



Improve Productivity with Continuous Integration & Delivery

Clare Liguori

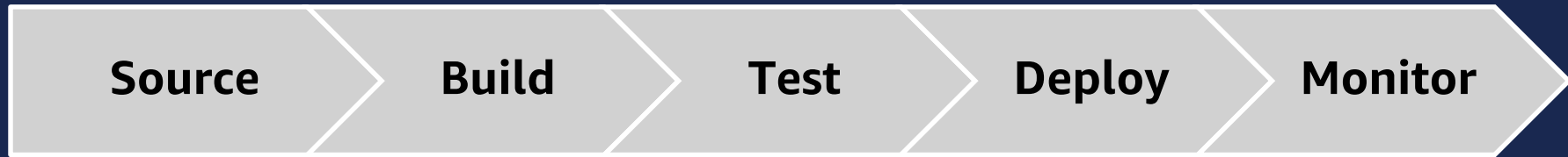
Principal Software Engineer, AWS Developer Tools

Agenda

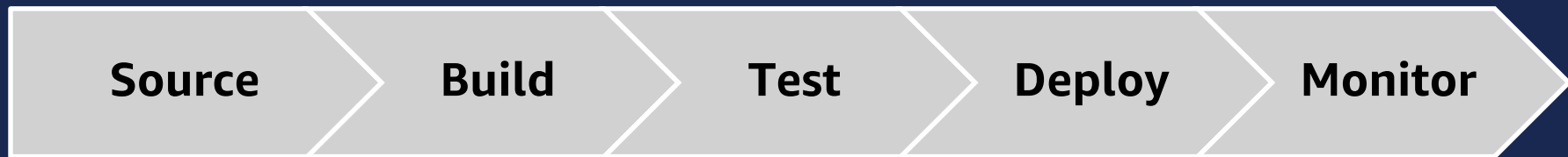
- **What is CI/CD?**
- **CI/CD in Practice: Amazon**
- **Using CI/CD on AWS**
- **Demo**

What is CI/CD?

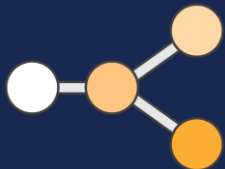
Five Major Phases of Releasing Software



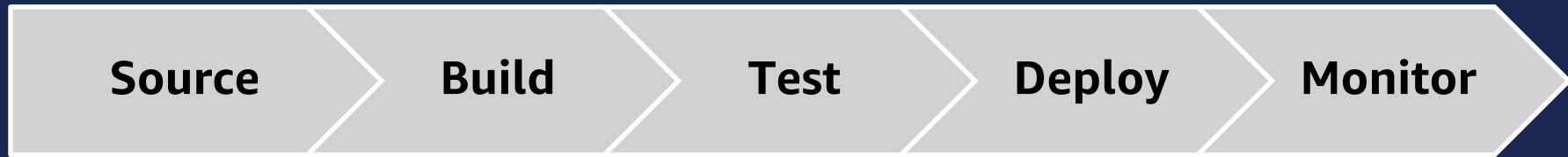
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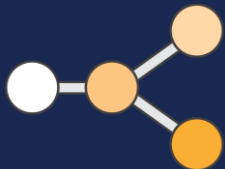
- Check-in source code such as .java files.
- Peer review new code



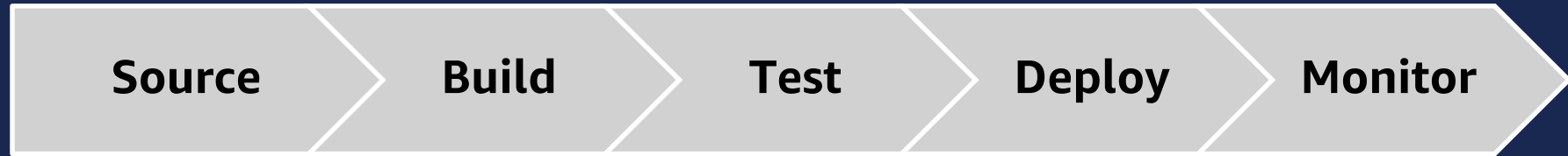
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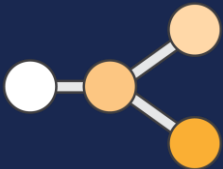
- Check-in source code such as .java files.
- Peer review new code
- Compile code
- Unit tests
- Style checkers
- Code metrics
- Create container images



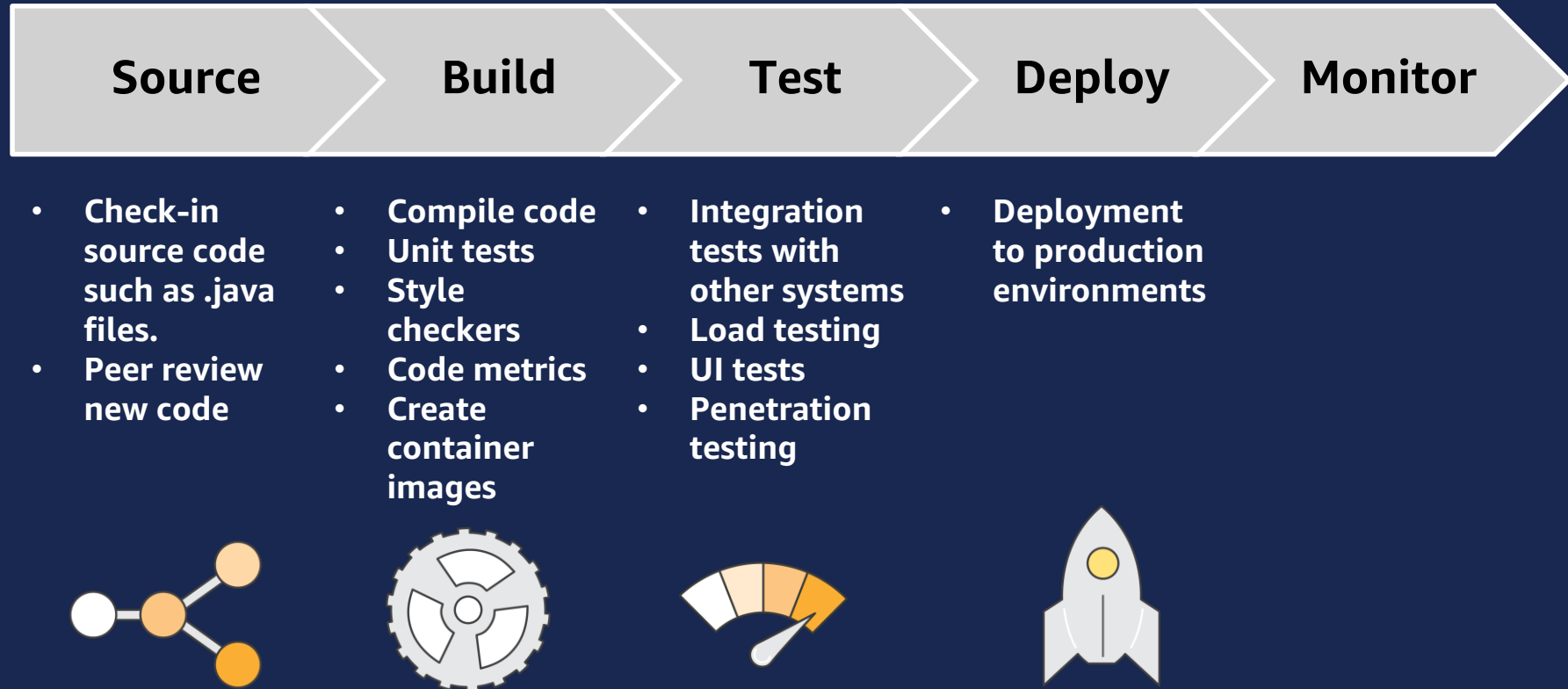
Five Major Phases of Releasing Software



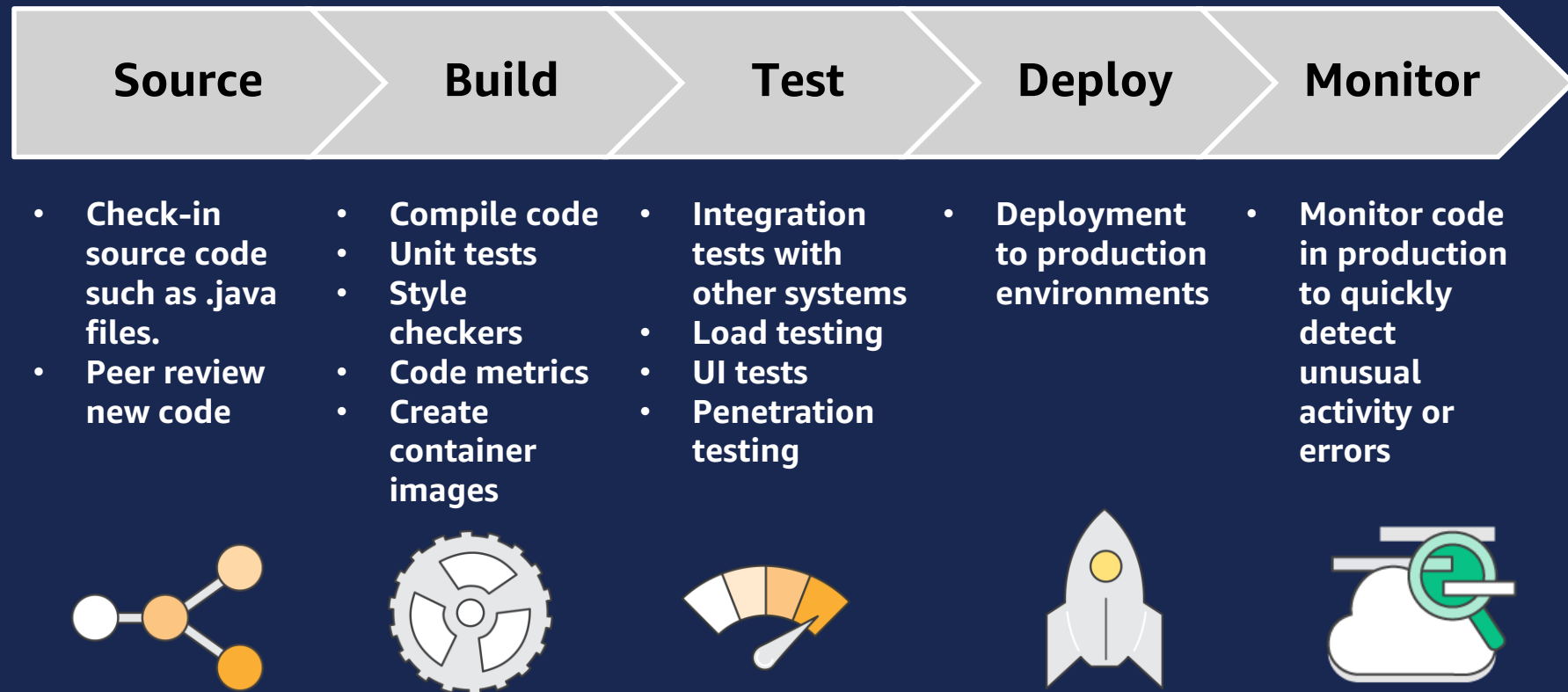
- Check-in source code such as .java files.
- Peer review new code
- Compile code
- Unit tests
- Style checkers
- Code metrics
- Create container images
- Integration tests with other systems
- Load testing
- UI tests
- Penetration testing



