

Xerris Bootcamp Series

Infrastructure as Code

Using AWS Cloud Developer Kit
(CDK)



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Transforming The Future, Now

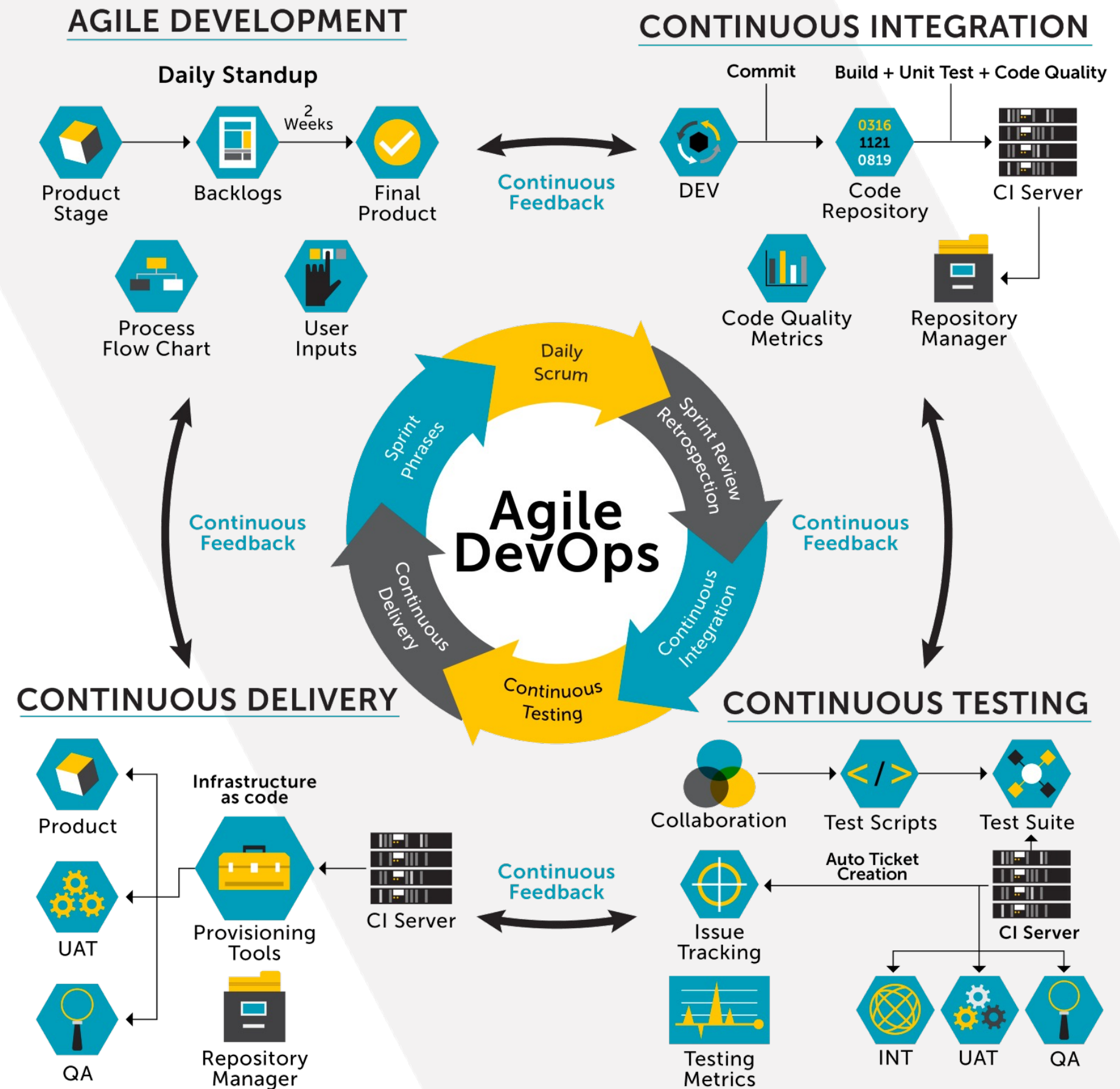
What is Infrastructure as code

Infrastructure As Code (IaC)

- Managing and provisioning computer data centers through machine-readable definition files rather than physical hardware configuration or interactive configuration tools.
- Allows you to treat and provision your networks, servers, database and other infrastructure like software.
- Quickly and reliably create the cloud environment for your business applications.
- Minimizes Risk of having different configurations between environments (dev, stage, prod)
- Mitigates the risk of disaster recovery. If necessary, an entirely new cloud environment could be provisioned very quickly.



What is Infrastructure as code



AWS Cloud Developer Kit (CDK)

AWS CDK

- “**AWS CDK** is a software development framework to define cloud infrastructure as code and provision it through CloudFormation. **CDK** integrates fully with **AWS** services and offers a higher-level object-oriented abstraction to define AWS resources imperatively.”

