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# Building and scaling a modernization strategy


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# Agenda

Why?

Pillars of modernization & building a strategy

Scaling across the organization

How Baker Tilly achieved modernization at scale

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# Why?

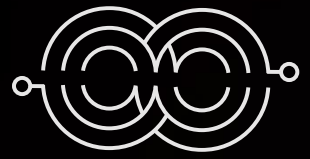
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CIOs say that 80% of developers' time is spent on the operations and maintenance of applications and only 20% of the time is actually spent on innovation

Source: Deloitte 2019

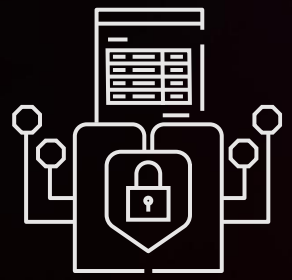
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# This impacts the business



Long release cycles for new products and features

**Lost revenue due to missed opportunity, loss of competitive edge**



Operational inefficiencies resulting in overhead costs

**Lost productivity or high costs for undifferentiated skills**

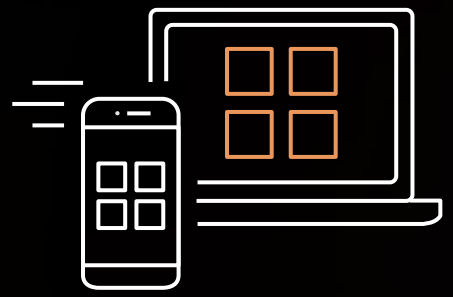


Inability to support changing compliance, security regulations

**Fines for non-compliance, reputational impact, lost customer trust**

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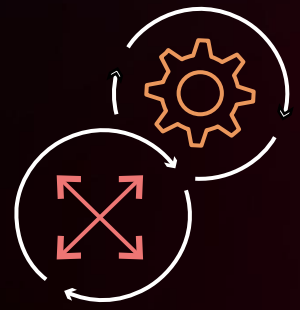
# Customers need to innovate and deliver value to their customers



