

AWS re:Invent

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ARC210

The Well-Architected way

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**“Everything fails all the time,
so plan for failure and
nothing fails”**

Dr. Werner Vogels

CTO, Amazon.com



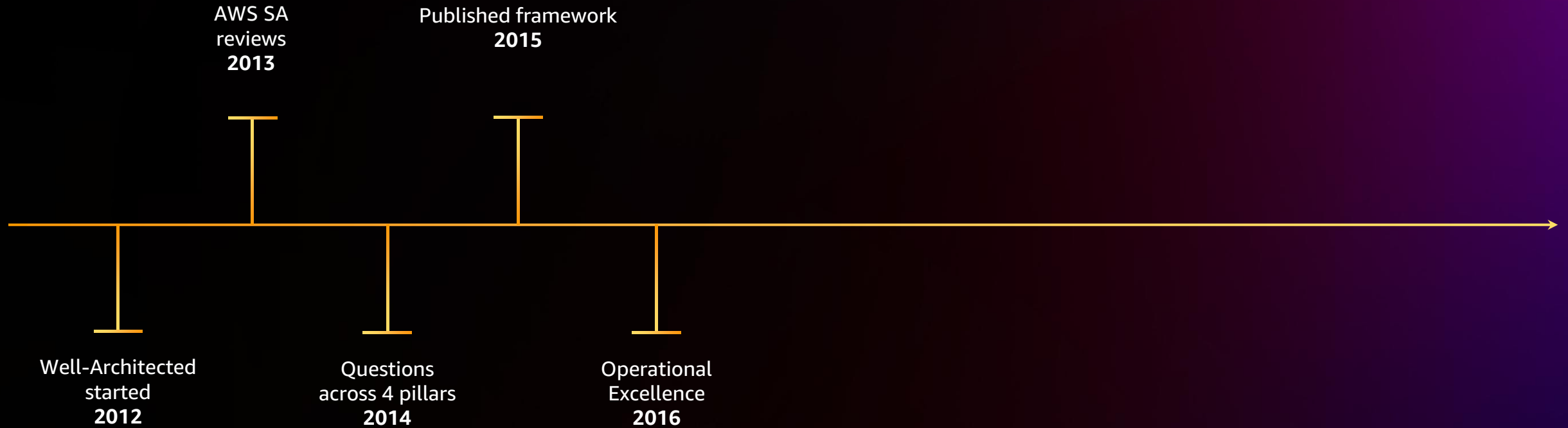
Overview of AWS Well-Architected (AWS WA)

When you look at the workloads
your team is building,
can you answer the question:

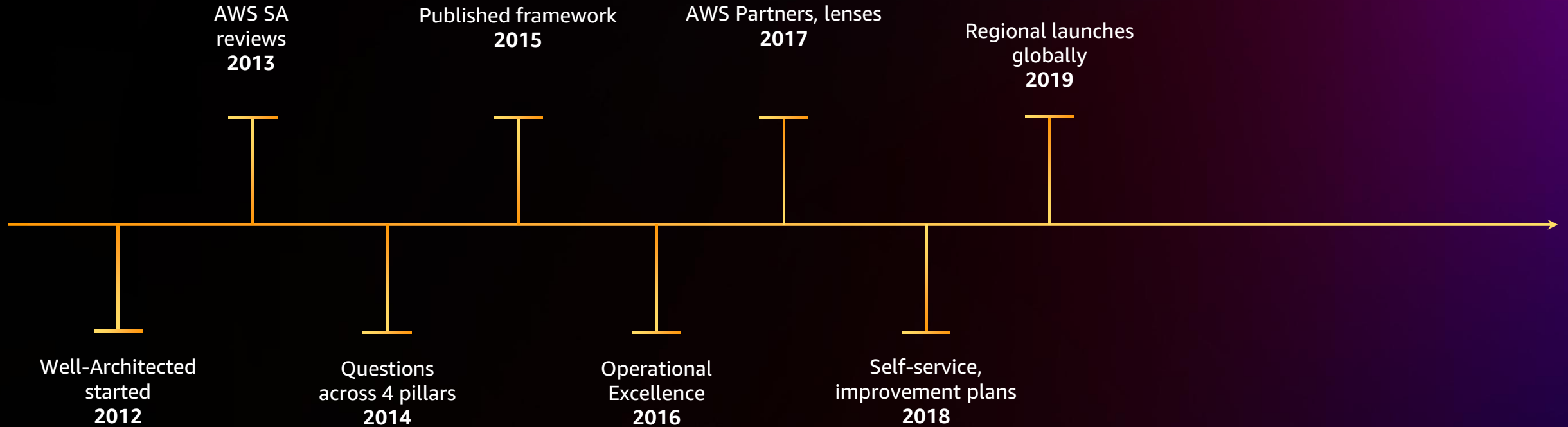
“Are you Well-Architected?”



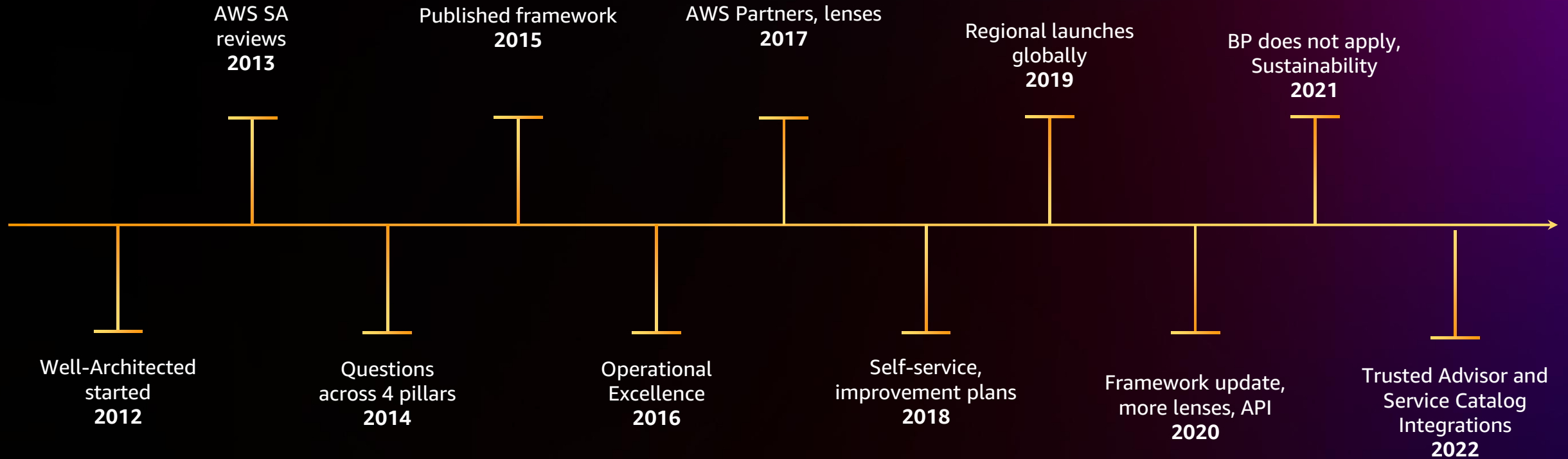
A brief history of AWS WA



A brief history of AWS WA



A brief history of AWS WA



What is the AWS WA Framework?