Five Major Phases of Releasing Software



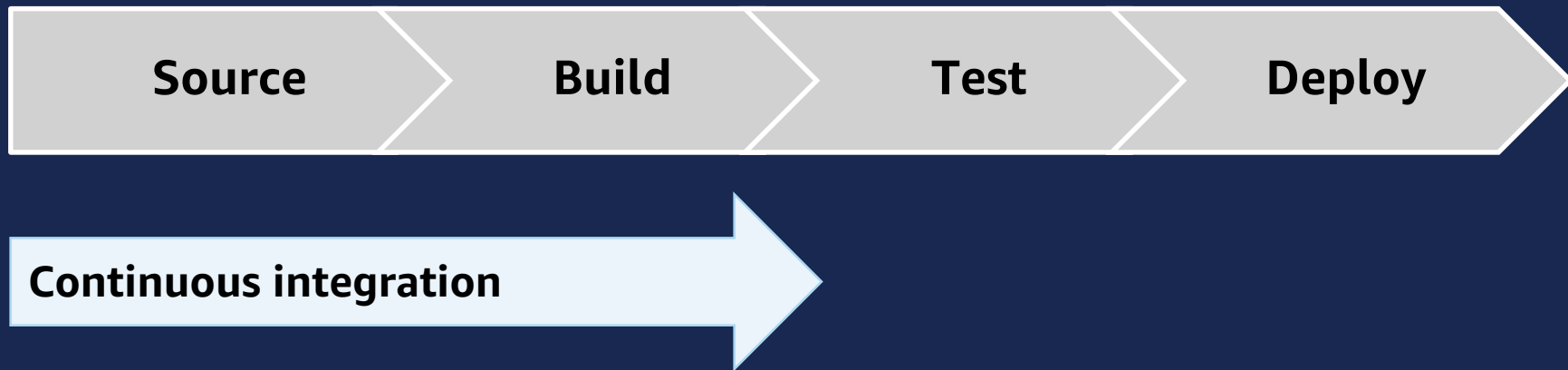
Five Major Phases of Releasing Software



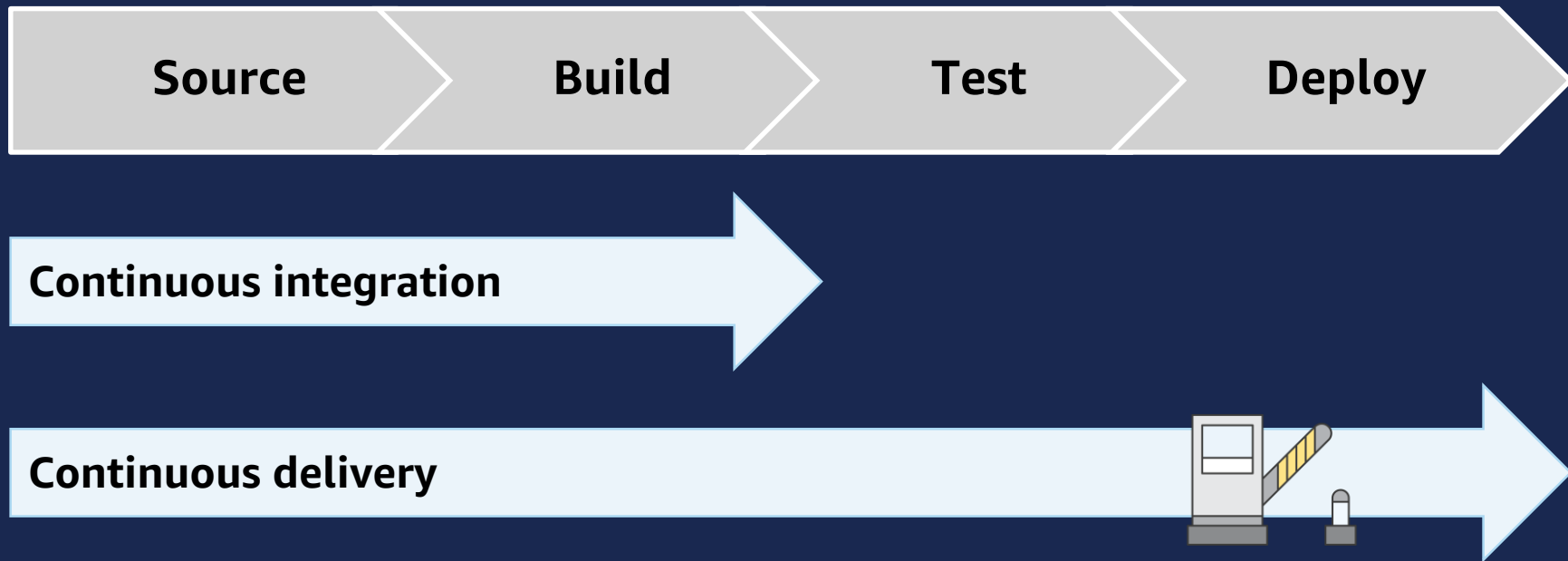
Release Process Levels



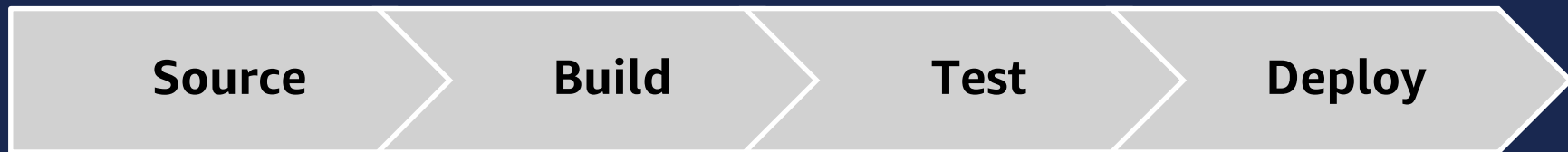
Release Process Levels



Release Process Levels



Release Process Levels



Continuous integration

Continuous delivery

Continuous deployment

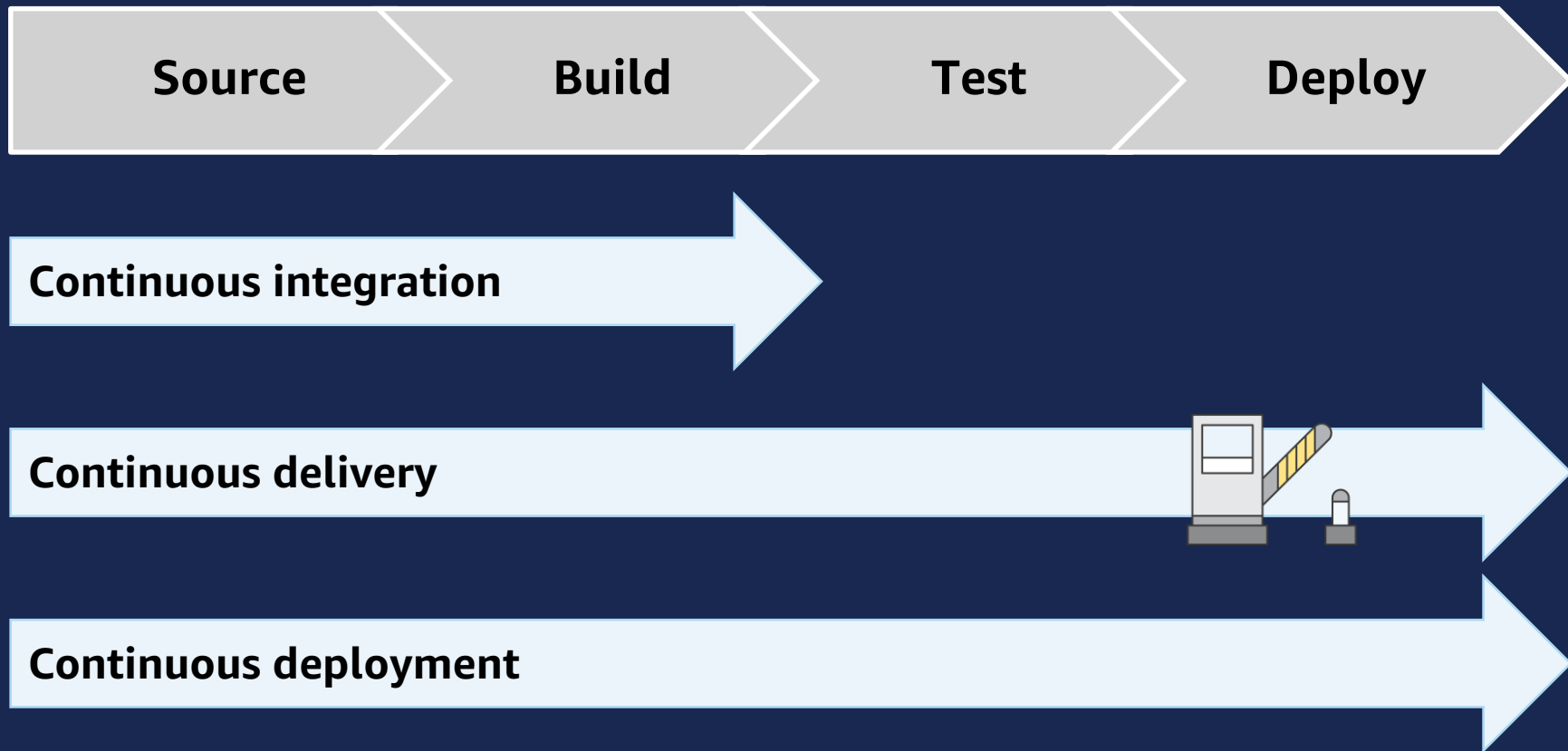
Why does CI/CD matter?