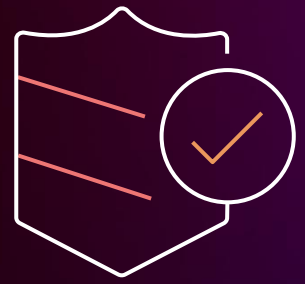
Getting to market faster



Lowering total cost of ownership



High performance and scalability



Security and isolation by design

# What does success look like?

Challenge Solution

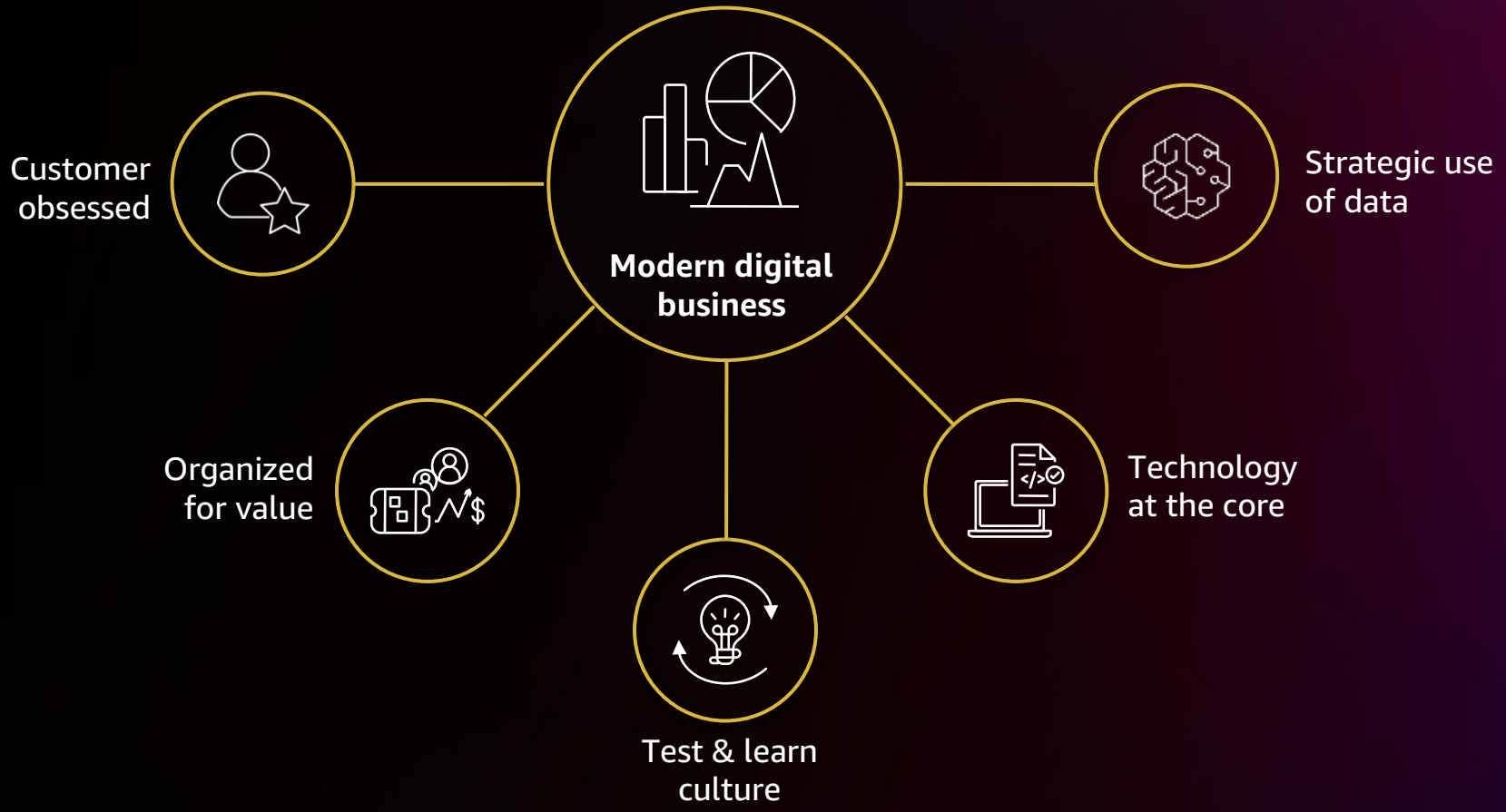
| Challenge | Solution |
| --- | --- |
| Developers wait days/weeks for infrastructure to be provisioned | Developers provision infrastructure on demand and deploy in minutes |
| Software is manually deployed on an ad-hoc basis | Software delivery is automated via continuous delivery pipelines |
| Security is configured ad-hoc for each application | Security best practices are baked in to every application and service |
| Developers lack visibility into applications running in production | Applications are fully instrumented for metric and log collection |
| Tooling is inconsistent across teams and business units | Organizations standardize on tools and best practices |



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# Characteristics of a modern digital business




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# Pillars of modernization

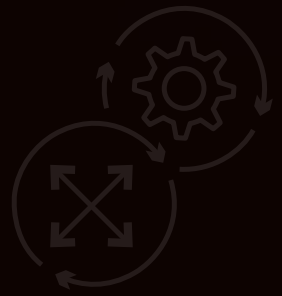
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# Pillars to build a modern development culture



## People

Organize for value. People drive innovation, not the technology



## Processes

Automate, enable, and self-service as much as possible with continuous improvement