Pillars and lenses



Design principles

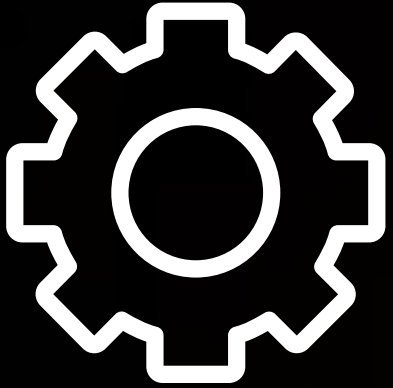


Questions



Best practices

What is the value of the Well-Architected Tool?



Implement continuous improvement for your workloads and architectures

What is the value of the Well-Architected Tool?



Identify risks

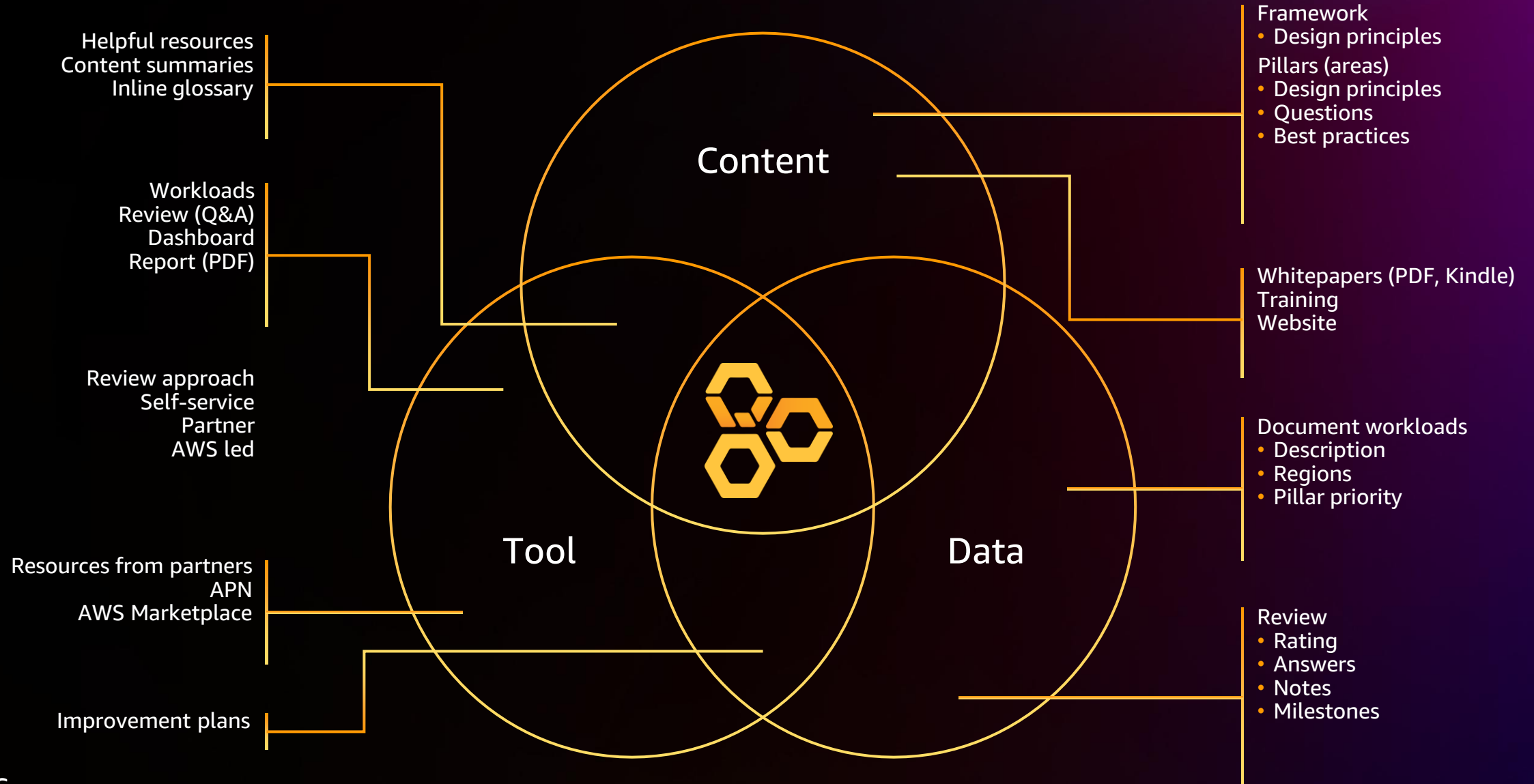


Document decisions
and trade-offs



Improve
workload health

What is AWS WA?



**“Good intentions never work,
you need good mechanisms
to make anything happen”**

Jeff Bezos

Founder, Executive Chairman Amazon.com



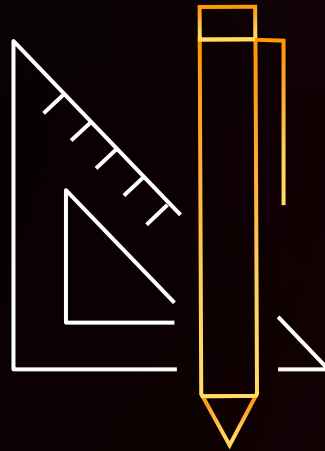
How can I implement AWS Well-Architected for my organization?