440x

**Faster from commit
to deploy**

Source: Puppet 2017 State of DevOps Report

Why does CI/CD matter?



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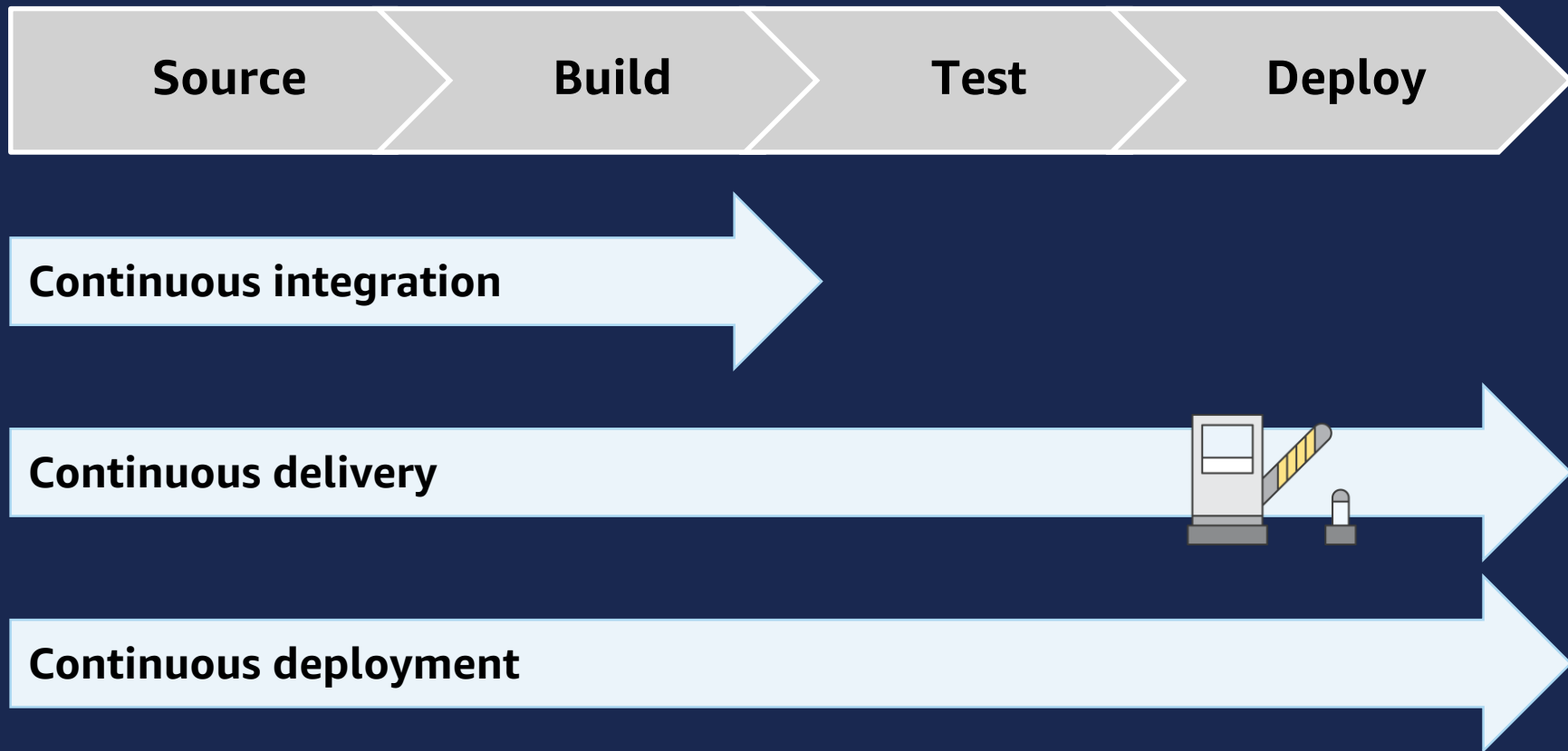
Faster from commit
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More frequent
deployments

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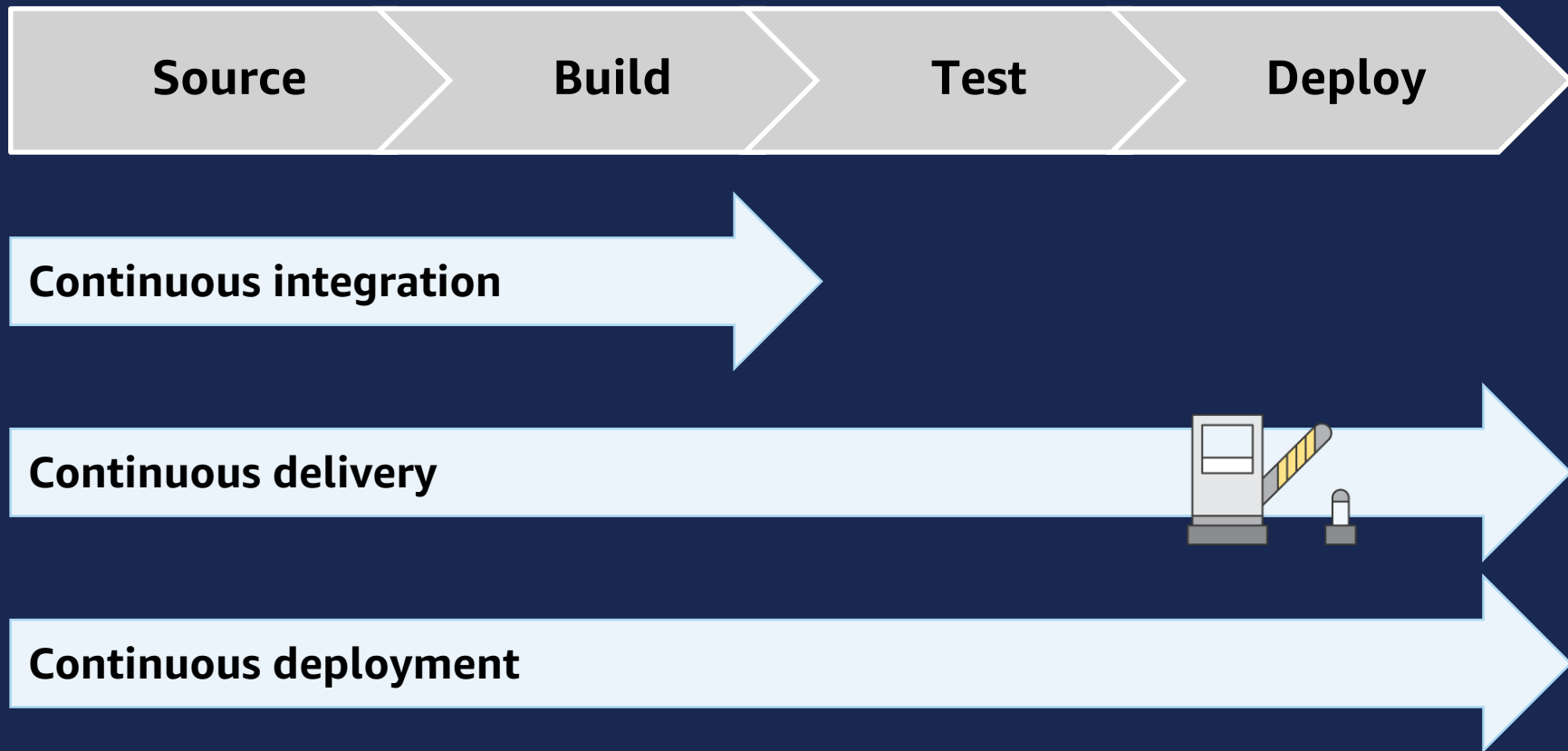
More frequent
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Lower change
failure rate

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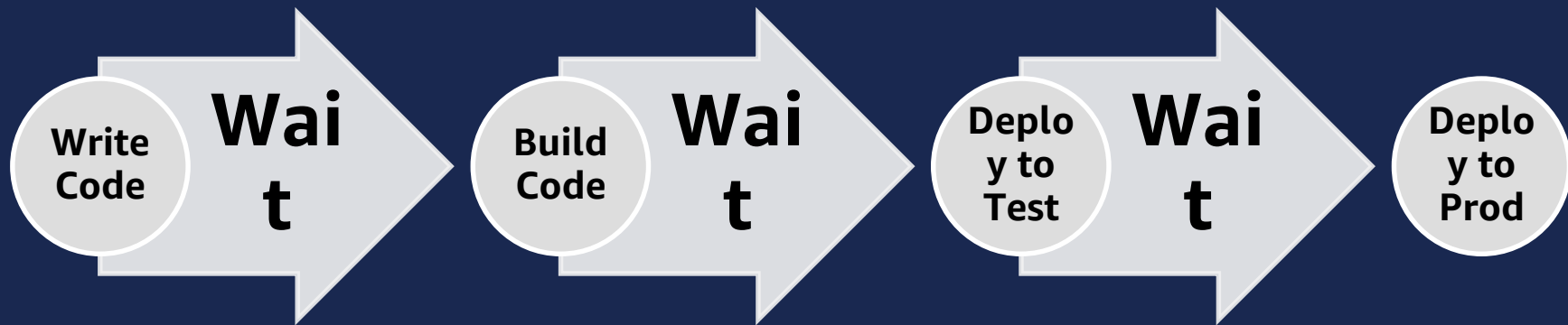
44%