## Technology

Offload the heavy lifting

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# In Amazon’s experience

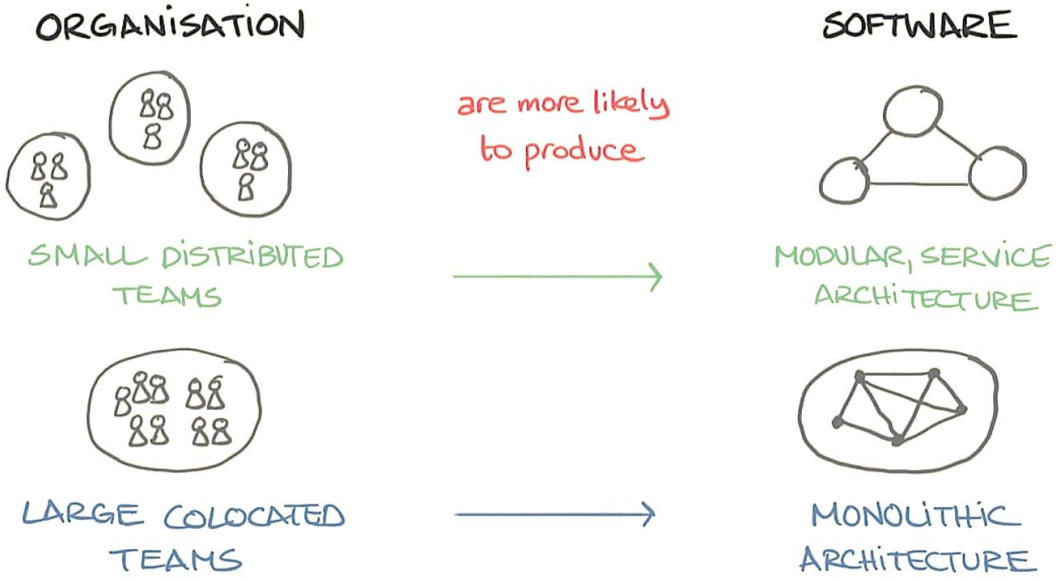
“Any organization that designs a system will inevitably produce a design whose structure is a copy of the organization's communication structure.”

**Melvin Conway**

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“If the architecture of the system and the architecture of the organization are at odds, the architecture of the organization wins.”

**Ruth Malan**

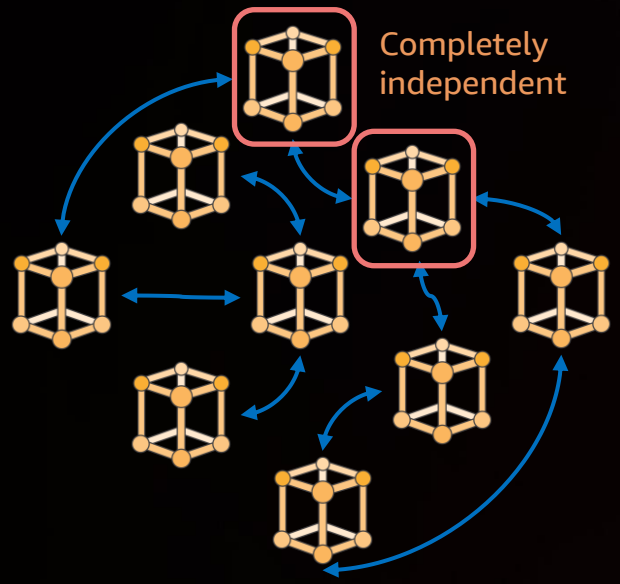



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# Microservices

DECOUPLED BUSINESS CAPABILITIES WITH DECENTRALIZED GOVERNANCE AND DATA MANAGEMENT

## Microservices

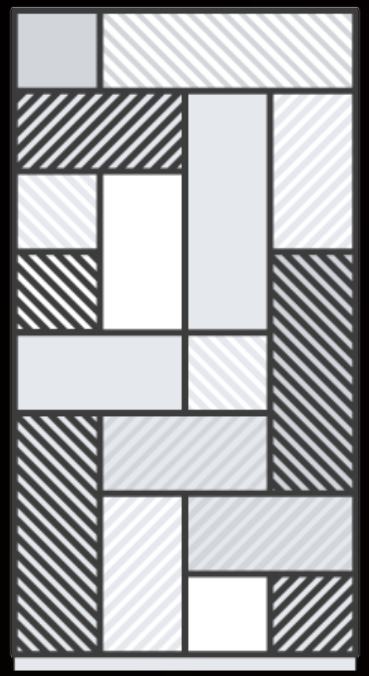



**Reusable** modules of code
Built and deployed independently
Organized around **business capabilities**
Own their **domain logic**
Independent **SLA**
**Optimizes** around the cloud's elasticity

