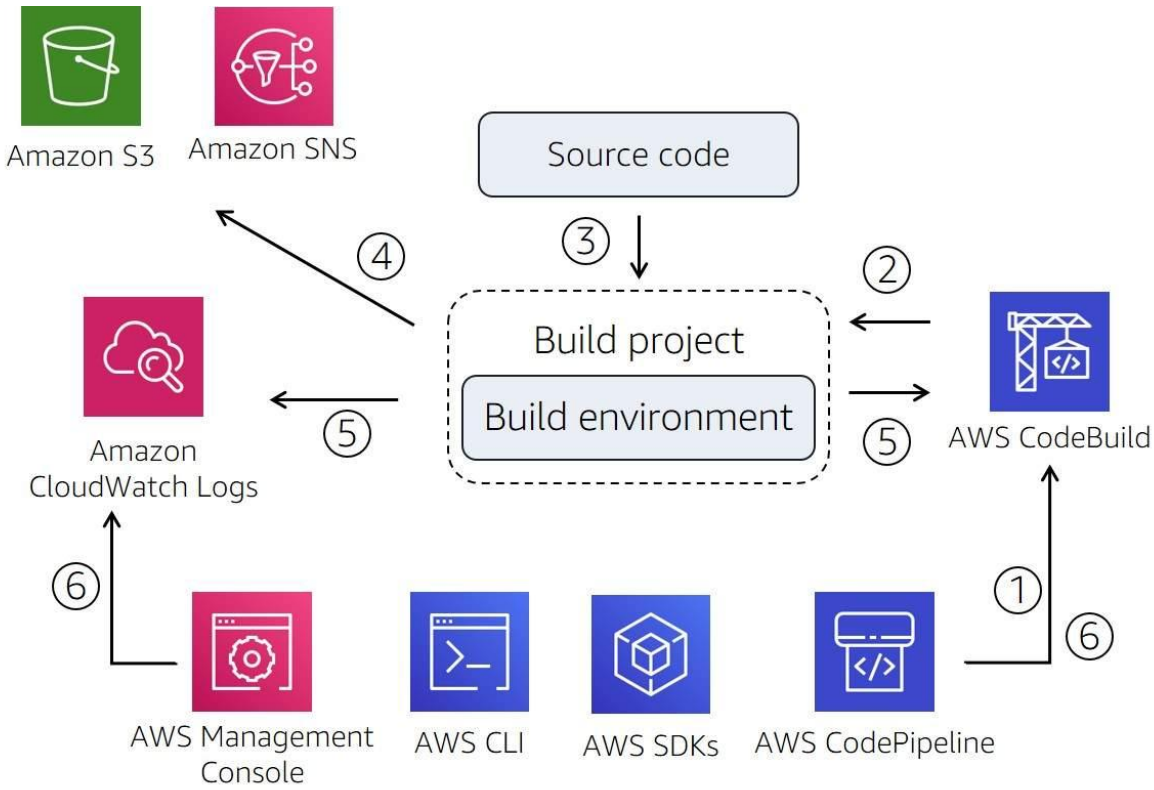
Pipeline


Developers
Check in code
Code
Build
Test
Deploy
Monitor
Developer tools
AWS Cloud9
Amazon
tools and SDKs
AWS Cloud Development Kit
(AWS CDK)
AWS CodeCommit
AWS CodeBuild
AWS CodeBuild
+ Third Party
AWS CodeDeploy
AWS X-Ray
Amazon
CloudWatch
AWS CodePipeline

AWS CodeBuild



AWS CodeBuild



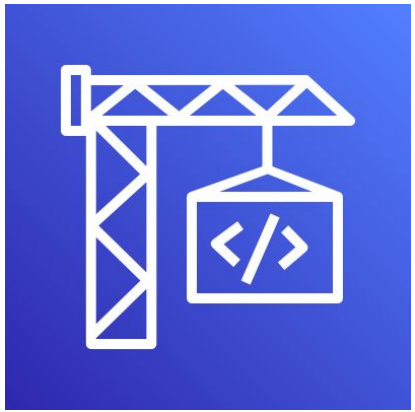
buildspec.yml

```yaml
version: 0.2

env:
  variables:
    JAVA_HOME: "/usr/lib/jvm/java-8-openjdk-amd64"
  parameter-store:
    LOGIN_PASSWORD: /CodeBuild/dockerLoginPassword

phases:
  install:
    commands:
      - echo Entered the install phase...
      - apt-get update -y
      - apt-get install -y maven
    finally:
      - echo This always runs even if the update or install command fails
  pre_build:
    commands:
      - echo Entered the pre_build phase...
      - docker login -u User -p $LOGIN_PASSWORD
    finally:
      - echo This always runs even if the login command fails
  build:
    commands:
      - echo Entered the build phase...
      - echo Build started on `date`
      - mvn install
    finally:
      - echo This always runs even if the install command fails
  post_build:
    commands:
      - echo Entered the post_build phase...
      - echo Build completed on `date`

reports:
```

buildspec.yml

```
      - echo Entered the post_build phase...
      - echo Build completed on `date`

reports:
  arn:aws:codebuild:your-region:your-aws-account-id:report-group/report-group-name-1:
    files:
      - "**/*"
    base-directory: 'target/tests/reports'
    discard-paths: no
  reportGroupCucumberJson:
    files:
      - 'cucumber/target/cucumber-tests.xml'
    discard-paths: yes
    file-format: CUCUMBERJSON # default is JUNITXML
artifacts:
  files:
    - target/messageUtil-1.0.jar
  discard-paths: yes
  secondary-artifacts:
    artifact1:
      files:
        - target/artifact-1.0.jar
      discard-paths: yes
    artifact2:
      files:
        - target/artifact-2.0.jar
      discard-paths: yes
cache:
  paths:
    - '/root/.m2/**/*'
```