How to use the AWS WA Framework



Learn



Measure



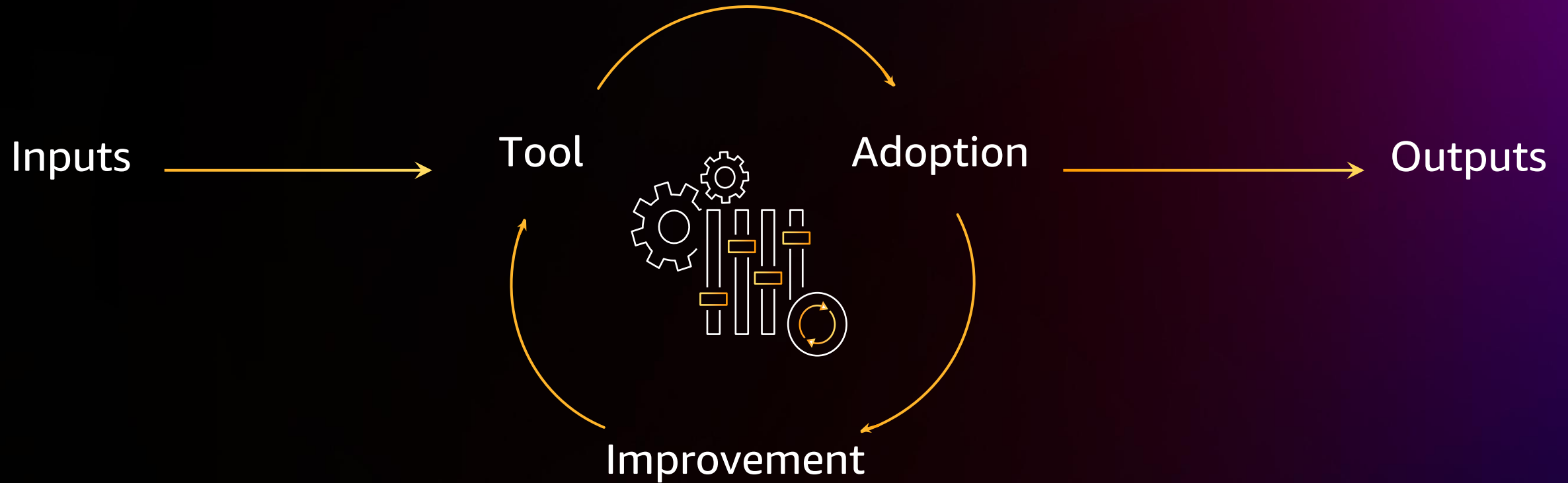
Improve

AWS WA hierarchy



AWS Well-Architected way

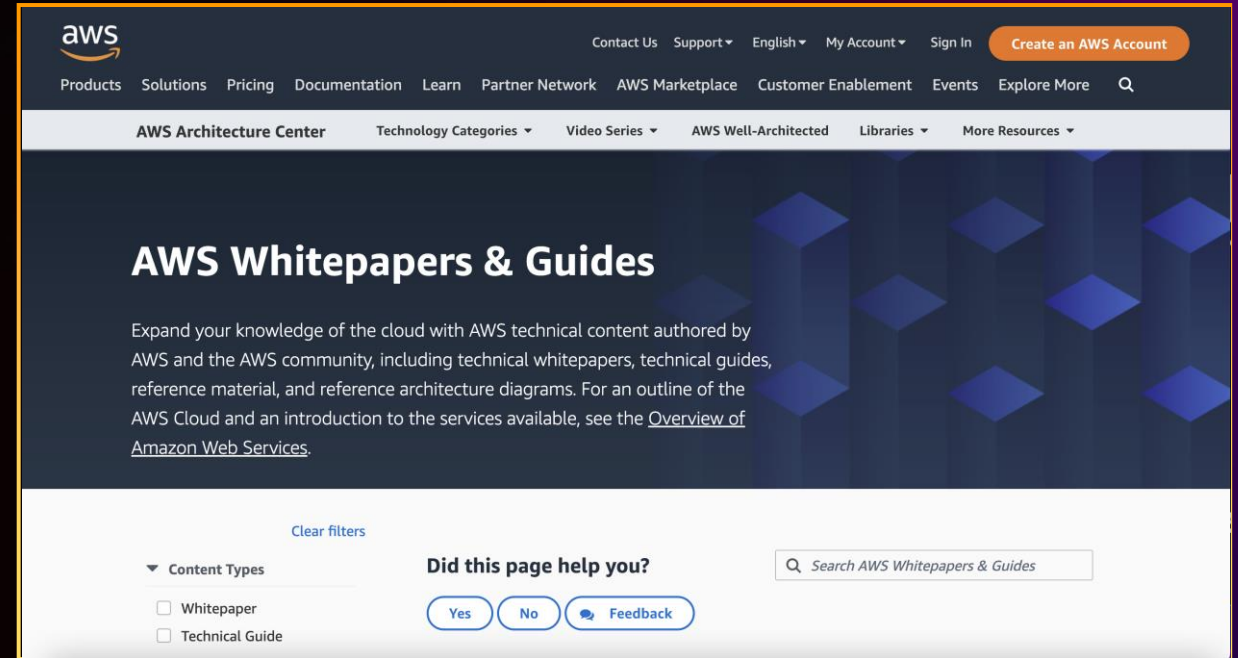
THE COMPLETE PROCESS OF A MECHANISM



Inputs overview

AWS WELL-ARCHITECTED WAY

- ✓ Align prioritization to determine what matters to your organization
- ✓ Identify internal and external customer needs
- ✓ Reference Well-Architected whitepapers



Tools overview

AWS WELL-ARCHITECTED WAY

- ✓ AWS Console
- ✓ APIs
- ✓ Workload definition
- ✓ Document your decisions
- ✓ Consistency across workloads

Management Tools

AWS Well-Architected Tool

Learn, measure, and build using architectural best practices

The AWS Well-Architected Tool helps you review your workloads against current AWS best practices and provides guidance on how to improve your cloud architectures. This tool is based on the AWS Well-Architected Framework.

Define a workload

Define a workload based on one of your existing cloud applications.

