AWS re:Invent

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Modern .NET applications: Infrastructure as code and CI/CD

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Agenda

Presentation

- Application modernization
- Monolith to microservices
- AWS tools

Workshop

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Application modernization

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What is application modernization?

Defined:

Modernization is the process of progressively transforming applications to achieve the availability, scalability, business agility, and cost optimization benefits of running in the cloud

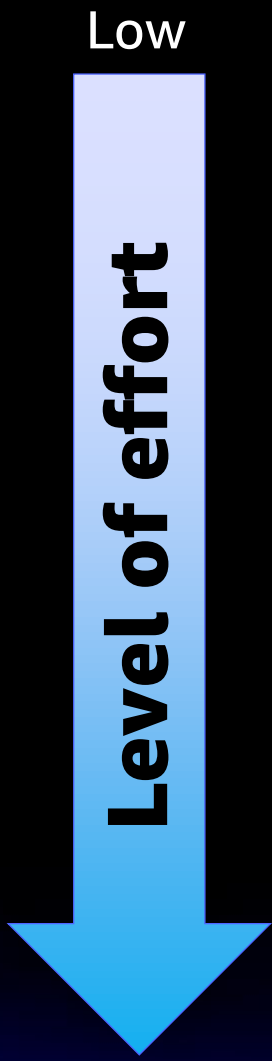
Practical implications:

Leveraging updated software practices (such as microservices) and infrastructure (such as containers and Linux OS) to empower businesses to move faster and meet customer needs

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.NET Framework migration strategies

Rehost	Deploy .NET Framework applications “as is” to Amazon Elastic Compute Cloud (Amazon EC2) virtual machines
Replatform	Containerize in Windows containers and orchestrate with Amazon Elastic Container Service (Amazon ECS), AWS Fargate, or Amazon Elastic Kubernetes Service (Amazon EKS)
Refactor	Port to .NET Core, and run in Amazon ECS, AWS Fargate, or Amazon EKS as Linux containers OR Lambda



aws

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Containerization benefits

Agility		Develop and deploy faster to achieve business goals
DevOps		Build and operate using a proven ecosystem of cloud-focused tooling
Portability		Enable self-contained and scalable application deployments
Operational efficiency		Reduce operational burden by removing undifferentiated heavy lifting and optimizing for cost savings in the cloud

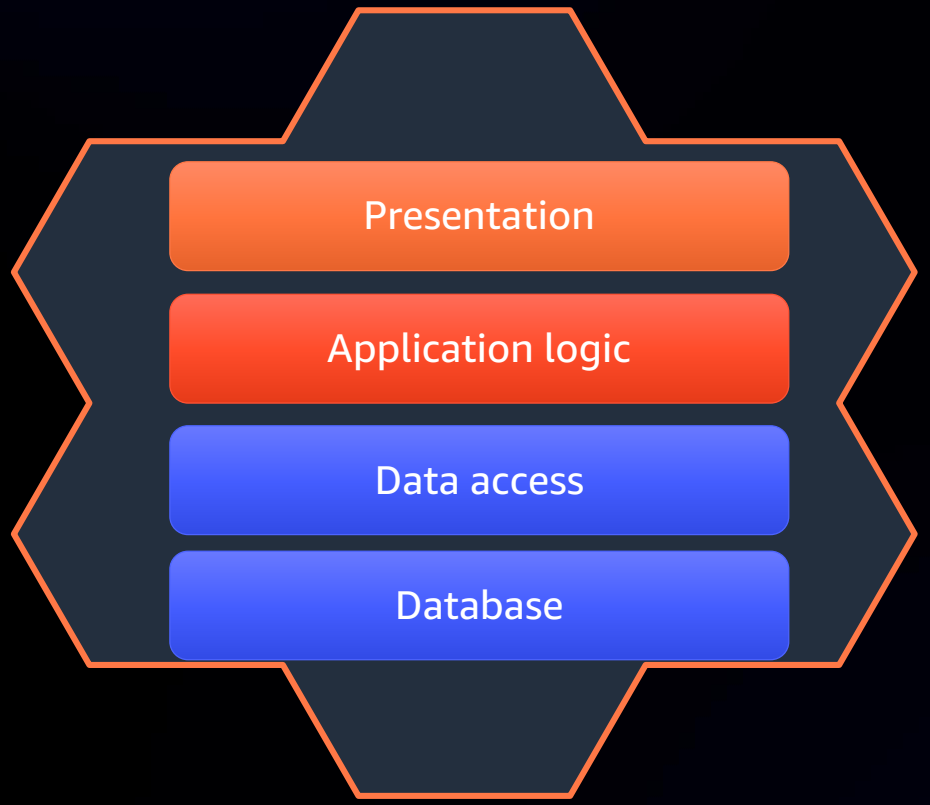
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Monolith to microservices