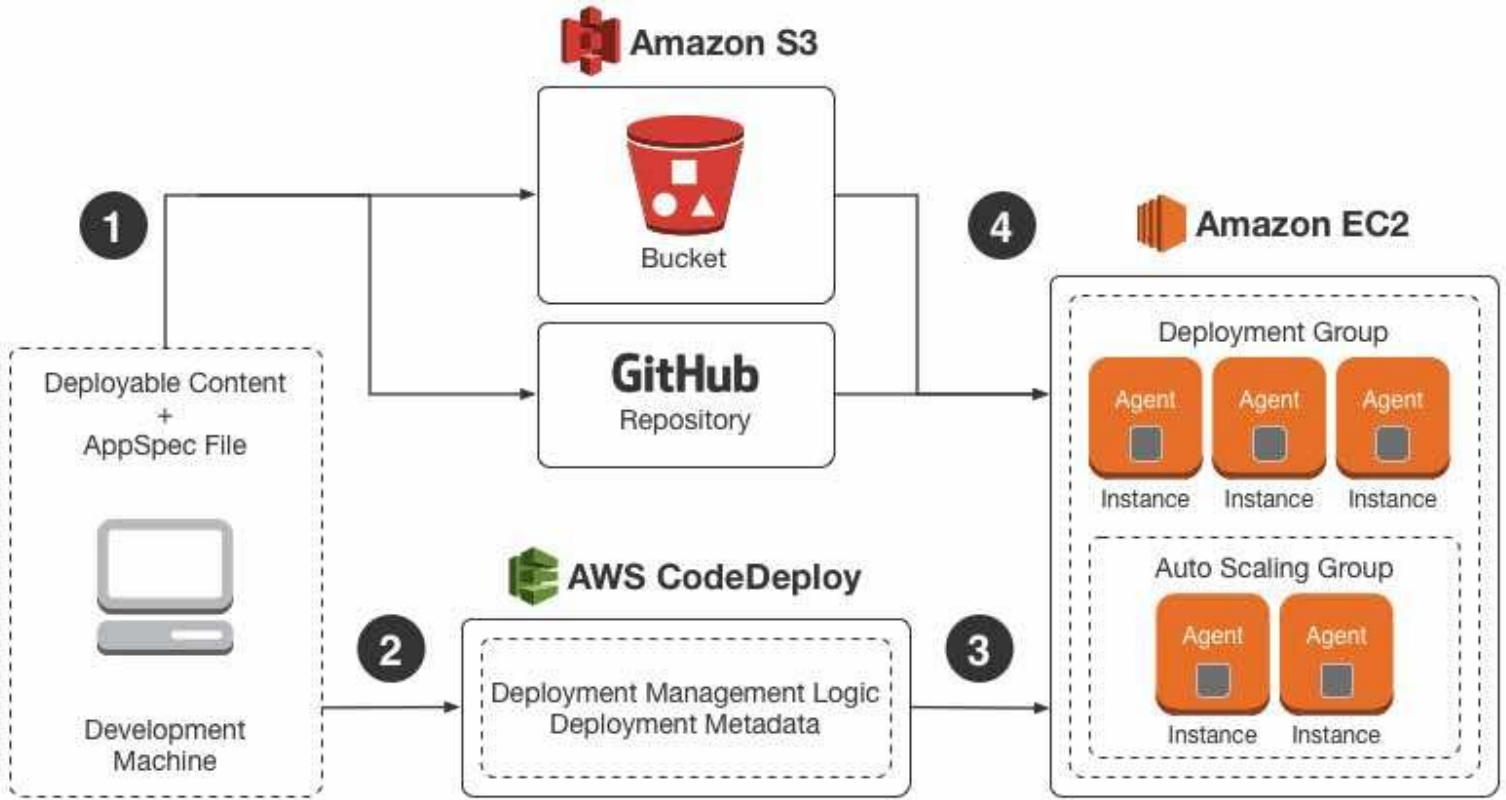
Tips



- gestire i secrets
- valutare bene se ha senso separare i test dalla build
- Script modulari e Pulizia buildspec