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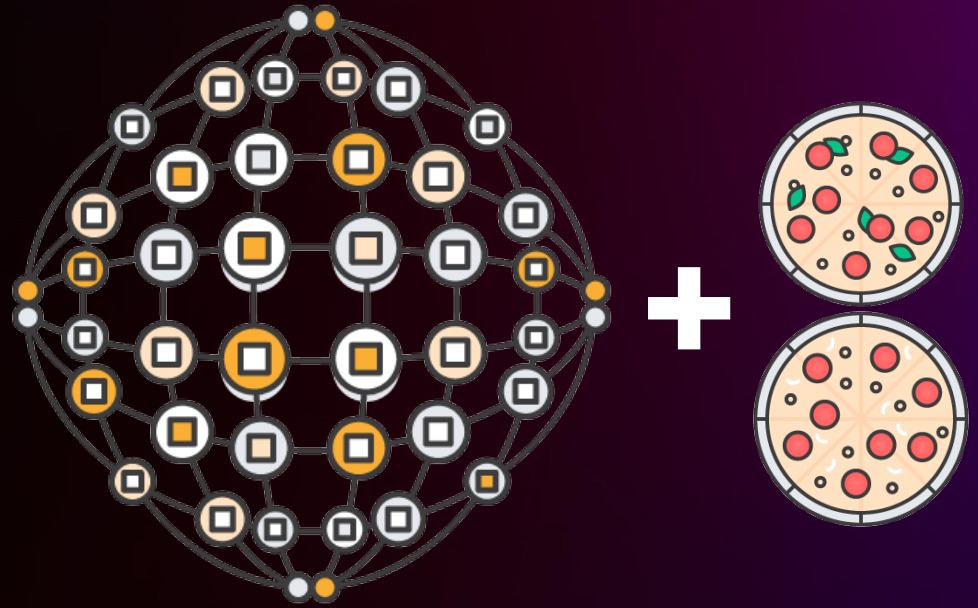
# Development transformation at Amazon.com

1994-2001



Monolithic architecture + hierarchical organization

2002+



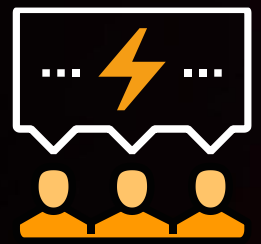
Decoupled services +
Two-pizza teams

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# Two-pizza team

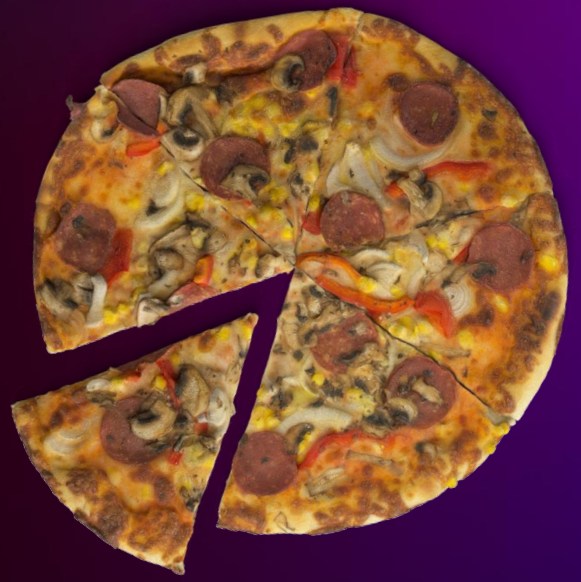




Small, decentralized teams are nimble



Own and run what you build

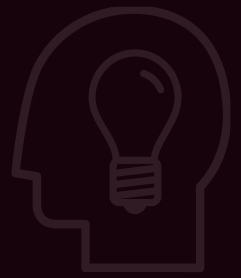


- Own a service
- Minimizes social constraints (Conway's law)
- Autonomy to make decisions
- Teams running as independent 'startups' inside Amazon

