



AMAZON WEB SERVICES

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Implement security in software factory through the DoD DevSecOps lens

DAFITC 2023



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Speakers

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Agenda



Department of Defense Software Modernization Initiative



Containerization and Application Modernization



Software Factory and Software Supply Chains



Securing the Software Factory



Technical Demonstration of Secure Software Factory



DoD Software Modernization Plan



Ultimately, the DoD Software Modernization Implementation Plan postures DoD to fight and win on the future battlefield – which will depend on DoD's proficiency to deliver resilient software capabilities rapidly and securely.

DoD software modernization implementation plan, March 2023

DoD Modernization Strategy



Accelerate the DoD Cloud Enterprise Cloud Environment



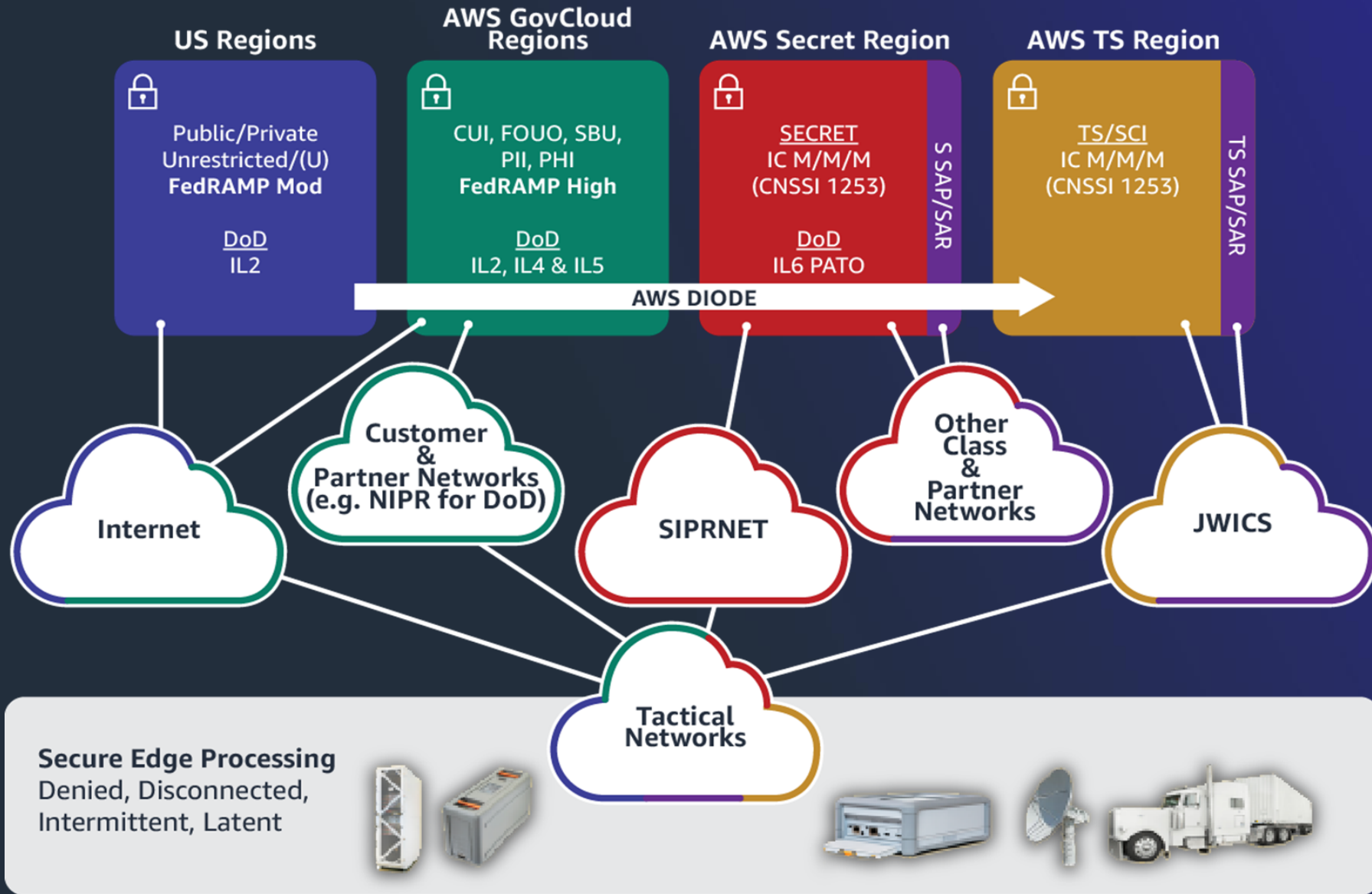
Transform Processes to Enable Resilience and Speed