AWS CodeDeploy

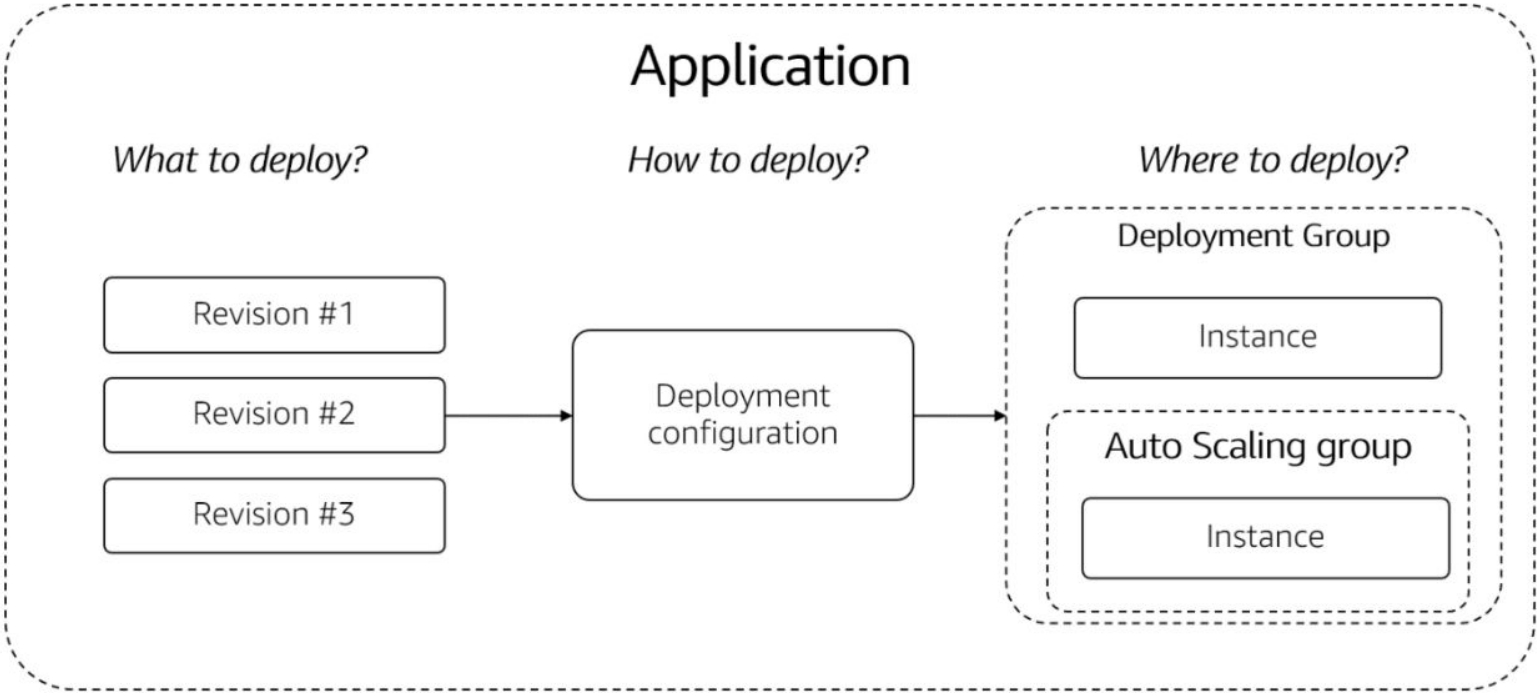
AWS CodeDeploy



appspec.yml

```yaml
version: 0.0
os: linux
files:
  - source: /
    destination: /var/www/html/WordPress
hooks:
  BeforeInstall:
    - location: scripts/install_dependencies.sh
      timeout: 300
      runas: root
  AfterInstall:
    - location: scripts/change_permissions.sh
      timeout: 300
      runas: root
  ApplicationStart:
    - location: scripts/start_server.sh
    - location: scripts/create_test_db.sh
      timeout: 300
      runas: root
  ApplicationStop:
    - location: scripts/stop_server.sh
      timeout: 300
      runas: root
```

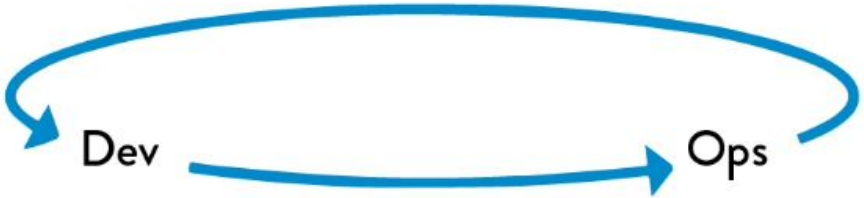
AWS CodeDeploy



Tips

- Gestire i secrets e variabili d’ambiente
- Scegliere la strategia di deployment adeguata
- Automatizzare i test post-deployment
- Attenzione a CodeDeploy agent !!