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The monolith

Large changes inherit large risk, thereby slowing releases and feedback

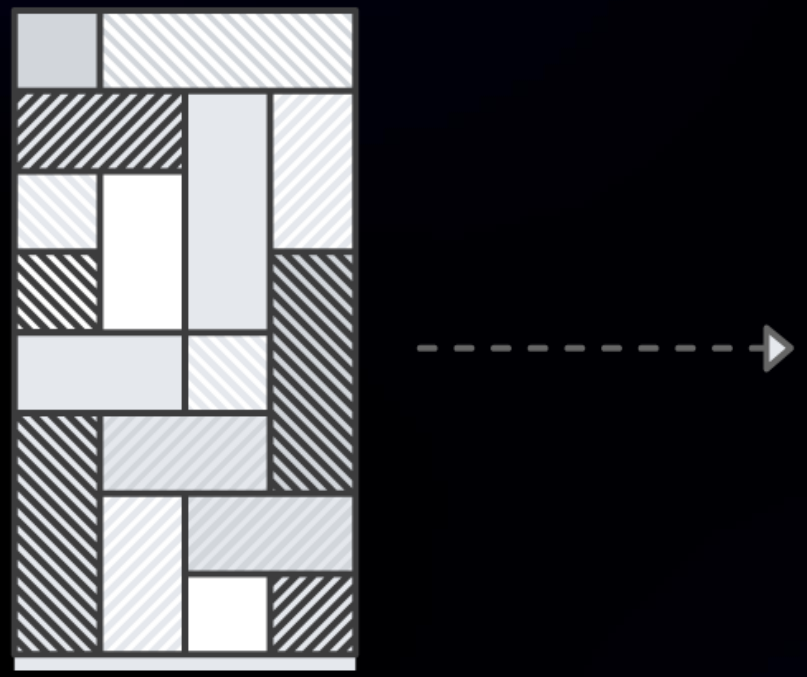


Monolithic application

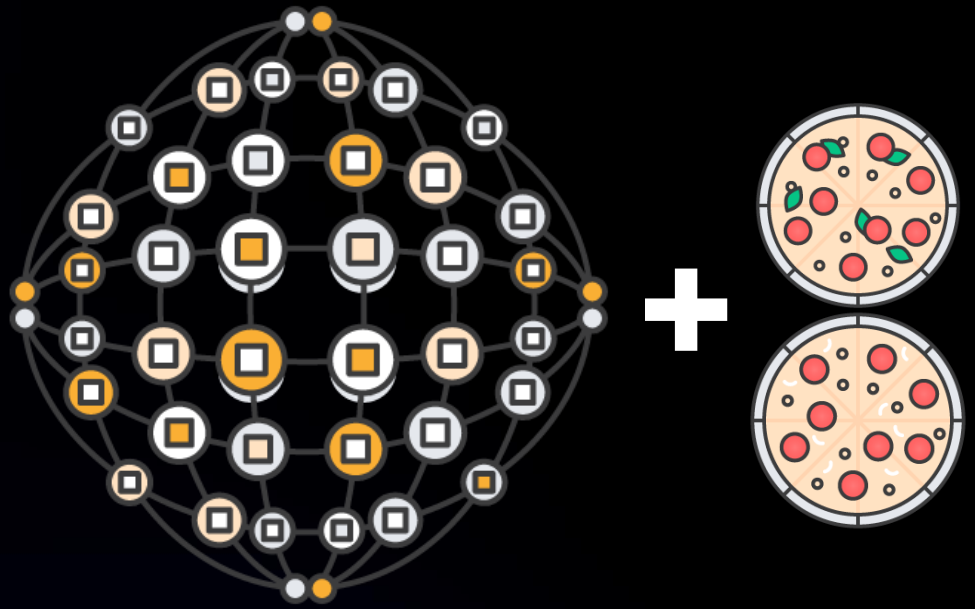
Does everything
Shared release pipeline
Rigid scaling
High impact of change
Hard to adopt new technologies
Long deployment processes
Hard to iterate and extend