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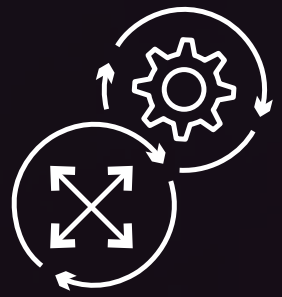
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# Pillars to build a modern development culture



People

Organize for value. People drive innovation, not the technology



Processes

Automate, enable, and self-service as much as possible with continuous improvement



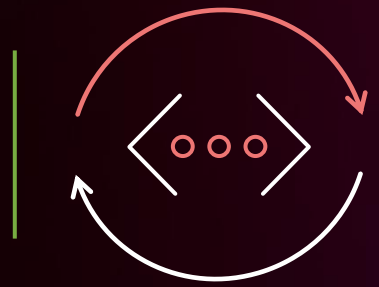
Technology

Offload the heavy lifting

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# Guardrails not toll booths

Automate everything



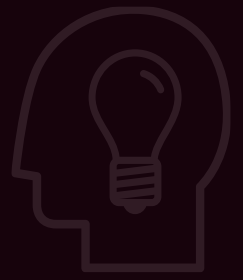
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# Automate, enable, and self-service to scale

| Set up governance | Enable compliance | Provision & orchestrate | Monitor & observe | Centralize operations |
|---|---|---|---|---|
| AWS Control Tower | AWS CloudTrail | AWS Proton | AWS Distro for OpenTelemetry | Amazon CloudWatch | AWS Systems Manager |
| AWS Organizations | AWS Well-Architected Tool | AWS License Manager | AWS Marketplace | AWS CloudFormation | AWS X-Ray | AWS Cost Explorer |
| AWS Budgets | AWS Config | AWS Managed Services | AWS Service Catalog | AWS Cost and Usage Reports |

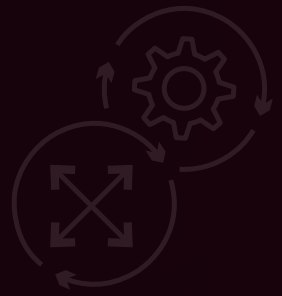
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# Pillars to build a modern development culture



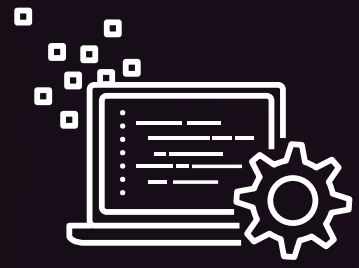
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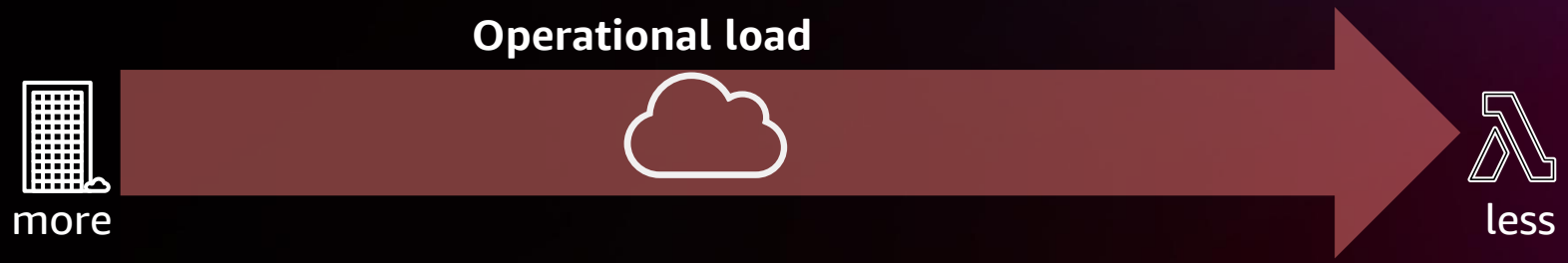
Offload the heavy lifting