More time spent on
new features and
code

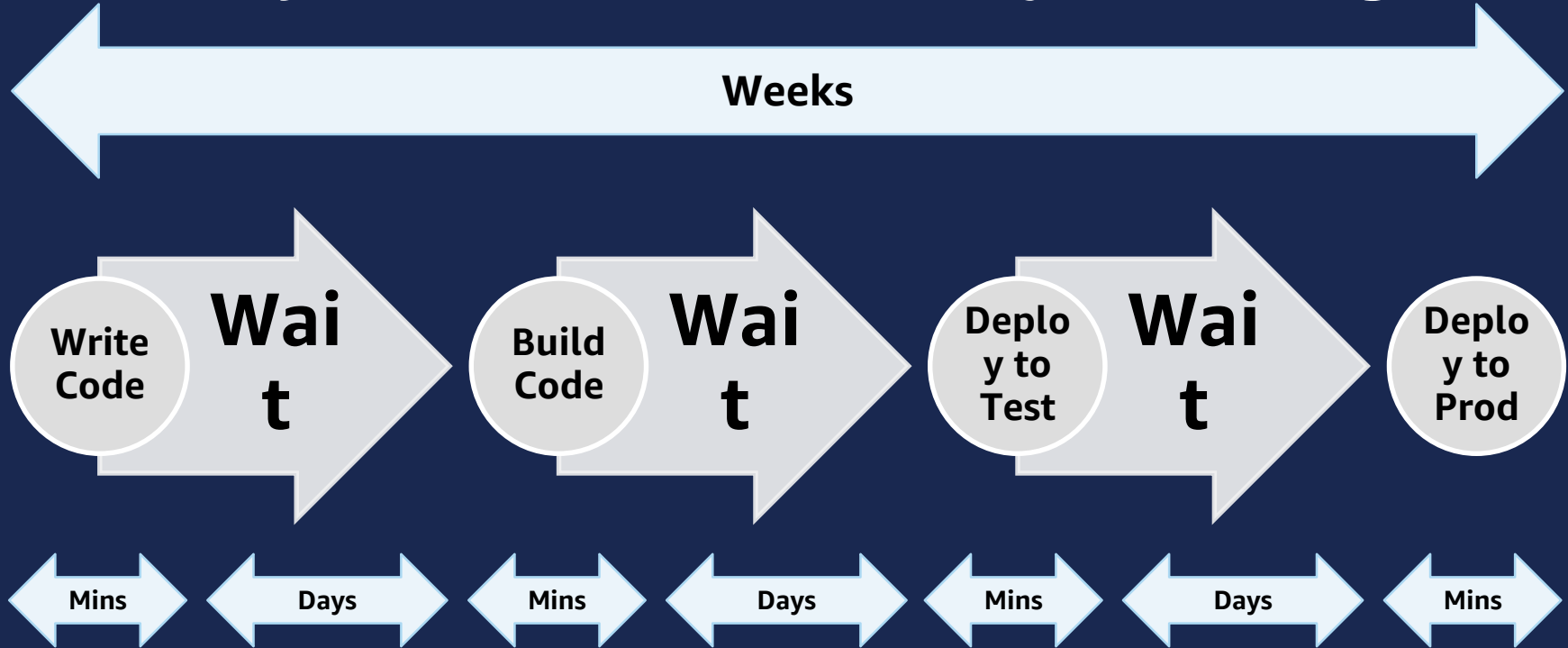
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CI/CD in Practice: Amazon

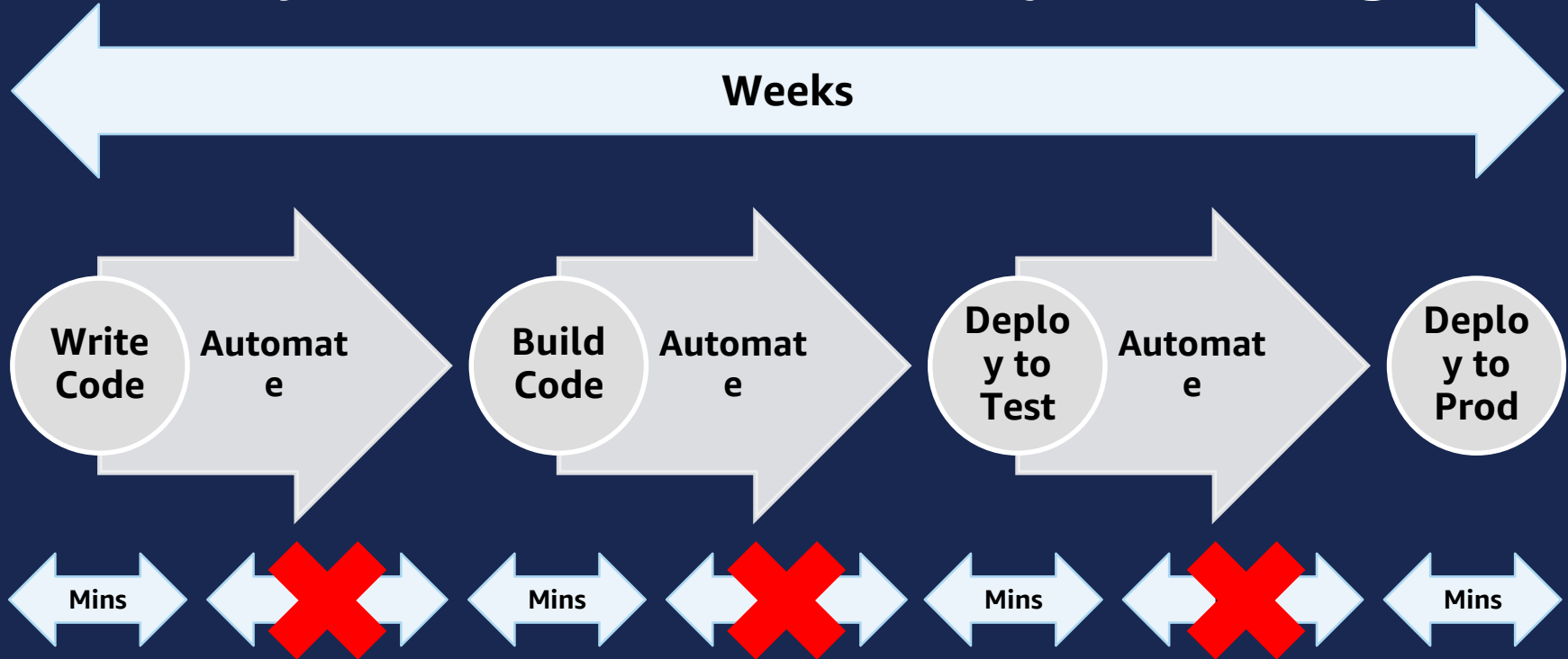
Our story: We realized we were just waiting.



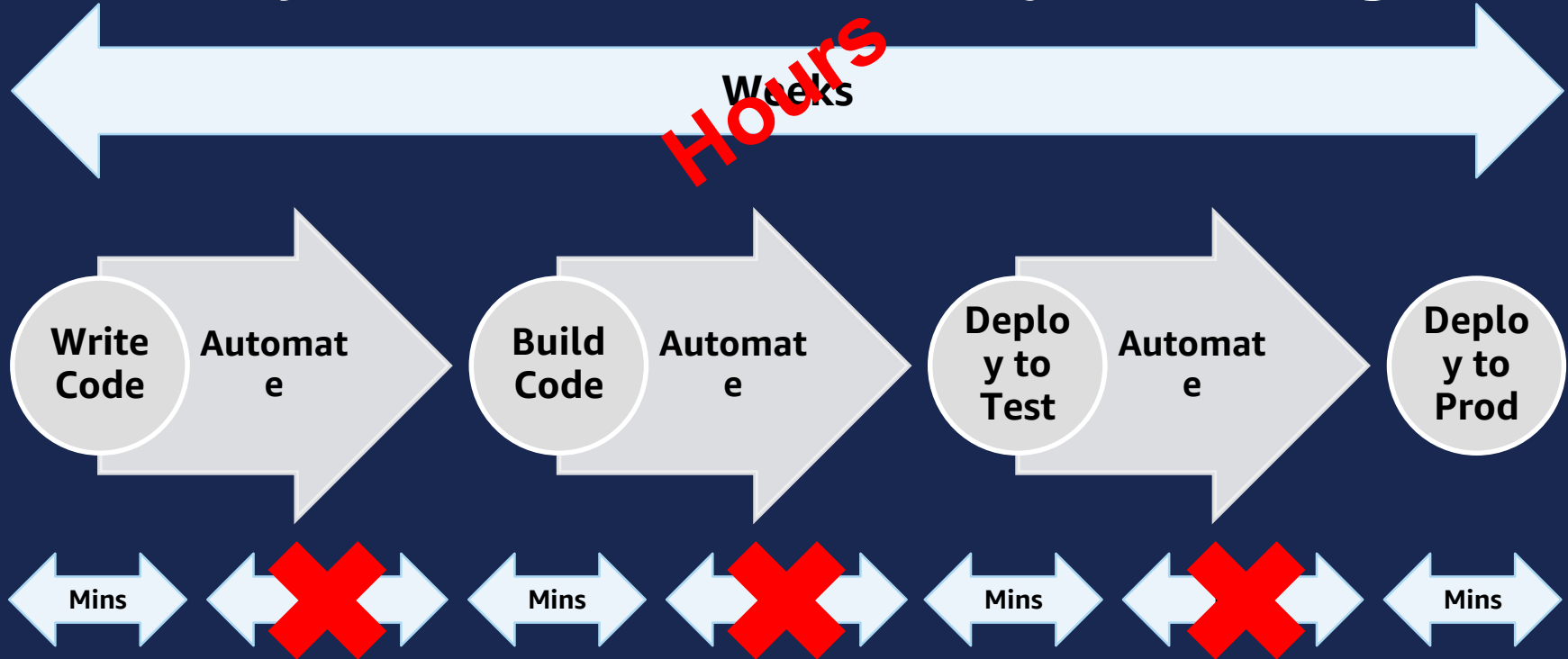
Our story: We realized we were just waiting.



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Our story: We realized we were just waiting.



Results

By 2014

- Thousands of teams across Amazon practicing continuous delivery
- Many environments (staging, beta, production) for many microservices

50 million deployments per
year

CI/CD Best Practices of Amazon Developers

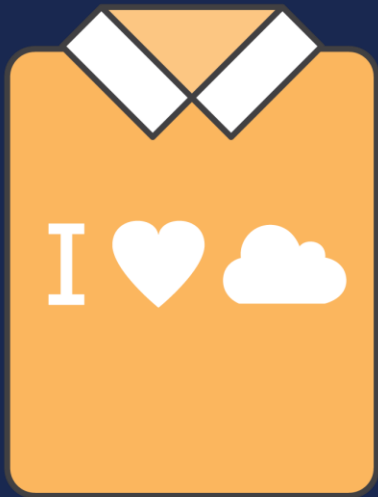
1. CI/CD is a MUST!