Flow of feedback



Monitoraggio e controllo

Monitoraggio all’interno dell’ecosistema AWS

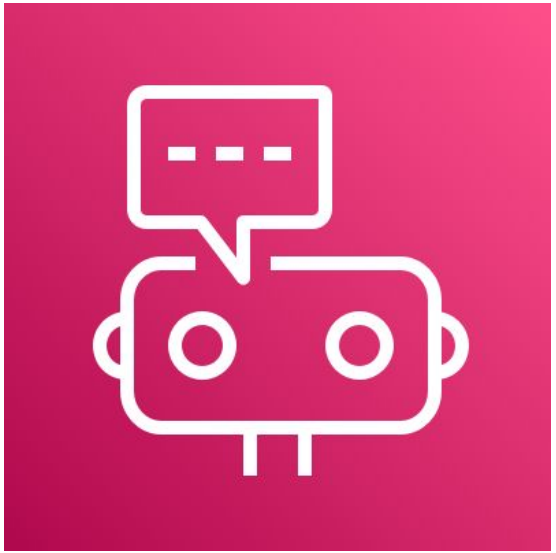
AWS Monitoring

Xray

CloudWatch

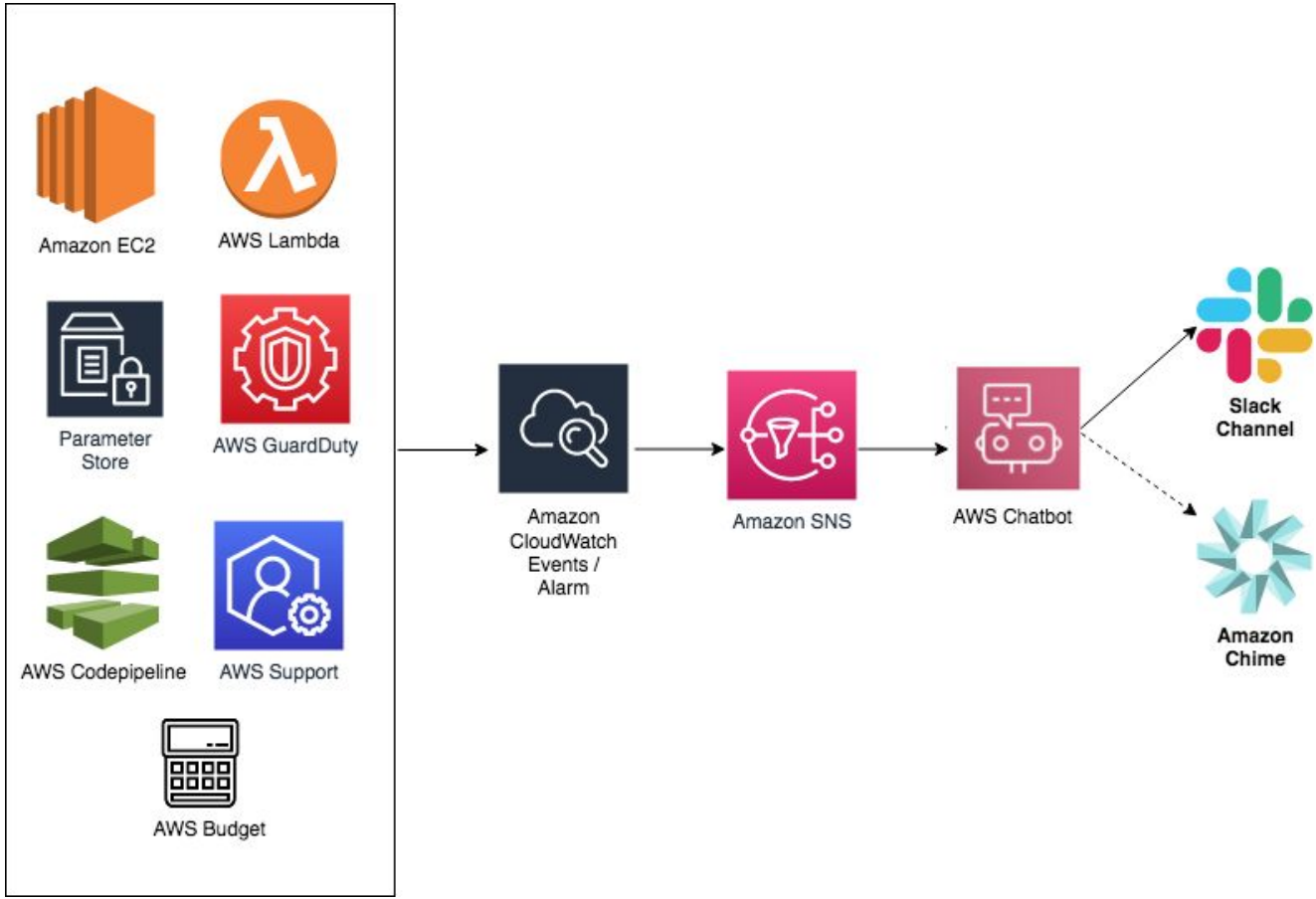
AWS Monitoring

EventBridge



Chatbot

AWS Monitoring

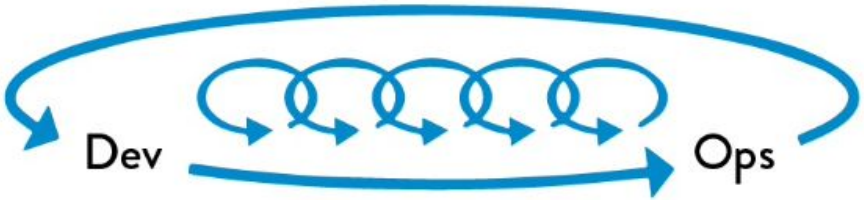


Tips

- Valutare molto bene se ha senso usare Xray
- Combinare i diversi strumenti
- Se non avete problemi di budget usate Datadog o simili

* https://aws.amazon.com/cloudformation/resources/templates/

Continual Experimentation & Learning

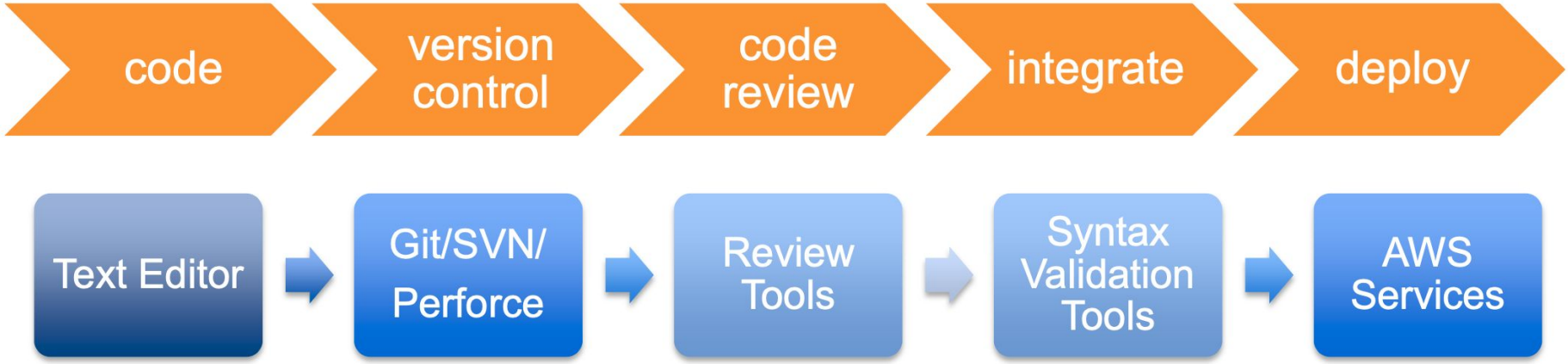


Gestione dell'Infrastruttura e Automazione

Infrastructure as Code all'interno dell'ecosistema AWS

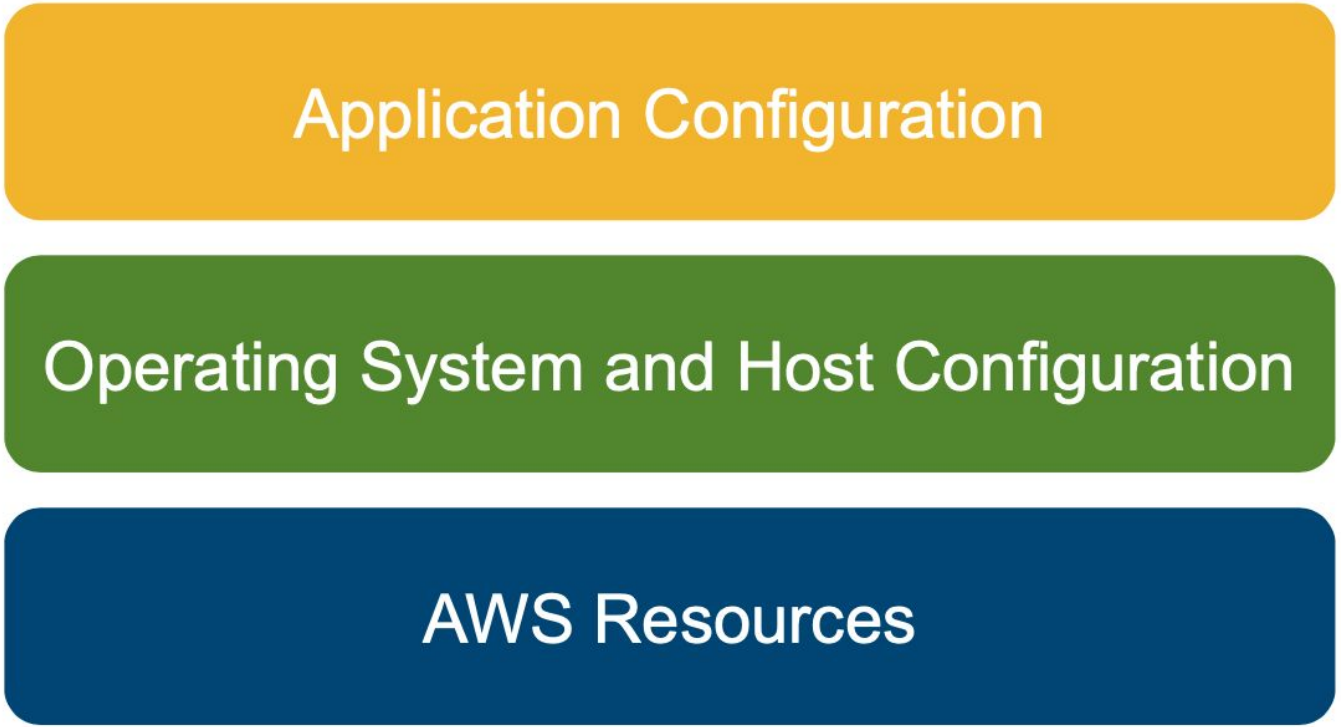
Infrastructure as Code (IaC) consente di definire e gestire l’infrastruttura (server, reti, database, ecc.) come se fosse codice sorgente. Mediante file di configurazione o script versionati e riutilizzabili, si automatizza il provisioning e l’aggiornamento di ambienti in modo coerente, riducendo errori e semplificando la scalabilità.