[Define workload](#)

Pricing (US)

Any usage Free

Getting started

[What is the AWS Well-Architected Tool?](#)

[Getting started video](#)

More resources

[FAQ](#)

[AWS Well-Architected Partners](#)

How it works

```
graph LR; A[Identify the workload to review  
Then answer a series of questions about your architecture] --> B[AWS Well-Architected Tool  
Review your answers against the five pillars established by the Well-Architected Framework]; B --> C[Operational excellence  
Security  
Reliability  
Performance efficiency  
Cost optimization  
Pillars]; C --> D[Get videos and documentation related to AWS best practices]; C --> E[Generate a report that summarizes your workload review]; D --> F[View the results of workload reviews across your organization in a single dashboard]; E --> F;
```

Adoption overview

AWS WELL-ARCHITECTED WAY

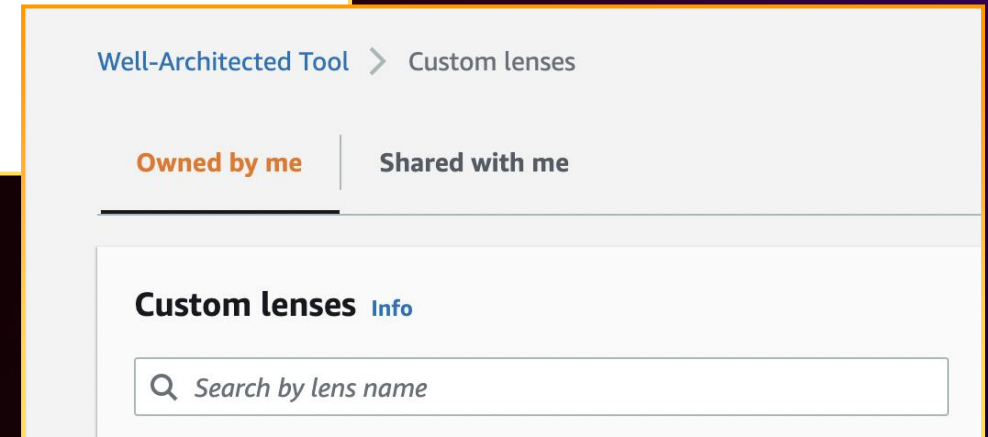
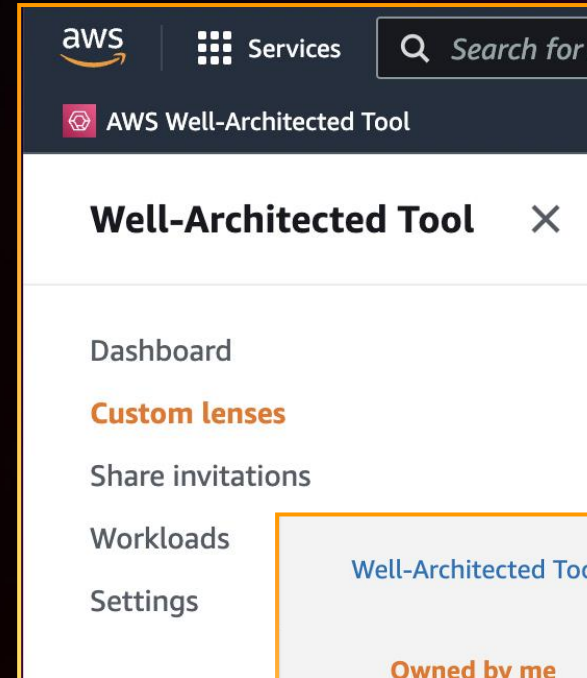
- ✓ Determine a phased approach to scale reviews
- ✓ Tailor the guidance using custom lenses
- ✓ Collaborate across teams
- ✓ AWS Organizations



Adoption overview: Custom lenses

AWS WELL-ARCHITECTED WAY

- ✓ Tailor the guidance using custom lenses
- ✓ Collaborate across teams and share lenses
- ✓ Use tags to a lens



Adoption overview: AWS Organizations

AWS WELL-ARCHITECTED WAY

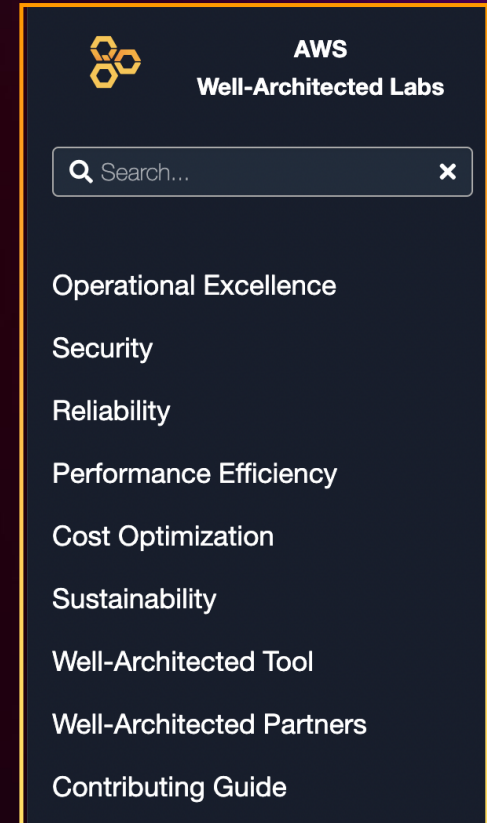
- ✓ Develop shared understanding of your workloads
- ✓ Evaluate internal and external customer needs
- ✓ Review and optimize priorities



Adoption overview: AWS WA Labs

AWS WELL-ARCHITECTED WAY

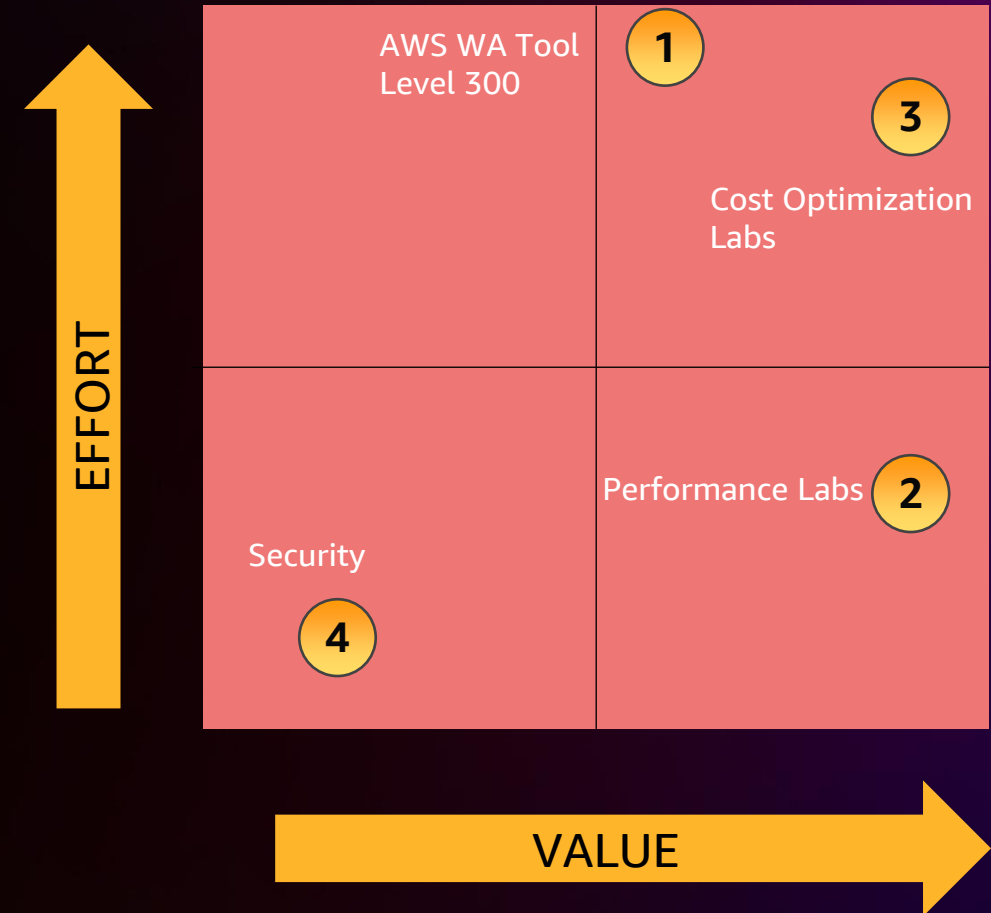
- ✓ Understand best practices across the six pillars of the AWS WA Framework
- ✓ Learn how to build secure, high-performing, resilient, and efficient architectures
- ✓ Gain guidance to help implement designs that will scale with your application needs