CI/CD Best Practices of Amazon Developers

1. CI/CD is a **MUST!**

2. Everything is code and everything goes into a repository

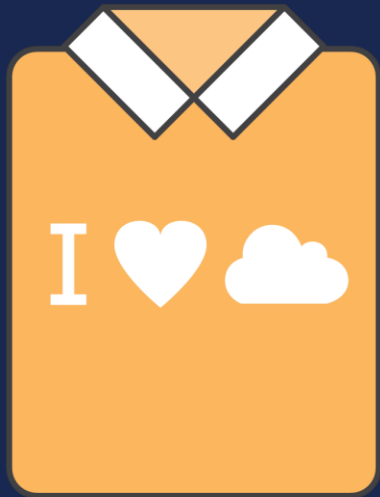


CI/CD Best Practices of Amazon Developers



1. CI/CD is a **MUST!**
2. Everything is code and everything goes into a repository
3. **Start with continuous delivery (“gated” promotion) and build up to continuous deployment**

CI/CD Best Practices of Amazon Developers



1. CI/CD is a **MUST!**
2. Everything is code and everything goes into a repository
3. Start with continuous delivery (“gated” promotion) and build up to continuous deployment
4. **Deploy small at first, then more broadly**

Case Study: lululemon athletica

“Instead of taking two days to build a production account, we can do it in minutes using AWS CloudFormation templates and AWS CodePipeline.”

Case Study: 3M Health Information Systems

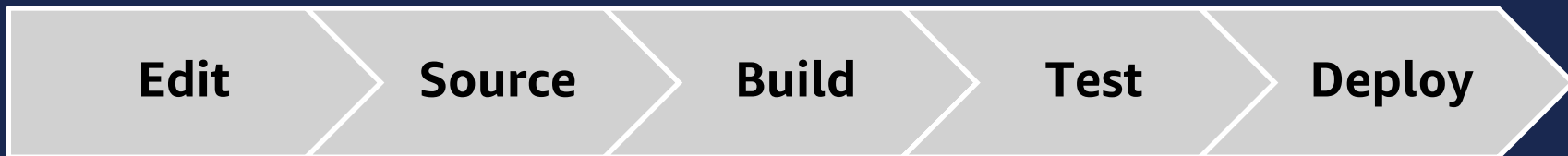
“Using AWS, we’ve gone from deployments taking six weeks to one per week, and very soon we expect that to be multiple deployments per day.”

Using CI/CD on AWS

AWS Code Services



AWS Code Services



AWS Cloud9

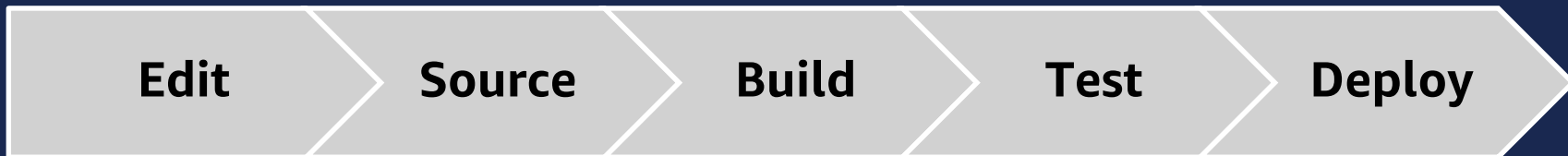
AWS Cloud9



AWS Cloud9

- **Cloud-based integrated development environment (IDE)**
- **Lets you write, run, and debug your code with just a browser**
- **Share your environment with your team to pair-program in real time**
- **Direct terminal access to AWS**
- **Provides great serverless experience: enables local testing and preconfigures the development environment with all SDKs, libraries, and plugins**

AWS Code Services



AWS Cloud9



AWS CodeCommit

AWS CodeCommit



- **Secure, scalable, and managed Git source control**
- **Use standard Git tools**
- **Scalability, availability, and durability of Amazon S3**
- **Encryption at rest with customer-specific keys**
- **No repo size limit**
- **Post commit hooks to call out to SNS, Lambda, and CloudWatch Events**

AWS Code Services

Edit

Source

Build

Test

Deploy



AWS Cloud9



AWS CodeCommit



AWS CodeBuild



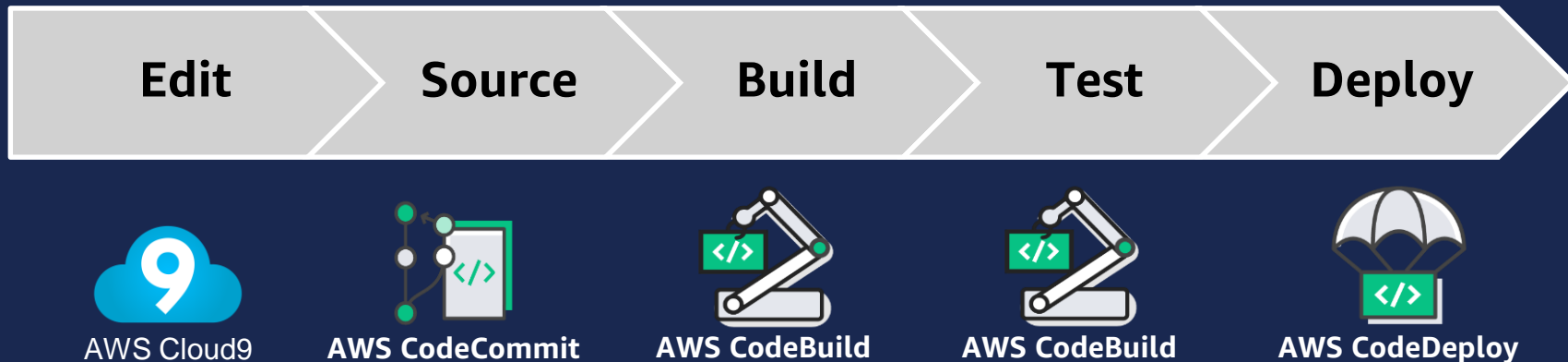
AWS CodeBuild

AWS CodeBuild



- Fully managed build service that compiles source code, runs tests, and produces software packages
- Scales continuously and processes multiple builds concurrently
- You can provide custom build environments suited to your needs via Docker images
- Only pay by the minute for the compute resources you use

AWS Code Services

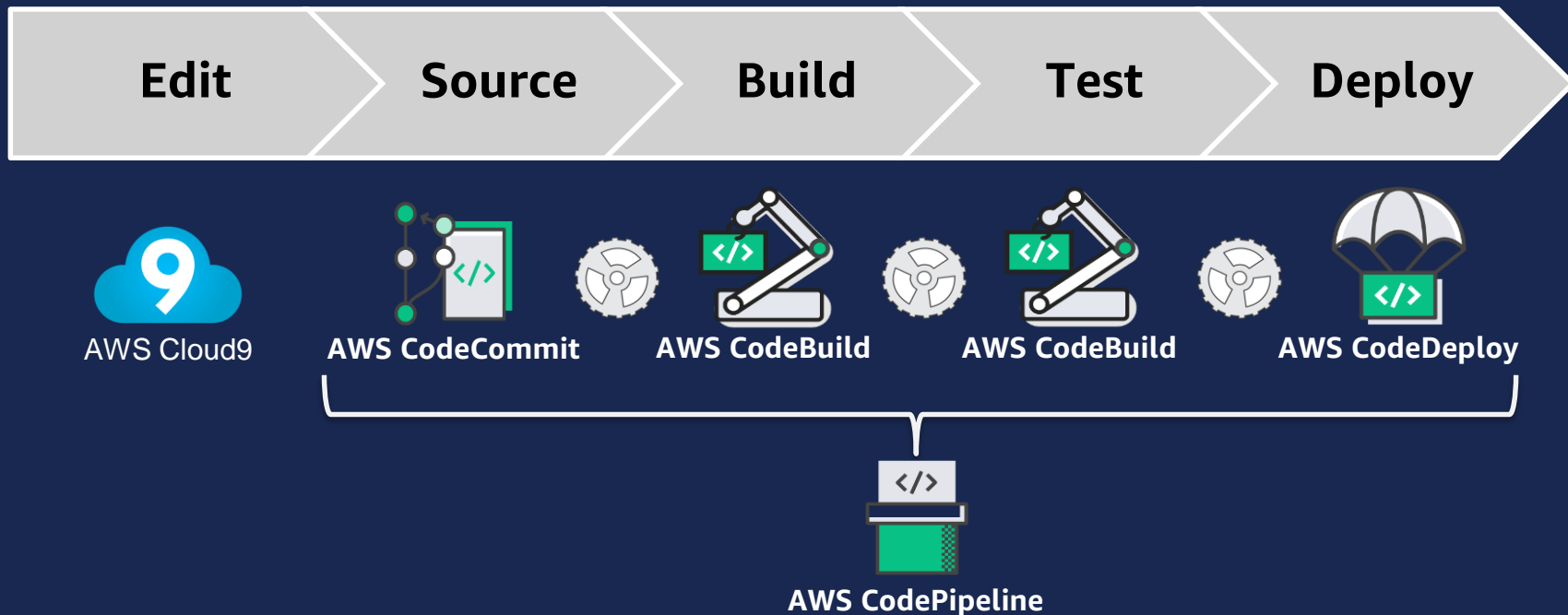


AWS CodeDeploy

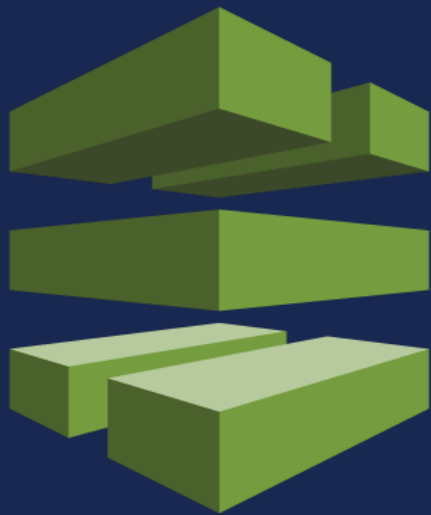


- Automates code deployments to any instance or Lambda function
- Handles the complexity of updating your applications
- Avoid downtime during application deployment
- Rollback automatically if failure detected
- Deploy to Amazon EC2, Lambda, or on-premises servers