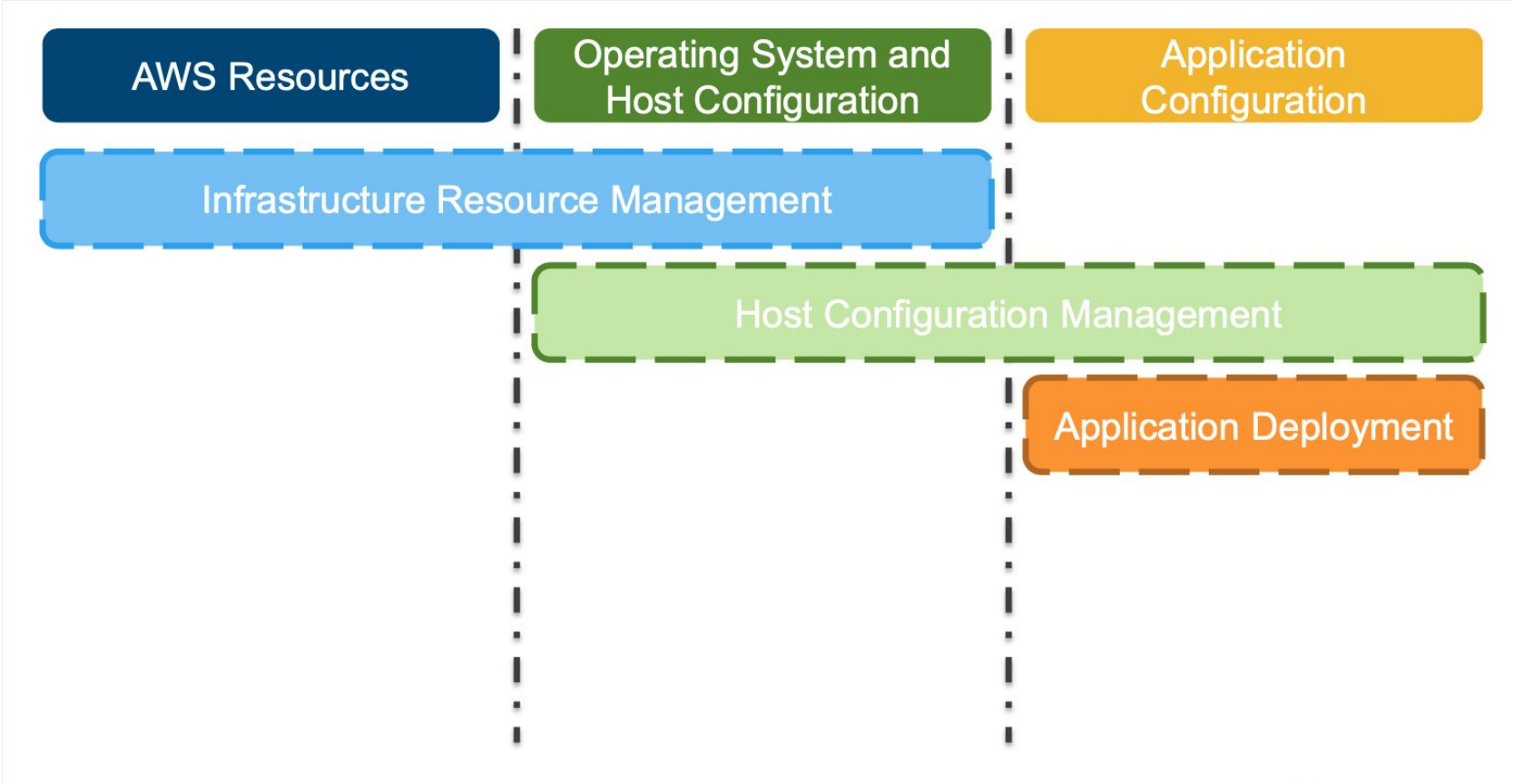
IaaC Workflow

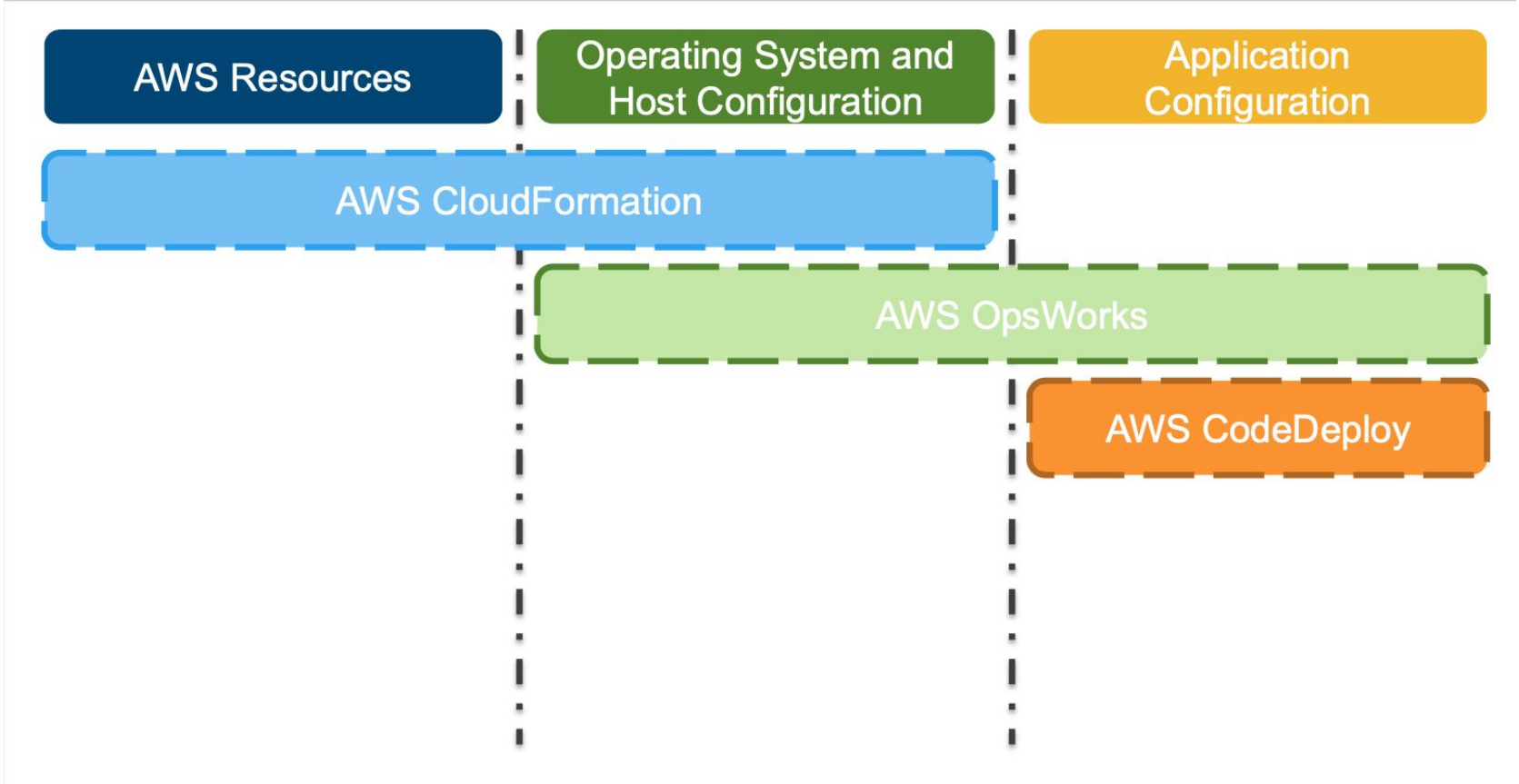