Establish Department-wide Software Factory Ecosystem

DoD software modernization implementation plan, March 2023

AWS Commitment to DoD

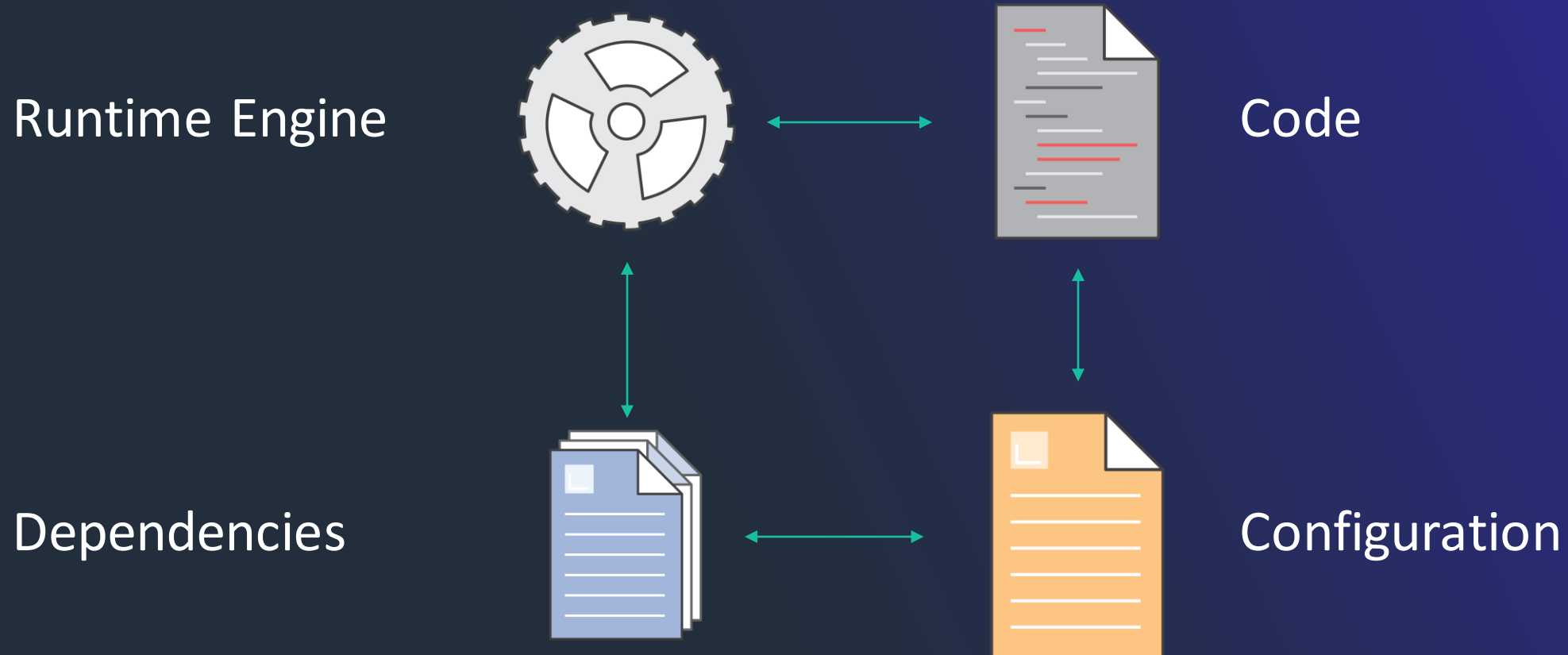


Application Modernization and Containerization

Transform Processes to Enable Resilience and Speed



Application Environment Components



Works locally but not in production



v8.0.0



Developer Machine



v7.0.0



Staging / QA Server

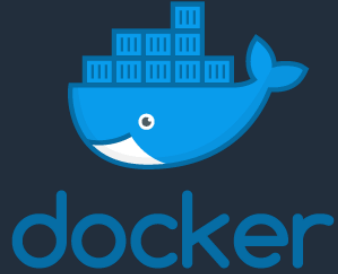


v7.0.0

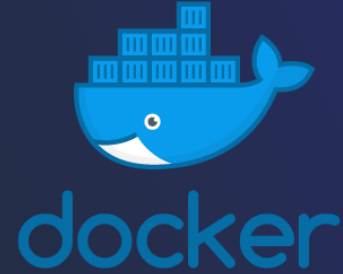


Production Server

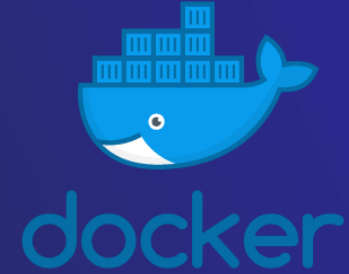
Three Environments, Same Container



Developer Machine



Staging / QA Server



Production Server

Why customers adopt containers

REDUCED RISK



Uniform security across environment, maintained with automation

OPERATIONAL EFFICIENCY



Reduced operational burden by removing undifferentiated heavy lifting

SPEED



Consistent environment improves developer velocity

AGILITY



Automation increases speed and ease of testing and iterating

AWS container services landscape