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Development transformation



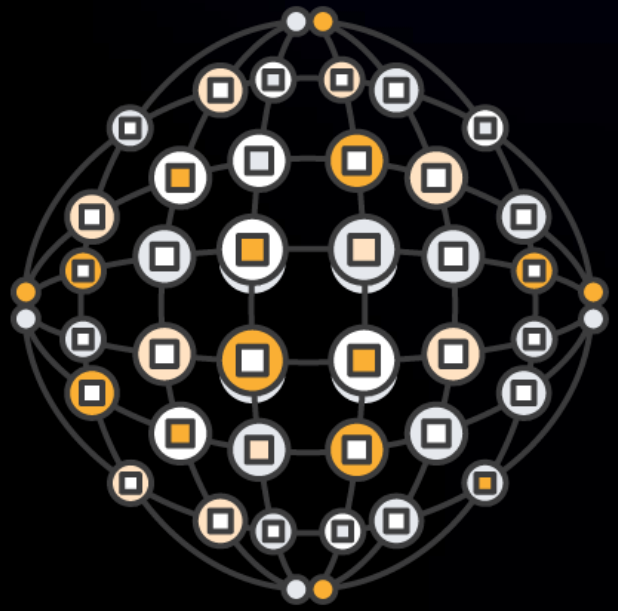
Monolithic architecture + hierarchical organization



Decoupled services + two-pizza teams

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Microservices



Conway's Law: Organizations design systems that model the organization and communication structure

2002 Jeff Bezos memo:

1. All teams will henceforth expose their data and functionality through service interfaces

2. Teams must communicate with each other through these interfaces

3. There will be no other form of intra-process communication allowed: no direct linking, no direct reads, no shared-memory model

4. It doesn't matter what technology they use

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Martin Fowler's strangler fig pattern