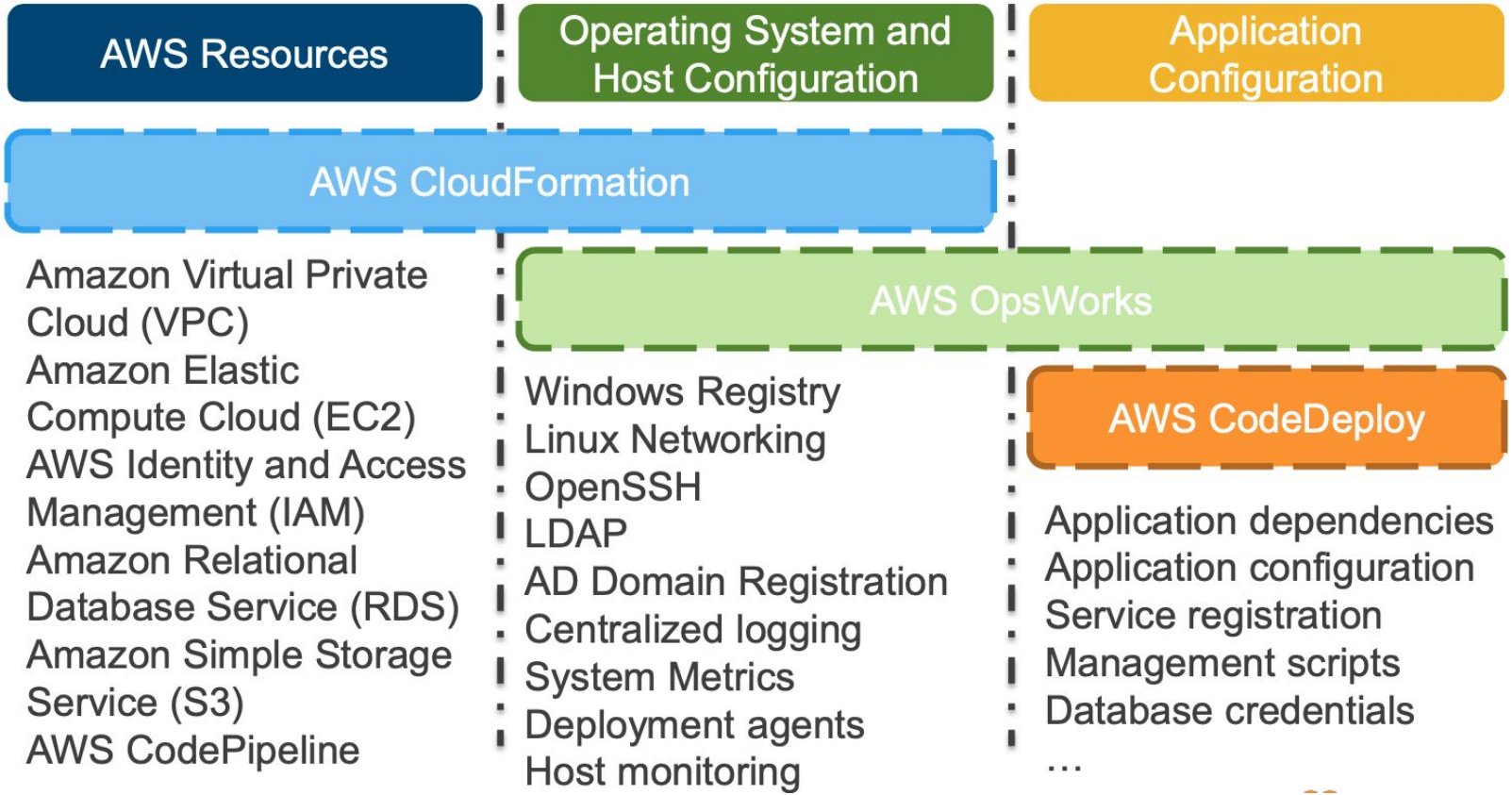
"It's all software"