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# “Build apps, not infrastructure”

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# Let AWS do the heavy lifting




| | | | | | | |
|---|---|---|---|---|---|---|
| **Compute** | Virtual Machine | Amazon EC2 | AWS Elastic Beanstalk | | AWS Fargate | AWS Lambda |
| **Databases** | MySQL | MySQL on AmazonEC2 | Amazon RDS for MySQL | RDS for Aurora | Aurora Serverless | Amazon DynamoDB |
| **Storage** | Storage | | | | | Amazon S3 |
| **Messaging** | ESBs | | Amazon MQ | Amazon Kinesis | | Amazon SQS/Amazon SNS |
| **Analytics** | Hadoop | Hadoop on Amazon EC2 | Amazon EMR | Amazon OpenSearch Service | | Amazon Athena |

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# Scaling modernization

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# Scaling modernization across the organization

## Form CCOE

~~Form Cloud Center of Excellence~~
Enablement

1

## Quick wins

Deliver strategic “light house” modernized workloads

2

## Leadership support

Establish clear vision and support from leadership

3

## Best practices

Build reusable patterns, reference architecture, and shared services

4

## Evangelize

Community building and enablement

5

## Reorganize

Decentralize CCOE function and federate across the organization

6

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# Forming the team

FOUNDING TEAM CHARACTERISTICS

- Experimentation-driven: able to learn from failures and iterate quickly
- Bold: not afraid to challenge the status quo
- Result-oriented: can take an idea from its ideation phase to successful implementation
- Customer focused: appreciates the impact of developer productivity and operational excellence
- Able to influence: can scale their skills through others



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# Quick wins

ESTABLISH "LIGHTHOUSE" MODERNIZED WORKLOAD

- High value: focus on relatively small but important project
- Representative: avoid "one-off" projects so results will resonate across the organization
- Measurable: use metrics to show measurable results of modernization outcomes

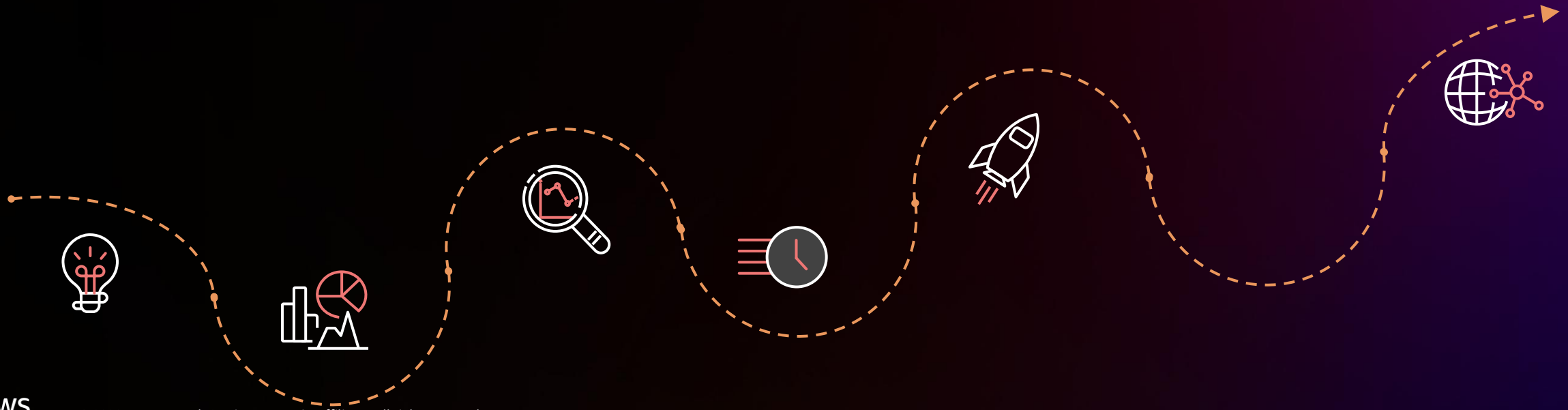


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# Discover and iterate with every pilot