Adoption overview: AWS WA Labs

AWS WELL-ARCHITECTED WAY

- ✓ Understand best practices across the six pillars of the AWS WA Framework
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Improvement overview

AWS WELL-ARCHITECTED WAY

- ✓ Develop and use improvement plans
- ✓ Build a mechanism to prioritize and track progress
- ✓ Integrate with ticketing systems
- ✓ Better risk management
- ✓ Review tool generated reports

The screenshot shows the 'Improvement plan overview' page in the AWS Well-Architected Tool. The breadcrumb trail at the top reads: 'Well-Architected Tool > Workloads > Retail Website - North America > AWS Well-Architected Framework Lens'. The page title is 'AWS Well-Architected Framework Lens'. Below the title are two tabs: 'Overview' and 'Improvement plan', with the latter being the active tab. The main content area is titled 'Improvement plan overview'. Under the 'Risks' section, there is a table showing the count of risks by level:

Risks	Count
⊗ High risk	3
⚠ Medium risk	1

At the bottom of the page, there is a section titled 'Improvement items' with a pagination control showing '< 1 >'.

Outputs overview

AWS WELL-ARCHITECTED WAY

- ✓ De facto standard to measure and improve workloads
- ✓ Adherence to recommended guidance from AWS
- ✓ Better workload and organizational health
- ✓ Cost Optimization

Resources				
1				
Total workload reviews	6			
With high risks	3			
With medium risks	4			

Workload reviews				
2				
Filter by risk				
	Name	High risks	Medium risks	Last updated
<input type="radio"/>	Internal Employee Portal	3	8	Jun 5, 2019 1:09 PM UTC-7
<input type="radio"/>	Mobile app - Android	0	1	Jun 4, 2019 1:38 PM UTC-7
<input type="radio"/>	Mobile App - iOS	0	0	Jun 4, 2019 1:41 PM UTC-7
<input type="radio"/>	Prototype replacement website	0	0	Jun 4, 2019 1:42 PM UTC-7
<input type="radio"/>	Retail Website - EU	13	18	Jun 4, 2019 1:31 PM UTC-7
<input checked="" type="radio"/>	Retail Website - North America	1	3	Jun 5, 2019 1:24 PM UTC-7

Milestones (Retail Website - North America)				
3				
	Name	Milestone status	High risks	Medium risks
	Version 1.0 - initial review	☑ Answered	1	3
				Date saved
				Jun 5, 2019 1:24 PM UTC-7

Introducing Trusted Advisor/Service Catalog

NEW

What's new with
AWS Well-Architected



<https://go.aws/3bbrv8d>



Trusted Advisor Integration



Service Catalog Integration

Liberty Mutual Insurance: A Well-Architected Journey

Matthew Dorrian (he/him)

Senior Solution Architect
Liberty Mutual Insurance
AWS Community Builder

Alison Bridger (she/her)

Solutions Architect
Liberty Mutual Insurance



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About Liberty Mutual Insurance



Our purpose: We exist to help people embrace today and confidently pursue tomorrow.

Our promise: We promise protection for the unexpected, delivered with care.