“It’s all software”




AWS Resources
Operating System and Host Configuration
Application Configuration
Infrastructure Resource Management
Host Configuration Management
Application Deployment

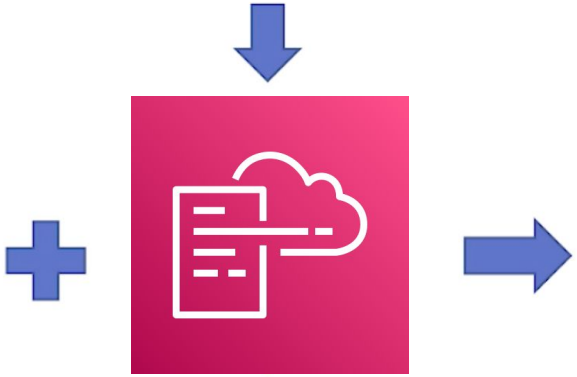

AWS Resources
Operating System and Host Configuration
Application Configuration
AWS CloudFormation
AWS OpsWorks
AWS CodeDeploy

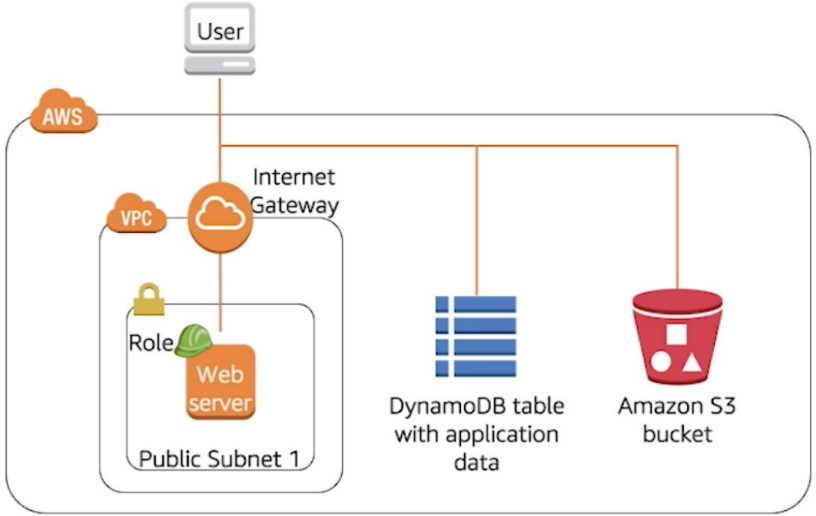

AWS Resources
Operating System and Host Configuration
Application Configuration
AWS CloudFormation
AWS OpsWorks
AWS CodeDeploy
Amazon Virtual Private Cloud (VPC)
Amazon Elastic Compute Cloud (EC2)
AWS Identity and Access Management (IAM)
Amazon Relational Database Service (RDS)
Amazon Simple Storage Service (S3)
AWS CodePipeline
Windows Registry
Linux Networking
OpenSSH
LDAP
AD Domain Registration
Centralized logging
System Metrics
Deployment agents
Host monitoring
Application dependencies
Application configuration
Service registration
Management scripts
Database credentials
…