AWS Code Services

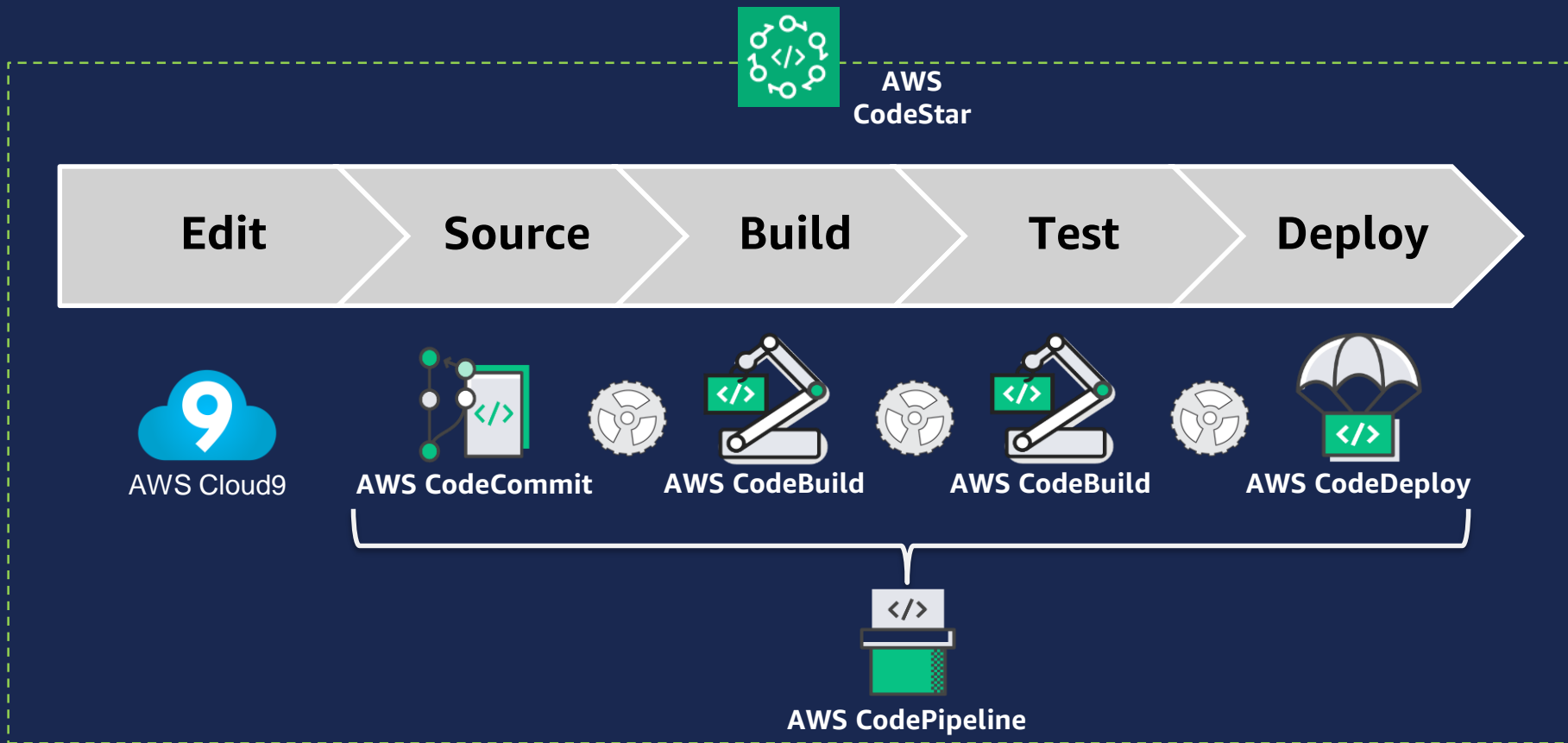


AWS CodePipeline



- **Continuous delivery service for fast and reliable application updates**
- **Model and visualize your software release process**
- **Builds, tests, and deploys your code every time there is a code change**
- **Integrates with third-party tools and AWS**

AWS Code Services

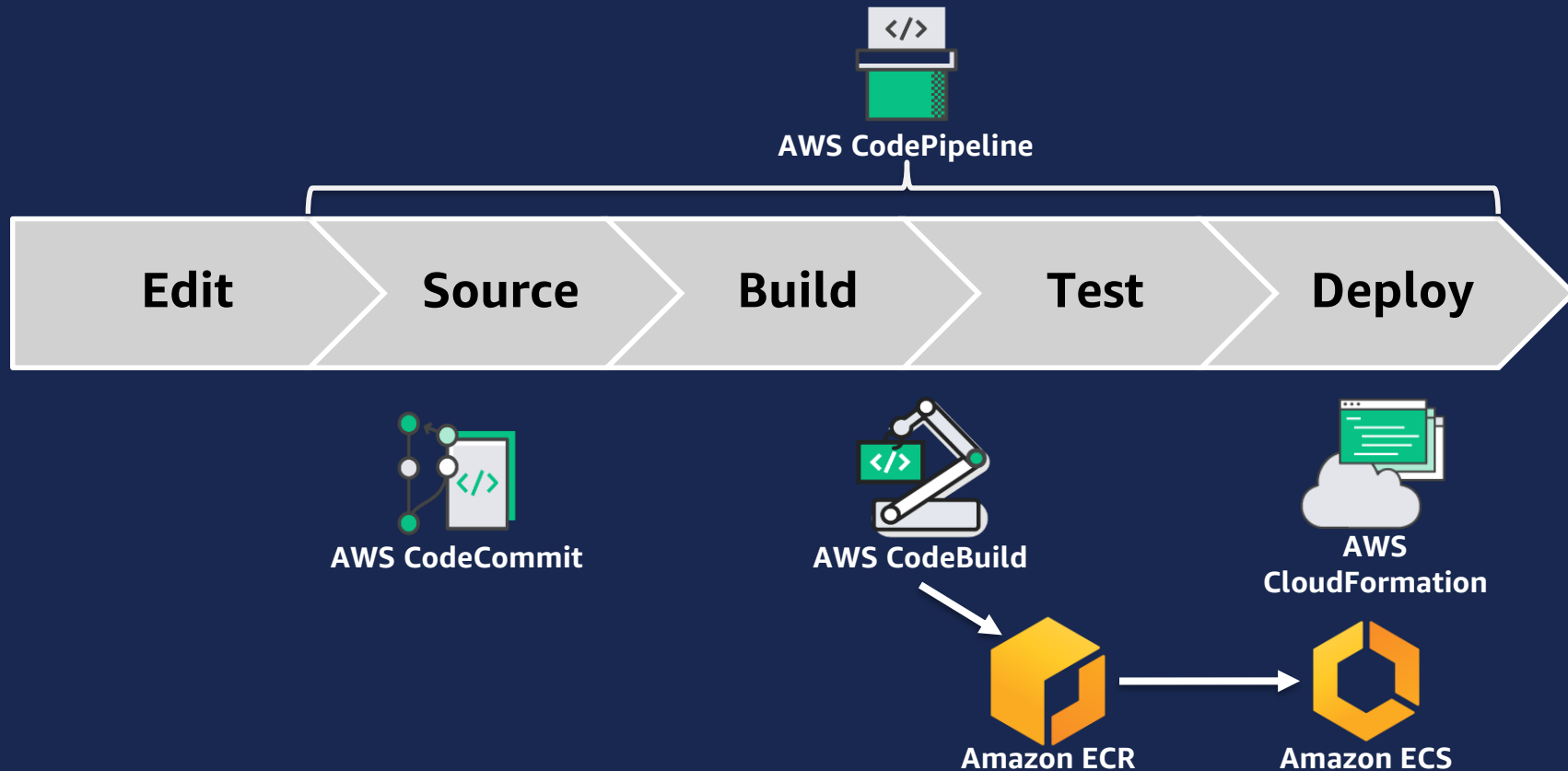


AWS CodeStar

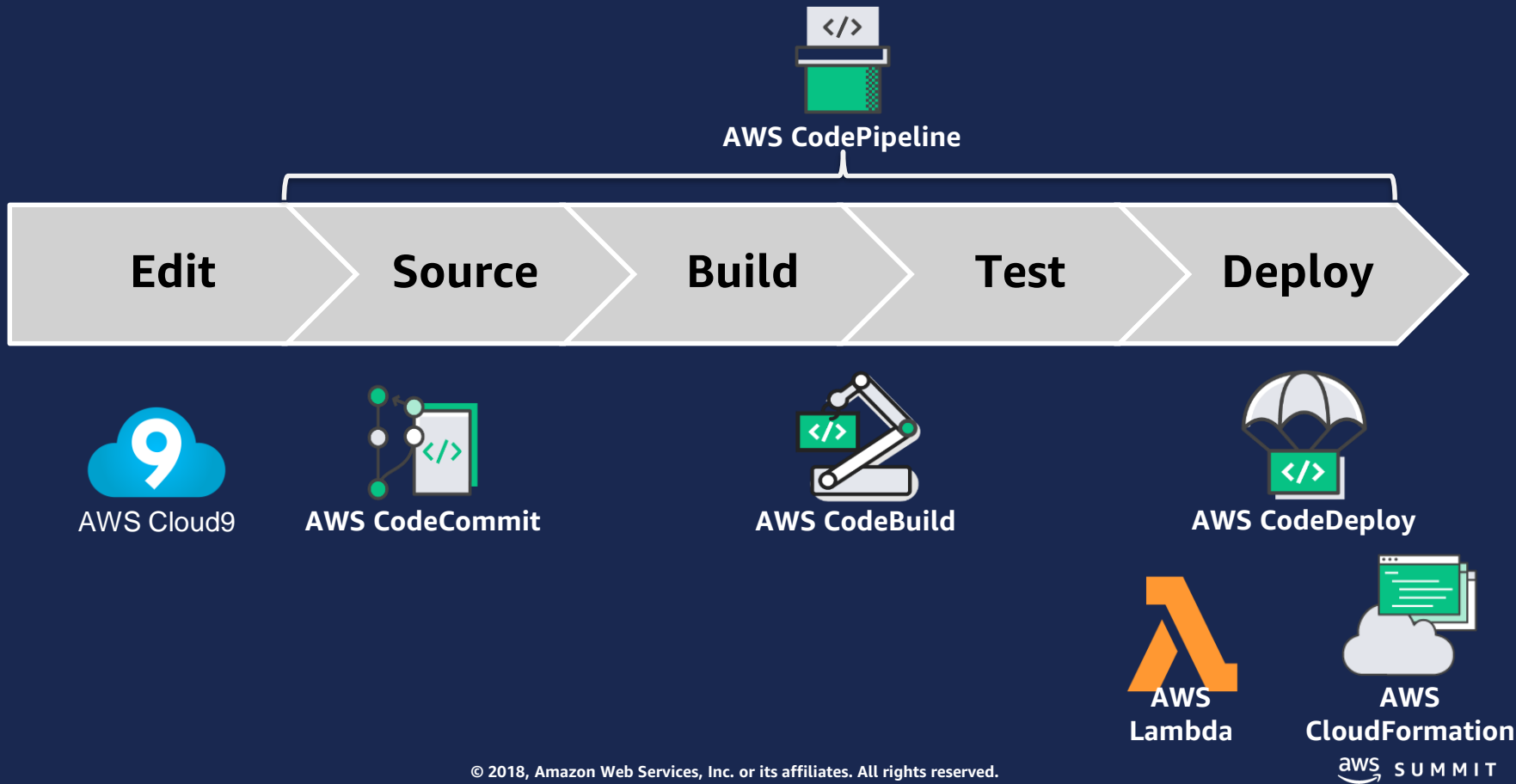


- **Quickly develop, build, and deploy applications on AWS**
- **Start developing on AWS in minutes**
- **Securely work across your team**
- **Choose from a variety of project templates**