**Amazon Elastic
Kubernetes Service
(EKS)**



**Amazon Elastic
Container Service (ECS)**

- Security and isolation by design
- Autonomous control plane operations
- Monitoring and Logging for Compliance
- Managed Control Plane
- Hybrid and edge capabilities

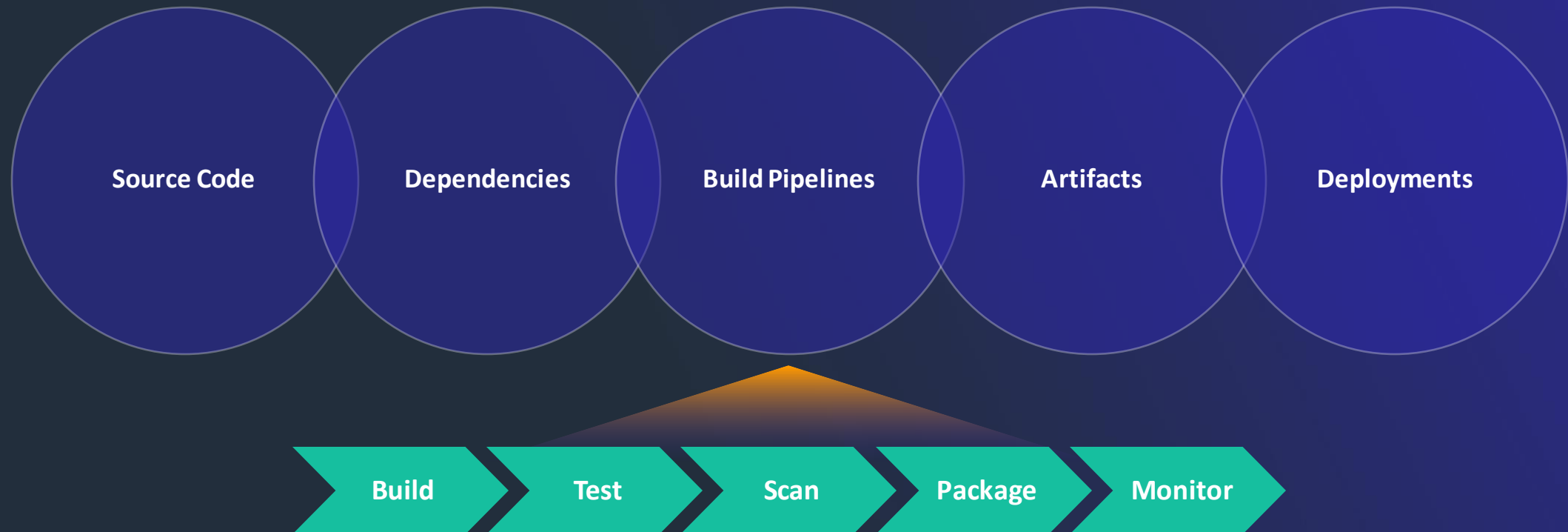
Software Factory Implementation

Establish Department-wide Software Factory Ecosystem



The software factory

Collections of people, tools, and processes enabling teams to continuously deliver value with continuous rollout and cyber resilience¹



Software factory challenges

742%

Increase in software supply chain attacks over the last 3 years¹

1.2 billion

Vulnerable dependencies are downloaded per month¹

6 out of every 7

Project vulnerabilities come from transitive dependencies¹

98%

Software uses Open source software dependencies²

1. State of the software supply chain
Report by Sonatype

2. The Linux Foundation, *Software Bill of Materials (SBOM)* and *Cybersecurity Readiness*, 2022, <https://bit.ly/3yYeGpP>