AWS Cloudformation

AWS CloudFormation - Components

- AWS Management Console
- AWS CLI
- AWS SDK/API



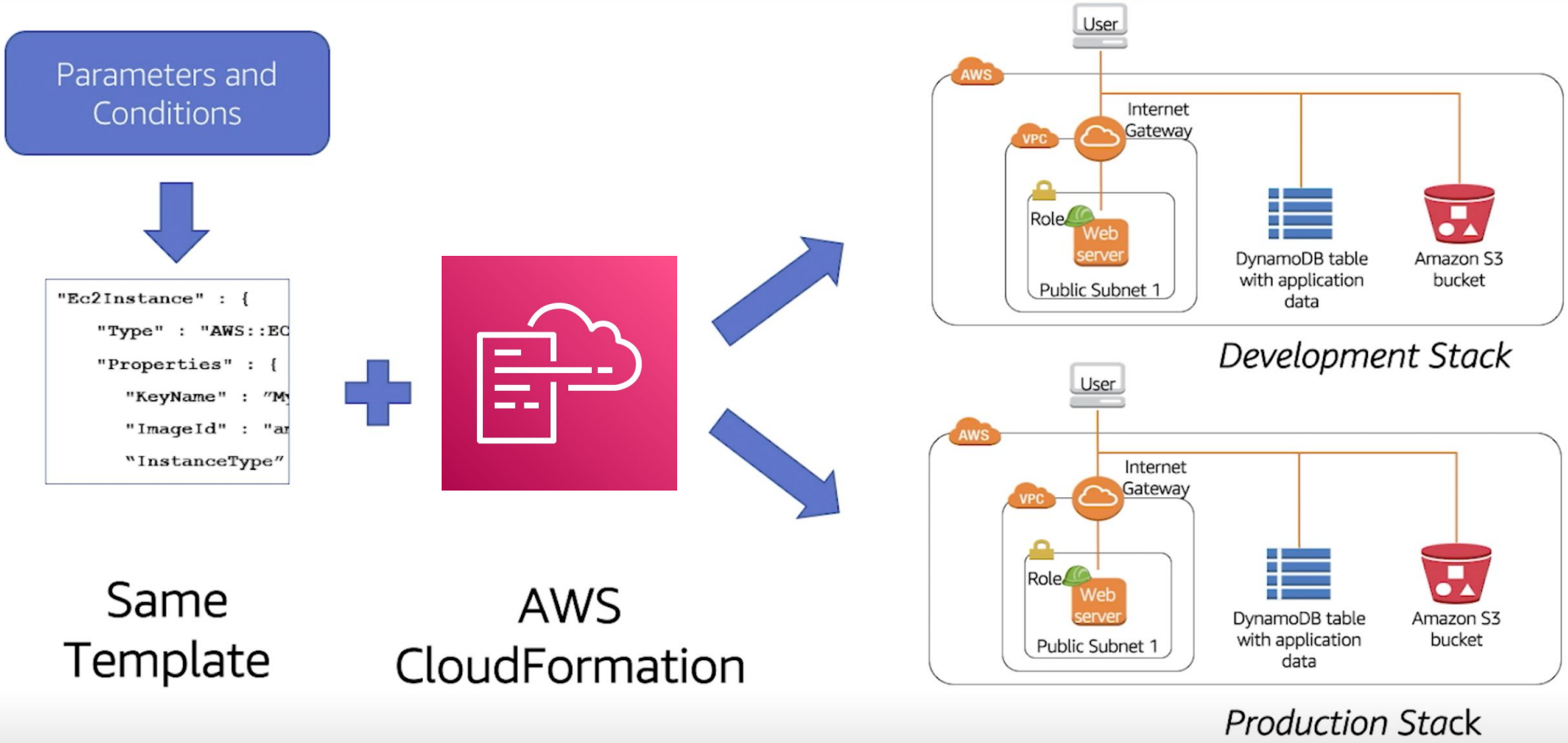


Template File

AWS CloudFormation

Stack

Templates


Parameters and Conditions
"Ec2Instance" : {
"Type" : "AWS::EC
"Properties" : {
"KeyName" : "My
"ImageId" : "ar
"InstanceType"
Same Template
AWS CloudFormation
User
AWS
Internet Gateway
VPC
Role
Web server
Public Subnet 1
DynamoDB table with application data
Amazon S3 bucket
Development Stack
User
AWS
Internet Gateway
VPC
Role
Web server
Public Subnet 1
DynamoDB table with application data
Amazon S3 bucket
Production Stack

Templates

```
"Ec2Instance" : {
    "Type" : "AWS::EC
    "Properties" : {
       "KeyName" : "My
       "ImageId" : "ar
       "InstanceType"
```

Dev

```
"Ec2Instance" : {
    "Type" : "AWS::EC
    "Properties" : {
       "KeyName" : "My
       "ImageId" : "ar
       "InstanceType"
```

Test

```
"Ec2Instance" : {
    "Type" : "AWS::EC
    "Properties" : {
       "KeyName" : "My
       "ImageId" : "ar
       "InstanceType"
```

Prod

```
"Ec2Instance" : {
    "Type" : "AWS::EC
    "Properties" : {
       "KeyName" : "My
       "ImageId" : "ar
       "InstanceType"
```

Network

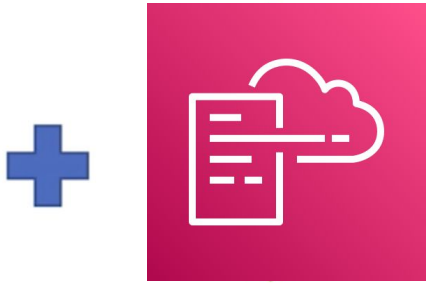
```
"Ec2Instance" : {
    "Type" : "AWS::EC
    "Properties" : {
       "KeyName" : "My
       "ImageId" : "ar
       "InstanceType"
```

Security

```
"Ec2Instance" : {
    "Type" : "AWS::EC
    "Properties" : {
       "KeyName" : "My
       "ImageId" : "ar
       "InstanceType"
```

Database

Template Library



AWS CloudFormation

AWS CDK (Cloud Development Kit)

Vantaggi del CDK rispetto a CloudFormation

- Astrazione più elevata
- Riutilizzo e modularità
- Testabilità
- Maggiore flessibilità

Svantaggi del CDK rispetto a CloudFormation

- Livello di astrazione
- Dipendenza dal runtime
- Aggiornamenti frequenti
- Lock-in parziale

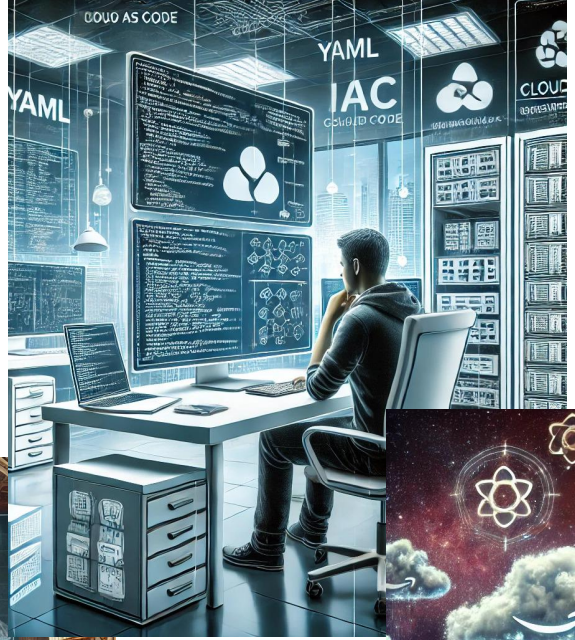
Tips

- Valutare se integrare IAAC in pipeline completamente automatizzate
- fare ampio uso di costrutti e template esistenti*
- Sfruttare moduli ma !!11attenzione!!11 ai nested stack

* https://aws.amazon.com/cloudformation/resources/templates/

Conclusioni

Consigli per un’adozione DevOps di successo su AWS



AXELERANT

- Principles > Tools
- AWS tools are 👍 but others are good too
- Continual Experimentation & Learning

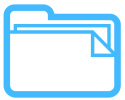
TO THE CLOUD & BEYOND

archeido

Grazie per l'attenzione!

Ci sono domande?

Ottieni altri insight di Axelerant



Scarica le slide

Vedi i prossimi webinar e quelli on demand su axelerant.it/eventi/webinar

Dai un voto a questa sessione