Continuous Deployment for Containers



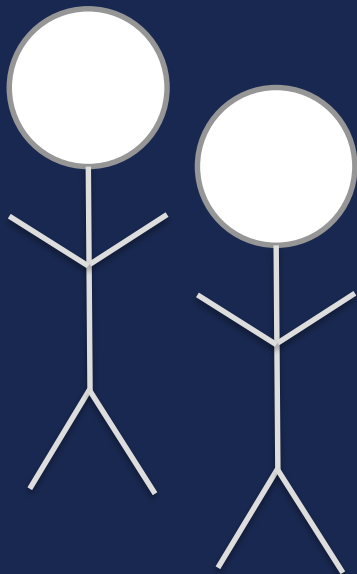
Continuous Deployment for Serverless



Demo

CI/CD with AWS

Lunch Wheel



**Where do you want
to go to lunch?**

**I don't know.
Where do you want
to go?**

**I don't know.
Where do you want
to go?**

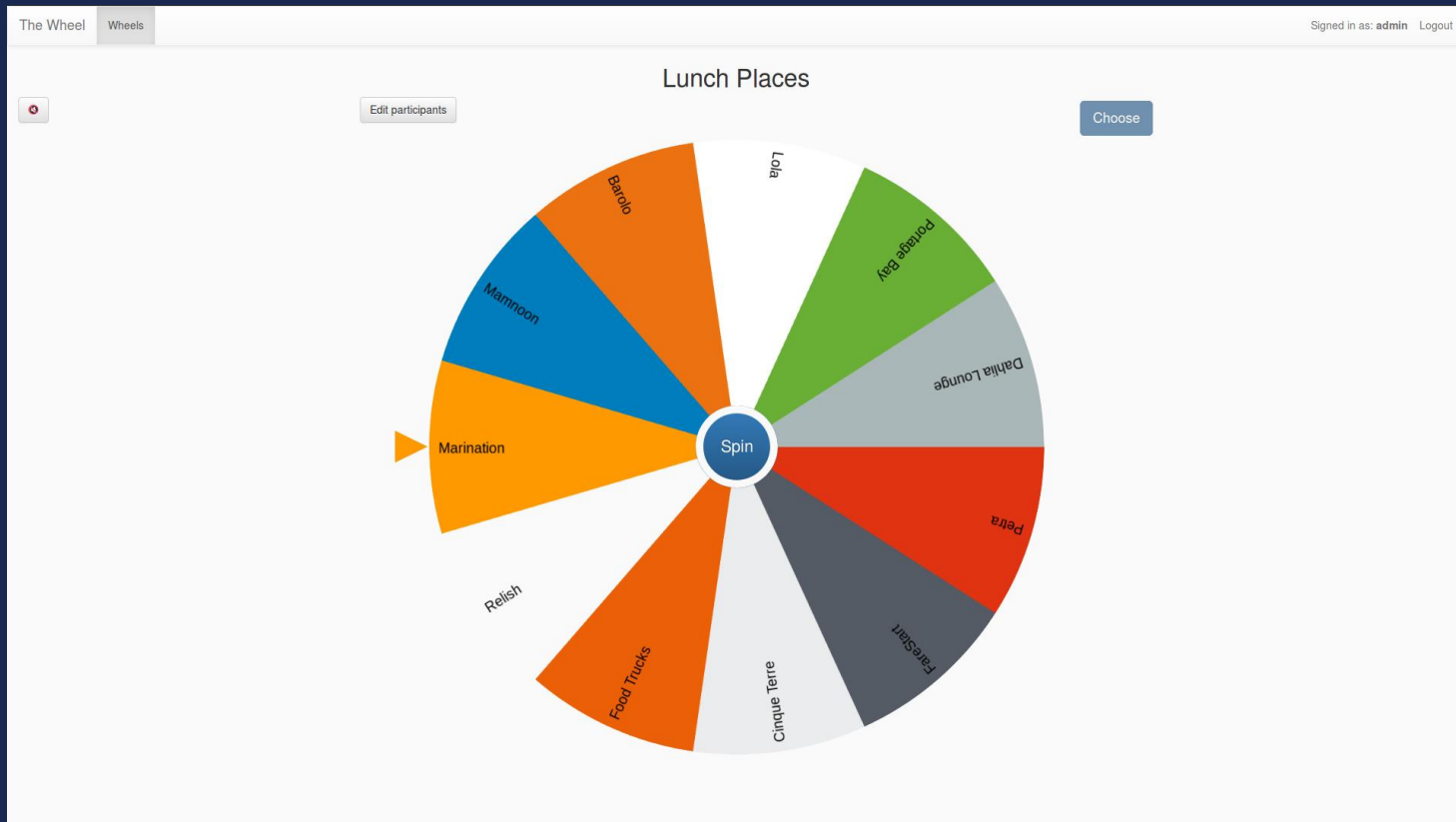
**I don't know.
Where do you want
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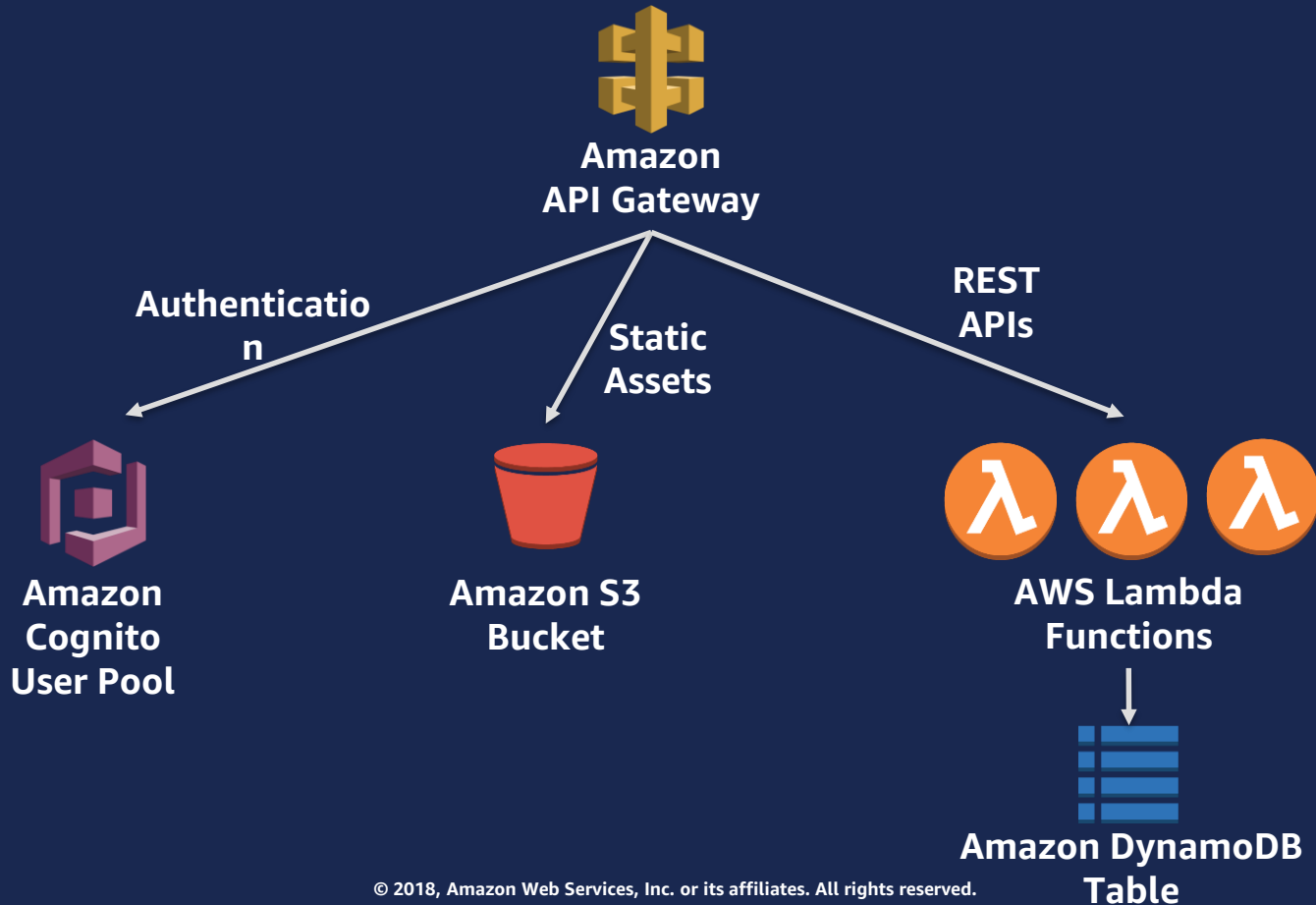
Lunch Wheel



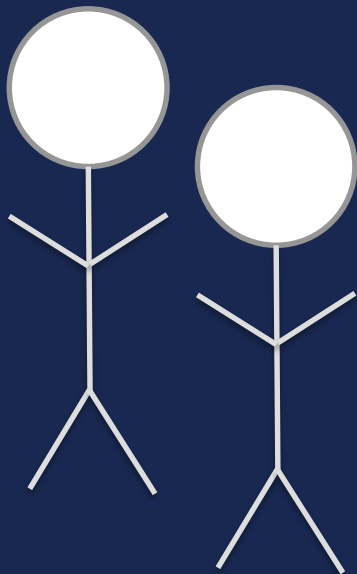
Lunch Wheel



Lunch Wheel



Food Trucks Slack Bot



**The lunch wheel
chose food trucks!**

**What food trucks
are there today?**

I don't know...



Food Trucks Slack Bot

The screenshot shows a Slack interface. On the left is a teal sidebar with the user profile 'Clare Liguori Pe...' and a list of channels including '# aws-summit-berlin'. The main area displays the '#aws-summit-berlin' channel with a message from the 'food-trucks' bot. The bot's message lists several food trucks and their locations, each with a map link. The message is timestamped '4:20 PM'.