Cloud Formation Templates

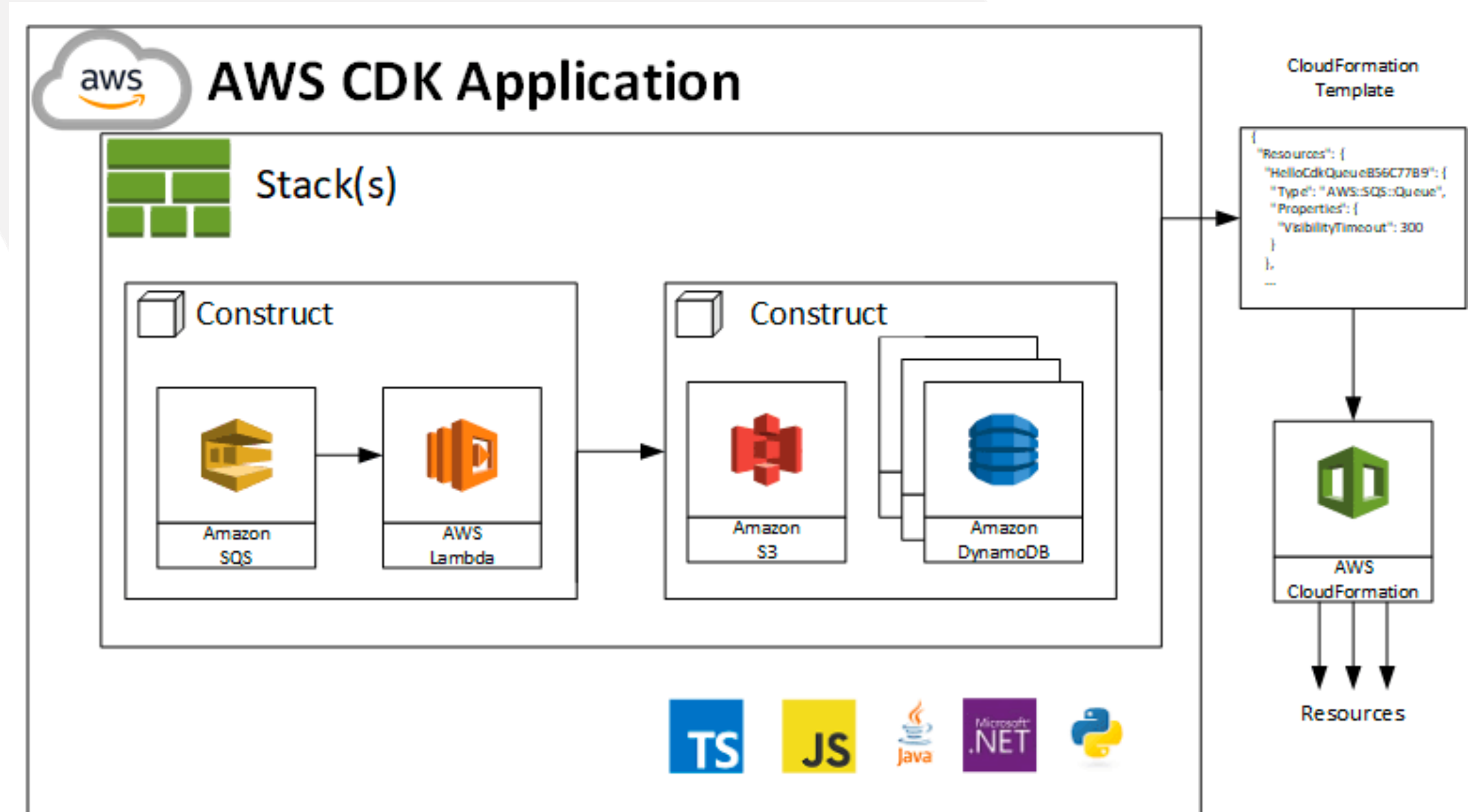
- “**AWS CloudFormation** is a service that gives developers and businesses an easy way to create a collection of related **AWS** resources and provision them in an orderly and predictable fashion.”



AWS Cloud Developer Kit (CDK)

AWS CDK

- AWS CDK is an IaC framework authored by Amazon
- Written in **TypeScript** but also supports **Python**, **C#**, **NodeJS**, and **Java**.



AWS Cloud Developer Kit (CDK)

CDK Constructs

- Allow you to bundle a bunch of infrastructure into reusable components.
- Constructs are strongly typed JavaScript classes that take in a set of props.
- You can create your own reusable constructs.
- <https://cdkworkshop.com>



AWS Cloud Developer Kit (CDK)

CDK Example

The following example shows a simple S3 bucket creation.

```
// Content bucket
const siteBucket = new s3.Bucket(this, 'SiteBucket', {
  bucketName: 'www.greg-cook-xerris-static-site.com',
  websiteIndexDocument: 'index.html',
  websiteErrorDocument: 'error.html',
  publicReadAccess: true,
  removalPolicy: cdk.RemovalPolicy.DESTROY,
});
new cdk.CfnOutput(this, 'Bucket', { value: siteBucket.bucketName });
```



AWS Cloud Developer Kit (CDK)

Typescript

"Typescript is a superset of JavaScript which primarily provides optional static typing, classes and interfaces. One big benefit is enabling IDEs to provide a richer environment for spotting common errors *as you type the code*.

Typescript is a strongly typed language (whereas JavaScript is loosely typed)

```
class Greeter {  
    greeting: string; constructor (message: string) {  
        this.greeting = message;  
    }  
    greet() {  
        return "Hello, " + this.greeting;  
    }  
}
```



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AWS Cloud Developer Kit (CDK)

CDK S3 Bucket Demo

CDK Workshop

- Create a new folder named

www.xerris-your-name-static-site.com

- Initialize a new CDK app for your static site.
- Start the watch and open the folder in **VS Code**.
- Add the S3 construct and create your bucket.
- Try and deploy your bucket to your AWS account.



AWS Cloud Developer Kit (CDK)

CDK Lambda & API Gateway deployment

- CDK supports Lambda deployment also. Follow the steps
- Import the Lambda module: `@aws-cdk/aws-lambda`
- Define your lambda and reference where the lambda code lives
- CDK also allows you to put the API Gateway over your Lambda.
- Import the API G/W module: `@aws-cdk/aws-apigateway`
- Define your API gateway and the GET method for get-books
- Use Lambda integration when you define your API method.
- Define the CORS (Cross Origin Resource Sharing).