- Leverage AWS Well-Architected Framework every step of the way
- Communicate your success via metrics
- Document lessons learned
- Standardize through reusable patterns
- Build a community and internal evangelists



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# Leadership support

KEY FOR ORGANIZATION SUCCESS

Define and communicate vision and business strategy

Be aggressive with goal setting and drive top down

Mandate the move to cloud-native architectures org wide

Be specific with all teams accountable



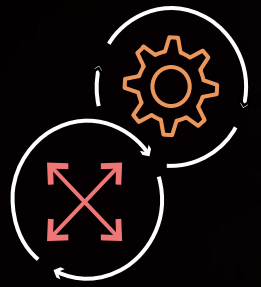
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# Establish operational principals and guardrails



Security best practices



Observability, monitoring, and logging



DevOps and CI/CD



Cost management strategy



Testing strategy



Community building



Architecture patterns

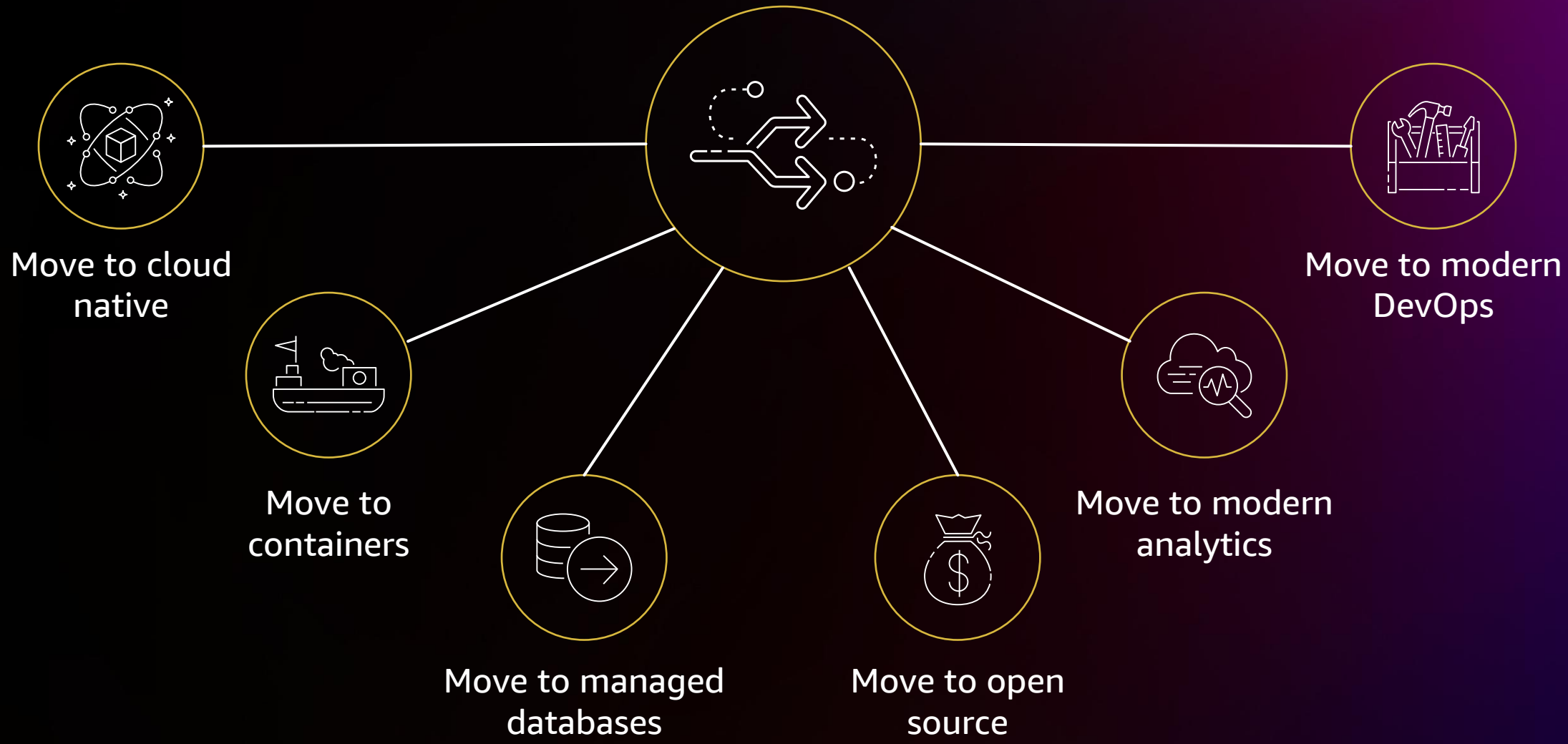


Database transformation

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# Streamline with modernization pathways




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# Baker Tilly: Achieving modernization at scale

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# bakertilly

**$1.3**
billion in revenue

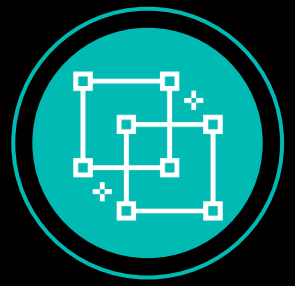
**6,500**
team members

**Top 9**
advisory CPA firm

**1,400+**
consulting professionals

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# Digital services



Transformation strategy



Cloud services



Data Solutions



Enterprise Solutions



Application services

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# Our challenge




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# Our modernization journey – The Great Stall




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# Our approach

## Experience-based acceleration as a foundation to accelerate and unblock adoption

EBA allowed us to get all the required stakeholders and experts together for 3 days, making decisions and proving out the concept … then actually migrating an application to AWS