Securing the software factory



Trustworthiness



Provenance Verification



Dependencies

Securing the software factory

TECHNIQUES

FACTORY



Utilize a
framework

- Supply Chain Levels for Software Artifacts (SLSA)
- System for Cross Domain Identity Management (SCIM)
- Cloud Native Computing Foundation (CNCF)
- in-toto is an open metadata standard



Securing the software factory

TECHNIQUES

FULFILLMENT



Secure the build
pipelines

Implement
DevSecOps best
practices

- Source Code: Version controlled
- Static Application Security Testing (**SAST**)
- Utilize Infrastructure as Code (**IAC**)
- Secret Scanning
- Container Hardening and Vulnerability Scanning
- Dynamic Application Security Testing (**DAST**)
- Generate Software Bill of Materials (**SBOM**)



Securing the software factory

TECHNIQUES

DELIVERY

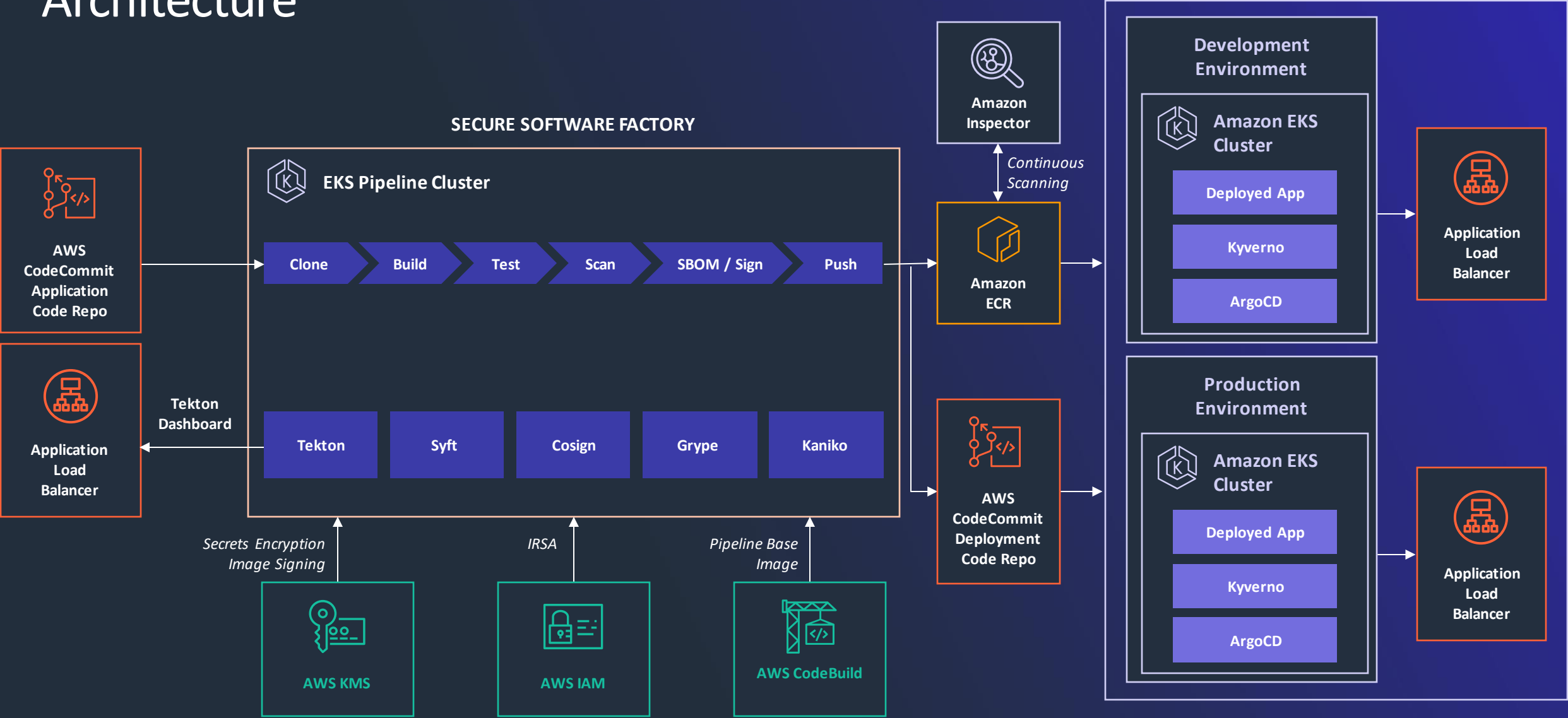


Provenance Verifications

- Implement DevSecOps for Automation
- Artifact Signing and Verification
- Utilize Git Operations (GitOps)



Architecture



Technical Demonstration



Thank you. Questions?

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