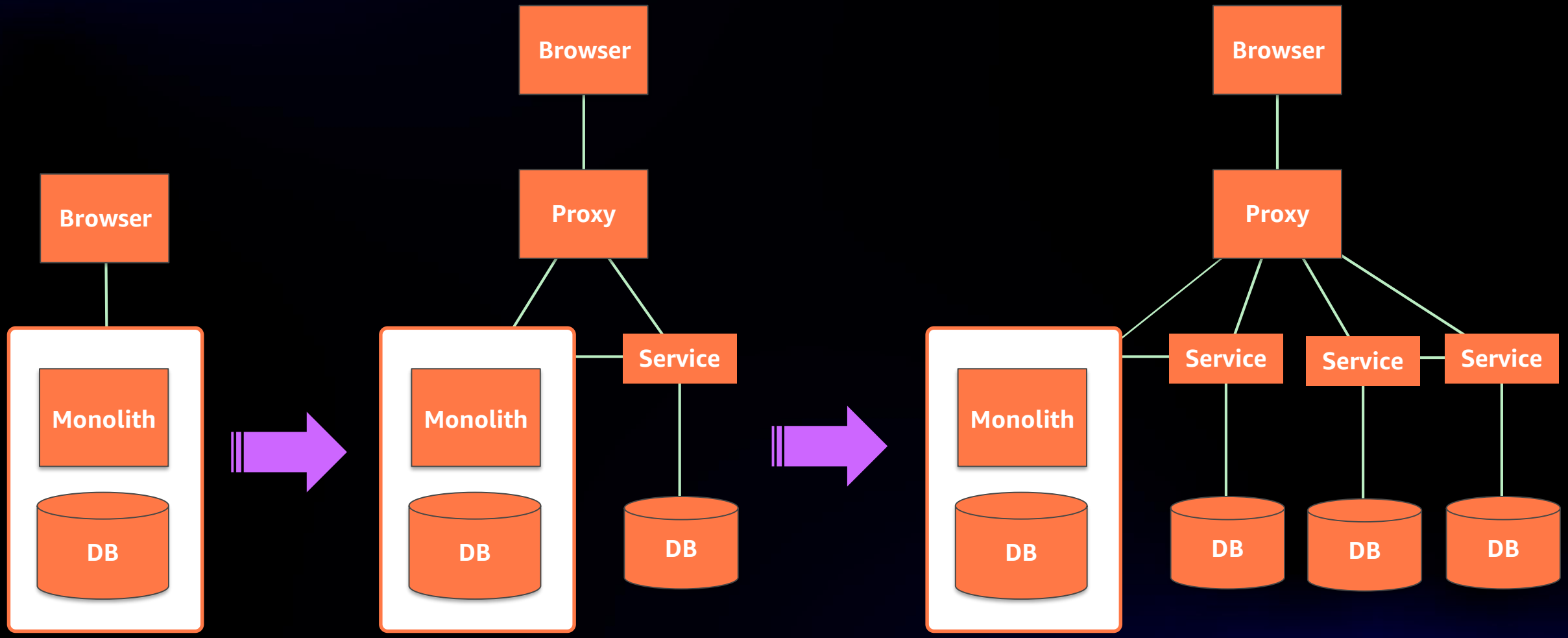


"[G]radually create a new system around the edges of the old, letting it grow slowly over several years until the old system is strangled."

Martin Fowler
June 29, 2004

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Creating a new system around the edges



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AWS tools

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AWS Porting Assistant for .NET

AWS Porting Assistant for .NET is an analysis tool that scans .NET Framework applications and generates a .NET Core compatibility assessment, helping you port your applications to Linux faster

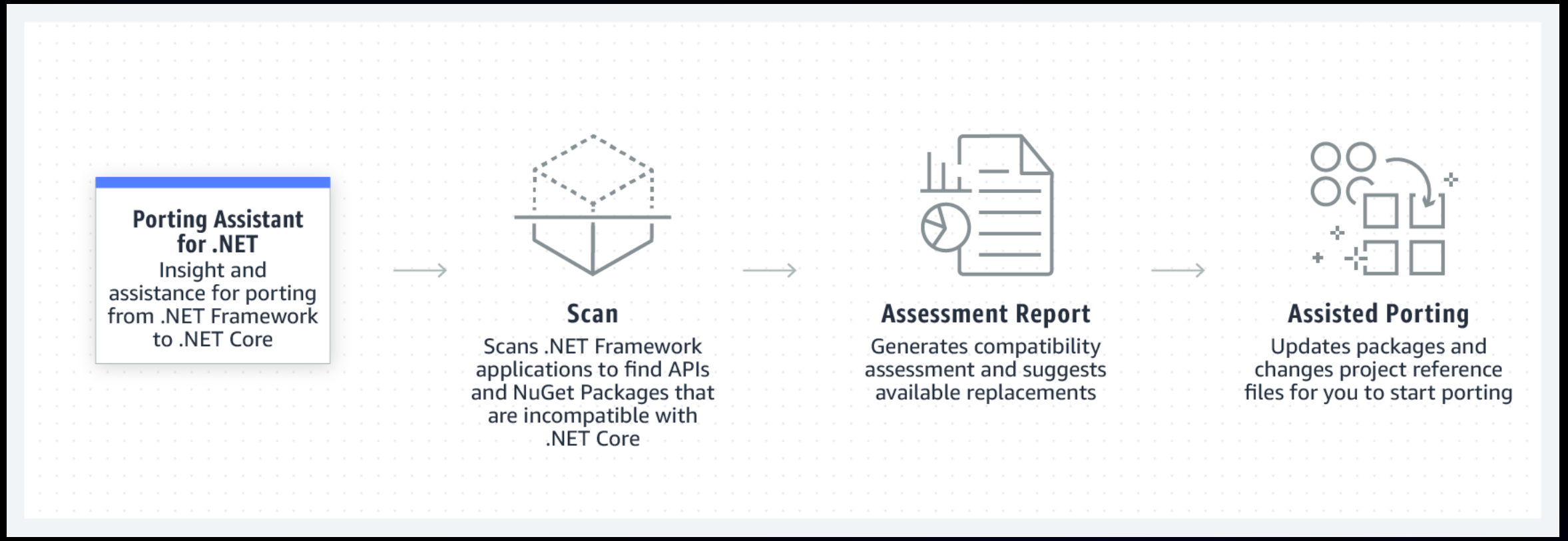
Benefits

- Quickly prioritize
- Project and solution assessment
- Assisted porting

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AWS Porting Assistant for .NET: How it works

Migrating from .NET Framework on Windows to .NET Core on Linux



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Start the workshop!

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Thank you!

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