\$48.2 billion
annual consolidated
revenue
#78 on Fortune
100 List



Nearly
45,000
employees



29 countries &
economies
globally

6th

largest global
P&C insurer



4,000+
technology
employees

Well-Architected for the Enterprise

Gather momentum

Enterprise wide imperative focused on WA enablement & adoption

Representatives throughout the org

Dedicated time & effort

Engage the audience

Centralized guidance/support focused on ease of onboarding & discoverability

Supplemented with enterprise LM context

Woven into definition of Engineering Excellence

Capture maturity metrics

Measure our progress towards best practices

Visibility into lens, usage, risk categories

Learnings led to tailored education & enriched enterprise resources

Iterate & learn

Incremental pillar by pillar roll out

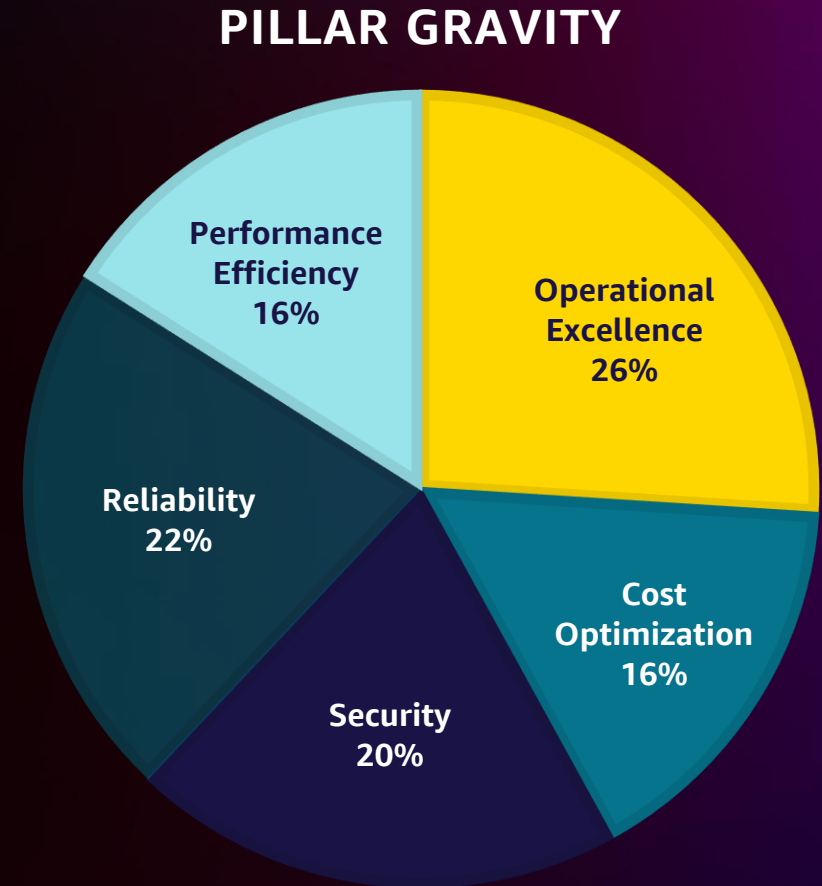
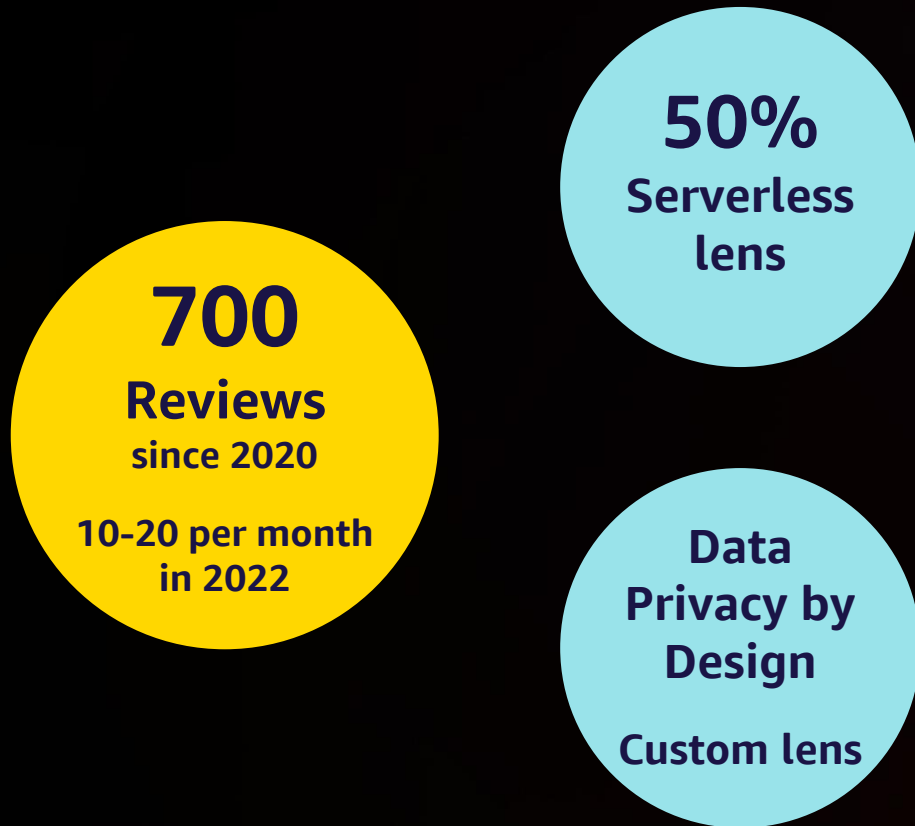
Faster feedback cycles influences LM WA roadmap



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Insights & metrics so far



Well-Architected for the Team

Enterprise Materials and Docs

Provide link between AWS Well-Architected best practices and Liberty enterprise efforts and guidelines

Helps educate engineers ahead of the review

Conversation over Checkboxes

Encourage engagement over participation

Conversations help engineers identify improvement opportunities

Engineer Participation

All squad engineers included in the review

Team members encourage engagement from their peers

Everyone plays a part

Inclusion of non-engineers

Best practices require engagement from non-engineering job families, e.g., Scrum Master and Product Owner



McDonalds: Failure Mode Analysis using AWS WAR Custom Lenses

Vamshi Komuravalli

Principal Architect, Digital Architecture
McDonald's Corporation



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We are the World's Largest Restaurant Company...



40K
Restaurants



2.2M
People Working for McDonald's
and Franchisees



100+
Countries



65M+
Customers served every
day

Served Every Day

A solid architectural foundation is required to work with the complexities introduced by our scale and highly franchised business model.