**Sponsorship**

- Top-down target goal
- Clear timeframe
- Bring the right stakeholders together



**How work is accomplished**

- Identify the right cross-functional team
- Clear goals defined – start with a strategic workload
- Agile-based and iterative
- Two-way door decisions
- Hands-on
- Repeatable process



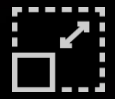
**Cloud outcomes**

- Deployed modernized workloads
- Critical path items for cloud
- Prove out scalability

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# Organizational outcomes … positive change post EBA



**Momentum**

Scaling – planning for the migration of the remaining applications



**Continued learning**

Kept learning and modernizing – things we had created in the EBA via CloudFormation had to be refactored



**Future thinking**

Rethinking how we architect future applications based on the new culture of modernization



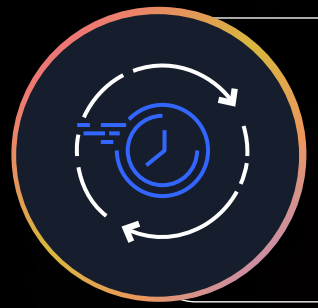
**Organizational changes**

Creation of a specific modernization pillar in our centralized CCoE – their goal being purely to own the modernization effort and evangelize the value across the firm

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# Success we have achieved



## Speed & agility

Over **90x** faster in time to scale

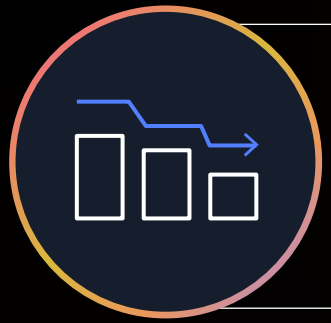
Ability **to rapidly prototype** innovative solutions over **20x faster**



## Security & operational resilience

**Reduced security risk** through serverless design and native AWS tools

Implemented **modern DevOps** processes



## Costs

**Eradicated** time required for server management

Reduced operational costs by at least **50%**

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# Thank you!

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