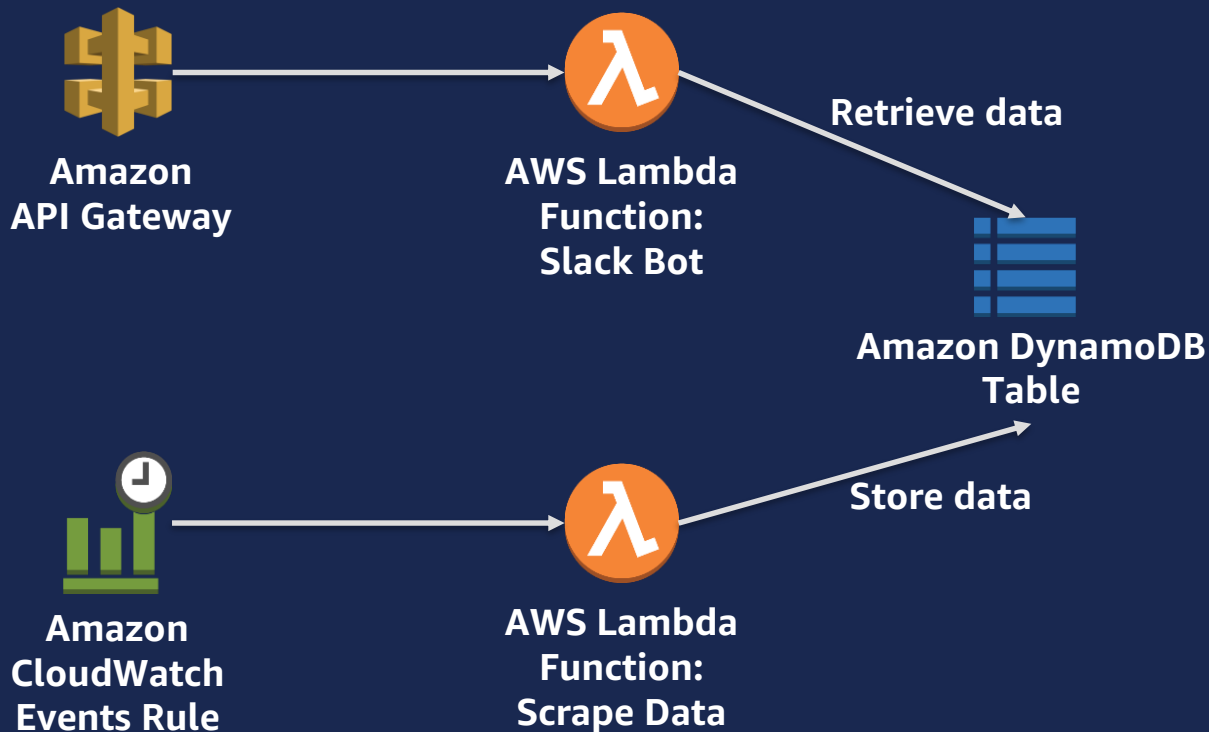
Slack Channel: #aws-summit-berlin

Message from food-trucks (4:20 PM):

Here are the food trucks in your area today:

- McGraw Square** ([map](#))
 - Charlie's Buns N' Stuff (Burgers, Sandwiches, and American)
- Johny & Terry** ([map](#))
 - The Roll Pod (Indian)
- Thomas & 9th** ([map](#))
 - Tacos El Tajin (Mexican)
 - NaanSense (Indian, Vegetarian, and Halal)
- John & Terry** ([map](#))
 - Poke Up (Hawaiian, Seafood, and Asian)
- 6th & Olive** ([map](#))
 - Nach'Yo Average Food Truck (Mexican, Sandwiches, and Vegan)
- Terry & Thomas** ([map](#))
 - Spice On Curve (Indian)
 - Seattle Mamak (Asian)
- Harrison & Westlake** ([map](#))
 - Athena's (Mediterranean)
- Westlake Park** ([map](#))
 - Roll OK Please (Indian)
 - Mo Pockets (Asian and Sandwiches)
 - Lemil's Big Easy (Southern)

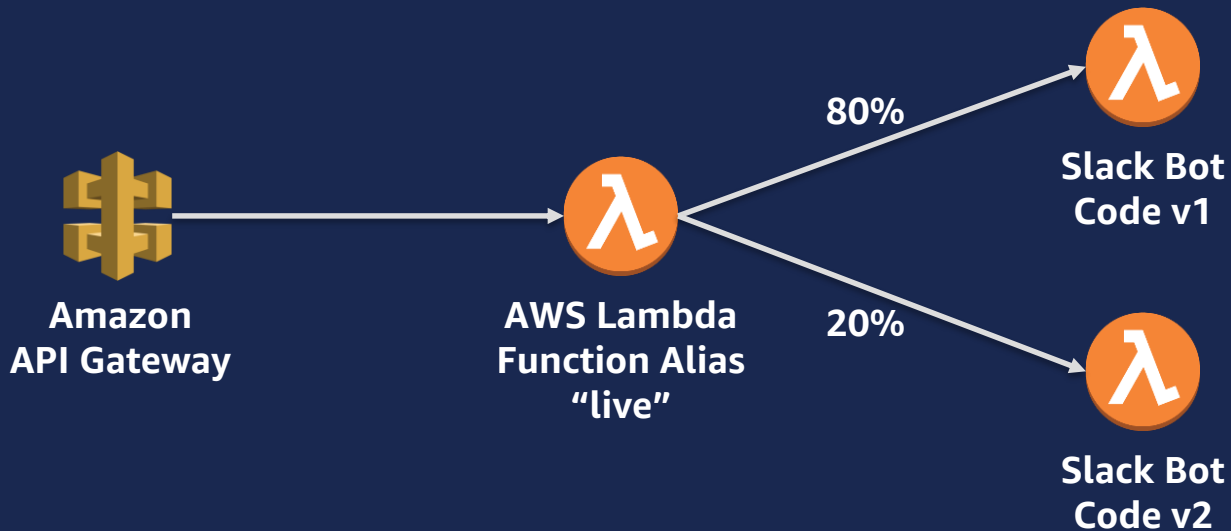
Food Trucks Slack Bot



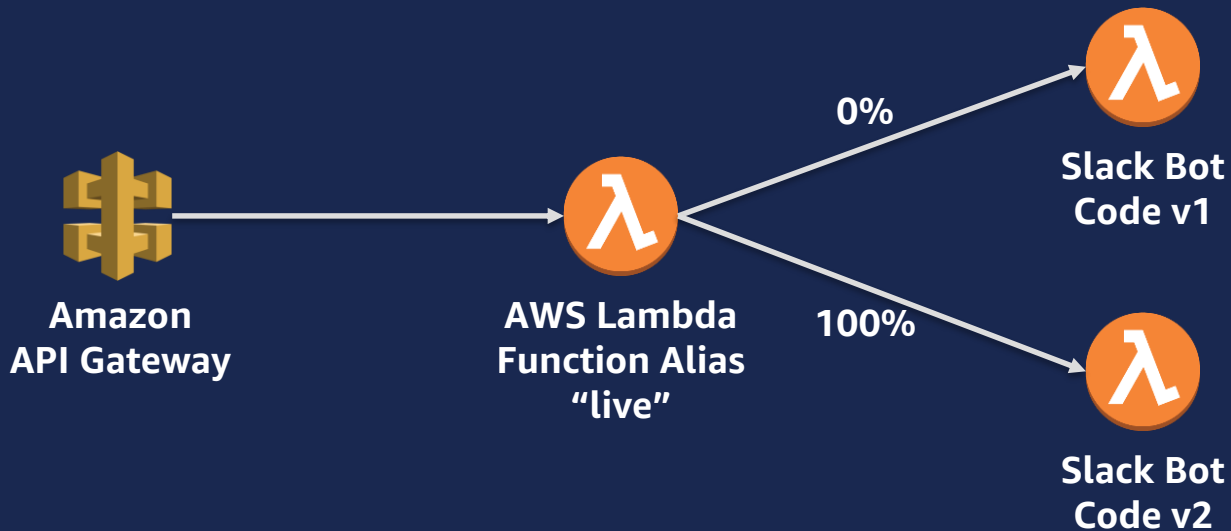
Food Trucks Slack Bot



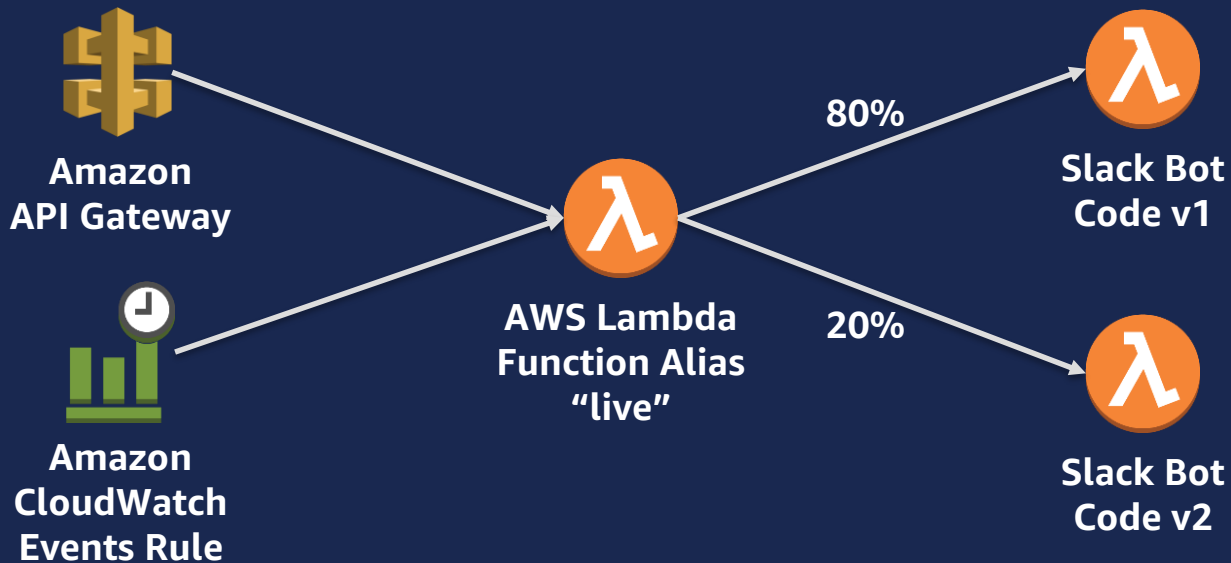
Food Trucks Slack Bot



Food Trucks Slack Bot



Food Trucks Slack Bot



Live Demo!

Thank you!

Get started with CI/CD in under 5 minutes
<https://aws.amazon.com/codestar/>