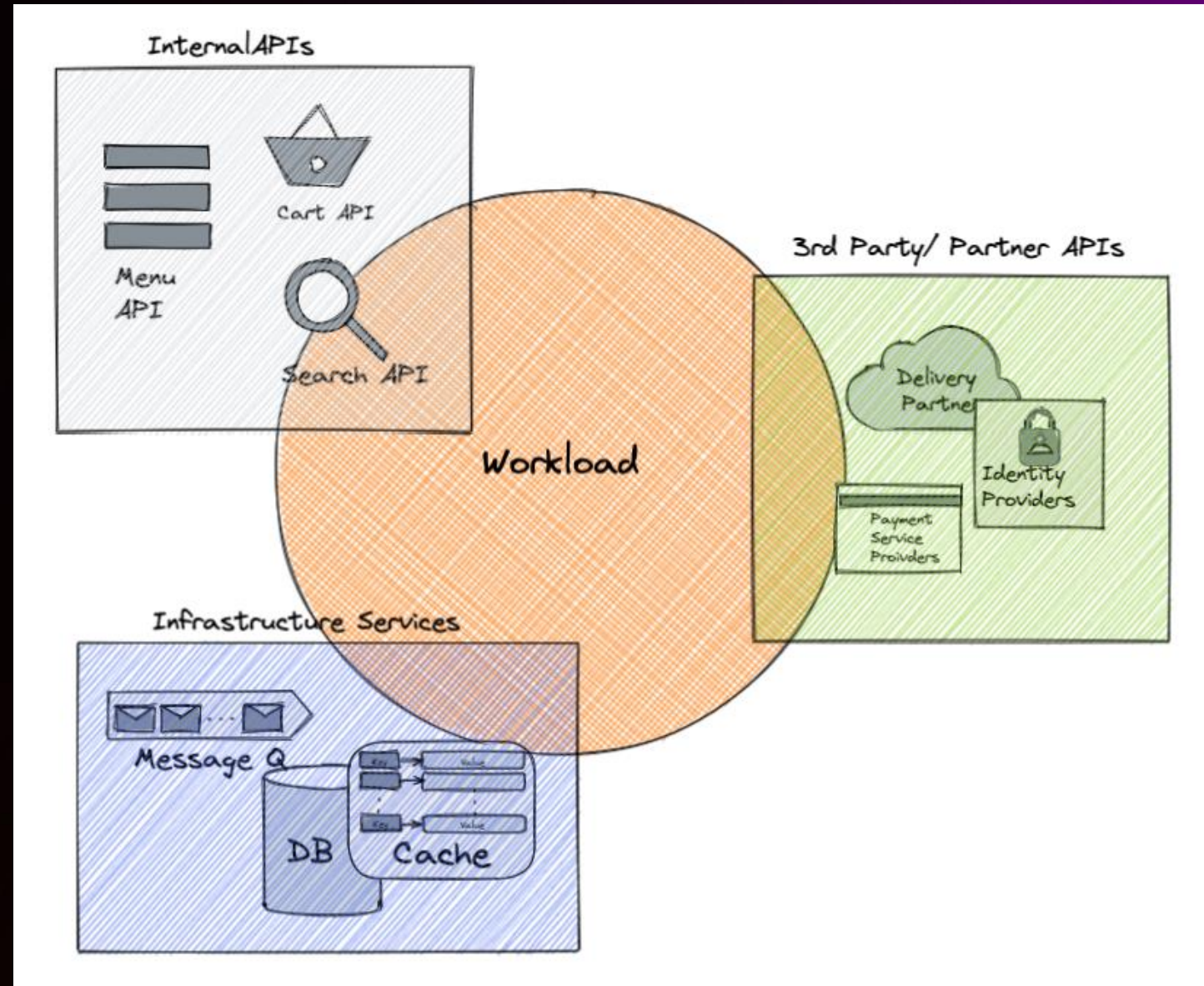


What is Failure Mode Analysis?

Key idea of this process is to improve resiliency of a system by identifying possible failure points & building recovery mechanisms to be resilient to these failures.

What causes a workload to fail?

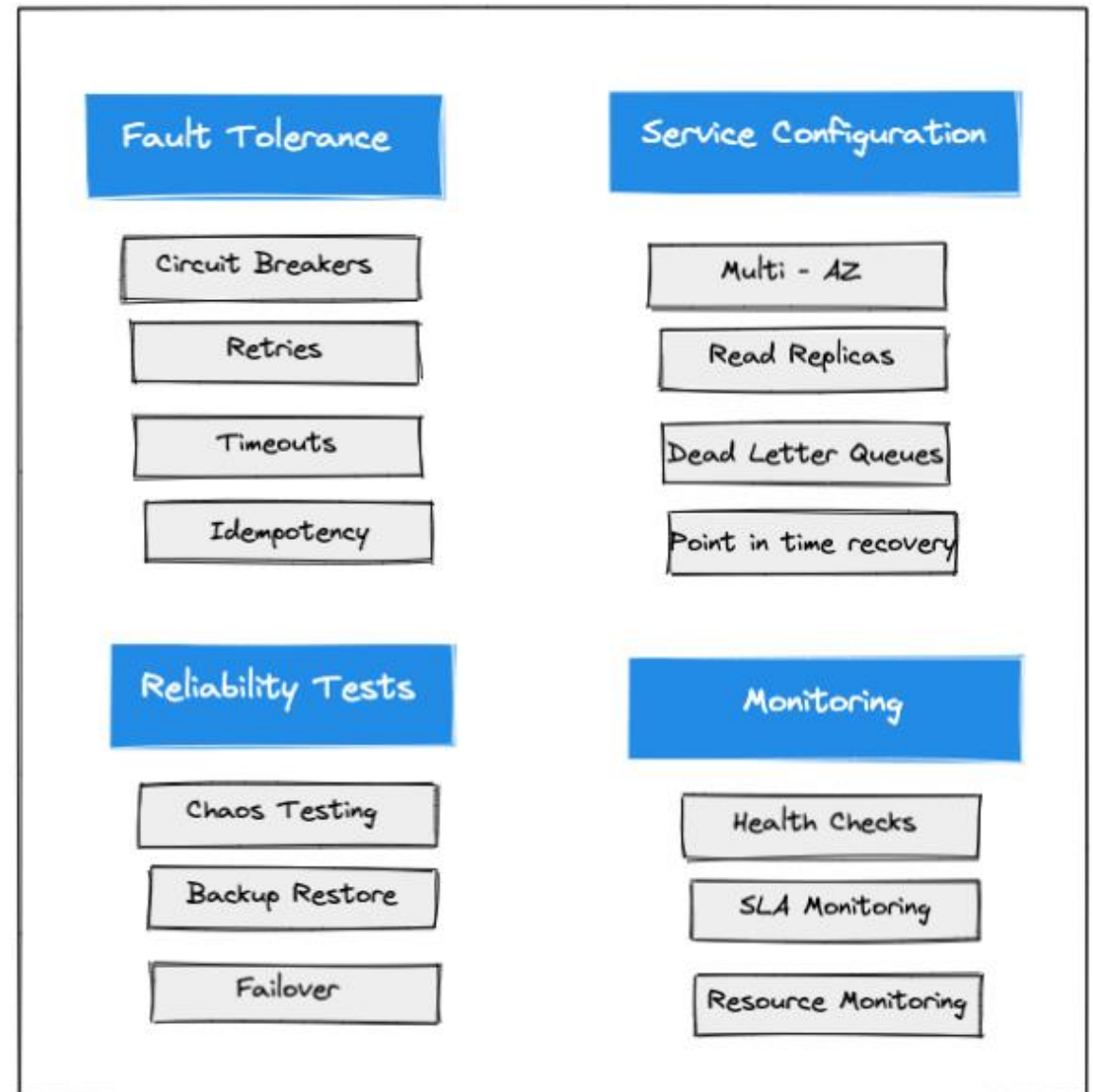
What is the business impact of the failure?





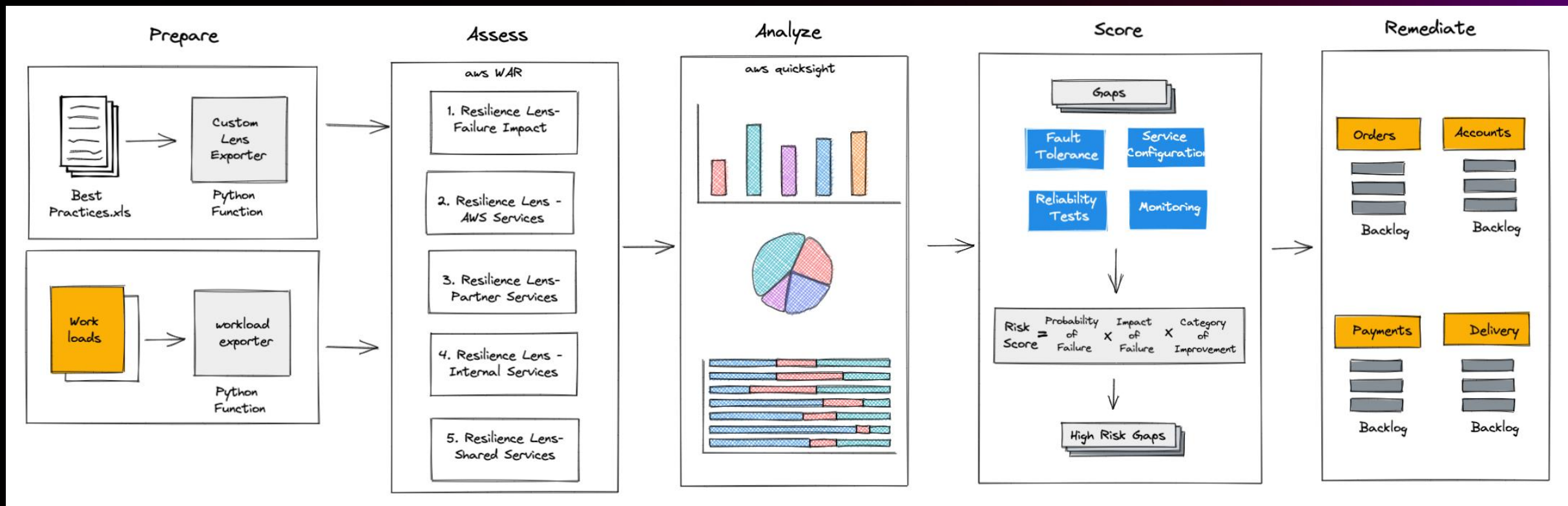
How do we make the workload resilient to failures?

Identify improvement opportunities in implementation of resilience best practices across the workloads.





Multi-Step Approach for Analysis & Remediation



Example Custom Lenses & Results



MCD Resilience Lens - AWS Services

[Add a link to your architectural design](#)

1. DynamoDB [Info](#)

Is DynamoDB configured using resilience

☐ Question does not apply to this work

Select from the following

☐ DynamoDB tables have regularly sche
[Info](#)

☐ DynamoDB tables are enabled for con

☐ Configured to use 'Eventually consiste

☐ The workload is resilient to DynamoD

☐ Workload monitors DynamoDB service

☐ Workload's reliability testing includes

☐ Workload's reliability testing includes

☐ DynamoDB is a weak dependency for

☐ DynamoDB DAX configured as multi-a

MCD Resilience Lens - AWS Services

[Add a link to your architectural design](#)

[?](#) Question has updated lens content

X

6. AWS MSK [Info](#)

Save and exit

Is AWS MSK configured using resilience best practices? Is your workload resilient to MSK service failures?

☐ Question does not apply to this workload [Info](#)

Select from the following

☐ Client connection strings include multiple brokers. [Info](#)

☐ Retention time period per topic is reviewed and adjusted [Info](#)

☐ Retention log size per topic is reviewed and adjusted [Info](#)

☐ Replication factor (RF) is set at least 2 for two-AZ clusters and set at lea

☐ Minimum in-sync replicas (minISR) are set to at most (RF - 1). [Info](#)

☐ Consumer lag metrics are monitored and alerted on [Info](#)

☐ Reliability testing includes AZ outage scenario [Info](#)

☐ Retry topic & dead letter table are setup to avoid data loss while producing

☐ Schemas fetched from schema registry are cached within the producer & consumer [Info](#)

☐ Reliability testing includes schema registry outage & high response time scenario [Info](#)

☐ Reliability testing includes throttling scenarios against MSK and schema registry [Info](#)

Workload Business Impact



Resilience & Fault tolerance Best Practices



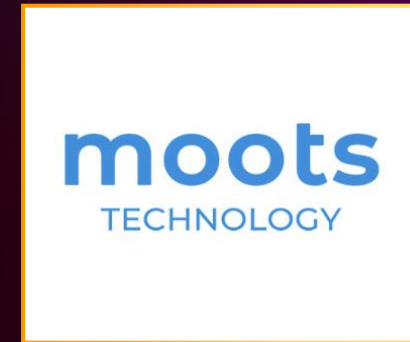
AWS WA customer impact



- Reduced AWS costs by 30%
- Reduced mean time to fix misconfigurations by 50%
- Identified and quickly remedied security vulnerabilities and cost inefficiencies
- Assisted with regulatory compliance requirements
- Provided a high level of transparency

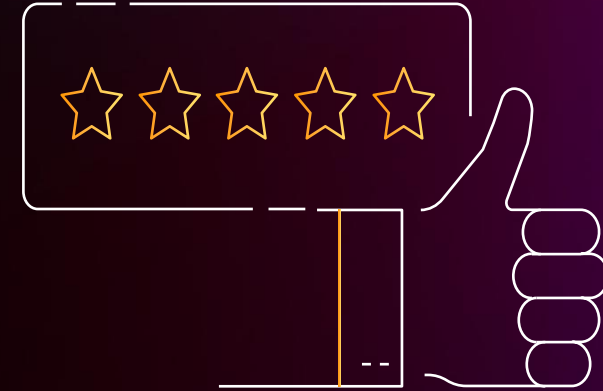


- Secured internal investment to help reduce risk
- Focused time on work that drives investment and improvement
- Consolidated workloads and clarified best practices across 350 engineering teams
- Reduced risk and increased security across its workloads



- Reduced high-risk issues by 25 percentage points
- Reduced medium-risk issues by 27 percentage points
- Reduced dependency on client-side server maintenance
- Improved internal processes for future growth
- Mitigated critical hardware failure risks

Customer benefits: AWS Well-Architected Partner



- ✓ Avoid costly architectural misses
- ✓ Better visibility of architectural risks
- ✓ Higher quality architectural guidance
- ✓ Improve architectural outcomes
- ✓ Access to AWS service credits
- ✓ Better ROI

- ✓ Improve decision making
- ✓ Access to AWS Well-Architected experts
- ✓ improve vendor SAT
- ✓ Innovate faster
- ✓ Alignment

Learn more:



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When you look at the
workloads your team is building,
can you answer the question:

“Are you Well-Architected?”

Questions?



Thank you!



Please complete the session survey in the **mobile app**

