

Education and NPO AWS Data Analytics and MLOps Luncheon

Hosted by Silicon Overdrive and AWS



About Silicon Overdrive

Gareth Bowers



About Silicon Overdrive

Founded in 1995, Silicon Overdrive has over 25 years of experience as a leading IT Managed Services business.

Silicon Overdrive has significant experience and expertise in helping customers migrate, secure, optimise, and manage their AWS infrastructure, as well as achieve and maintain security and compliance, including POPIA, GDPR, PCI DSS, ISO 27001, and HIPAA.

We have been awarded the AWS Public Sector Partner of the Year – Sub-Saharan Africa 2021 and AWS Consulting Partner of the Year – Sub-Saharan Africa 2020.



AWS Partnership

We are an AWS Advanced Consulting Partner, AWS DevOps Services Competency Partner, AWS Education Services Competency Partner, AWS Solution Provider Partner, AWS Public Sector Partner, and AWS Immersion Day Partner.

We are also an AWS Well-Architected Partner and an Amazon EC2 for Windows Server Delivery Partner.



- Public Sector
- Immersion Day
- Solution Provider
- DevOps Services Competency

- Education Services Competency
- Well-Architected Partner Program
- Amazon EC2 for Windows Server Delivery



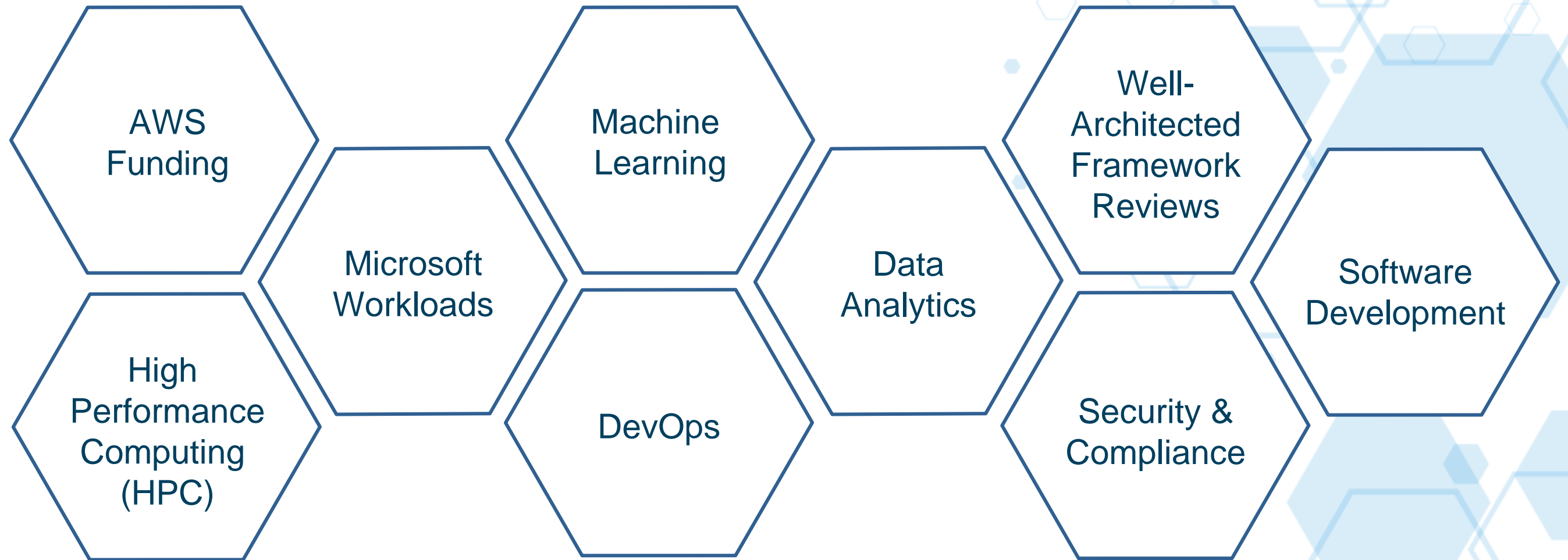
AWS Partnership

Our team has 100+ AWS certifications including:

- AWS DevOps Engineer Professional
- AWS Solutions Architect Professional
- Security Specialty
- Machine Learning Specialty
- SysOps Administrator
- Developer and Solutions Architect Associate certifications



Our AWS Offerings



AWS Modernization Journey

Gareth Bowers

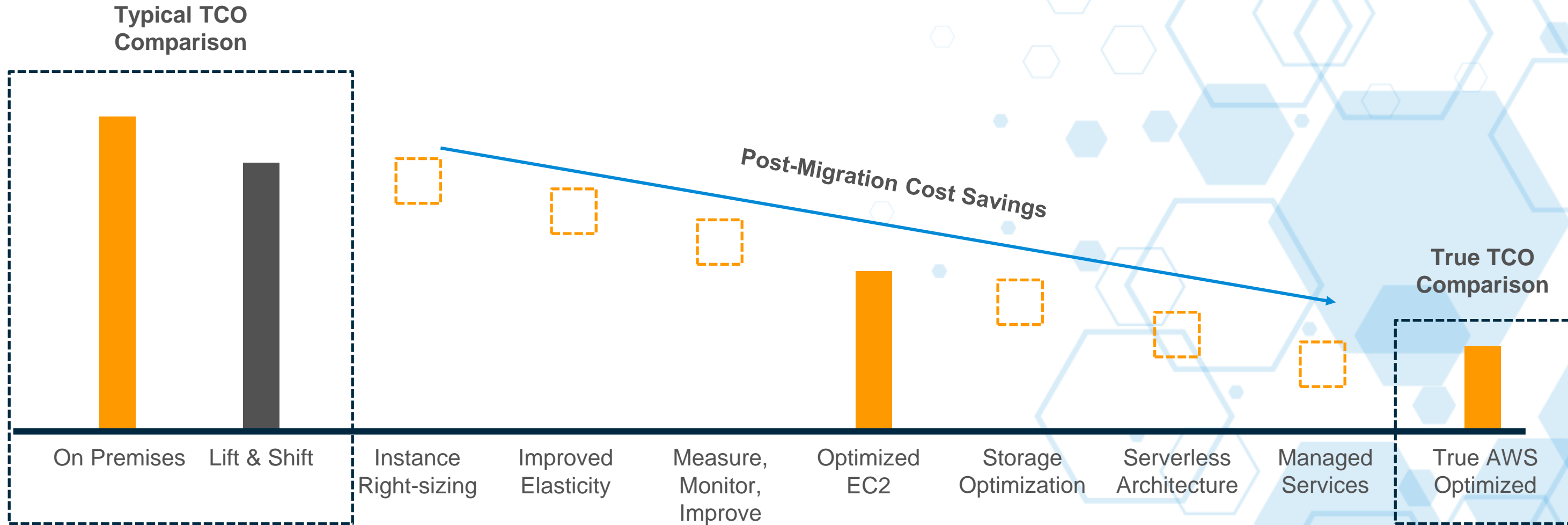


What is modernization?

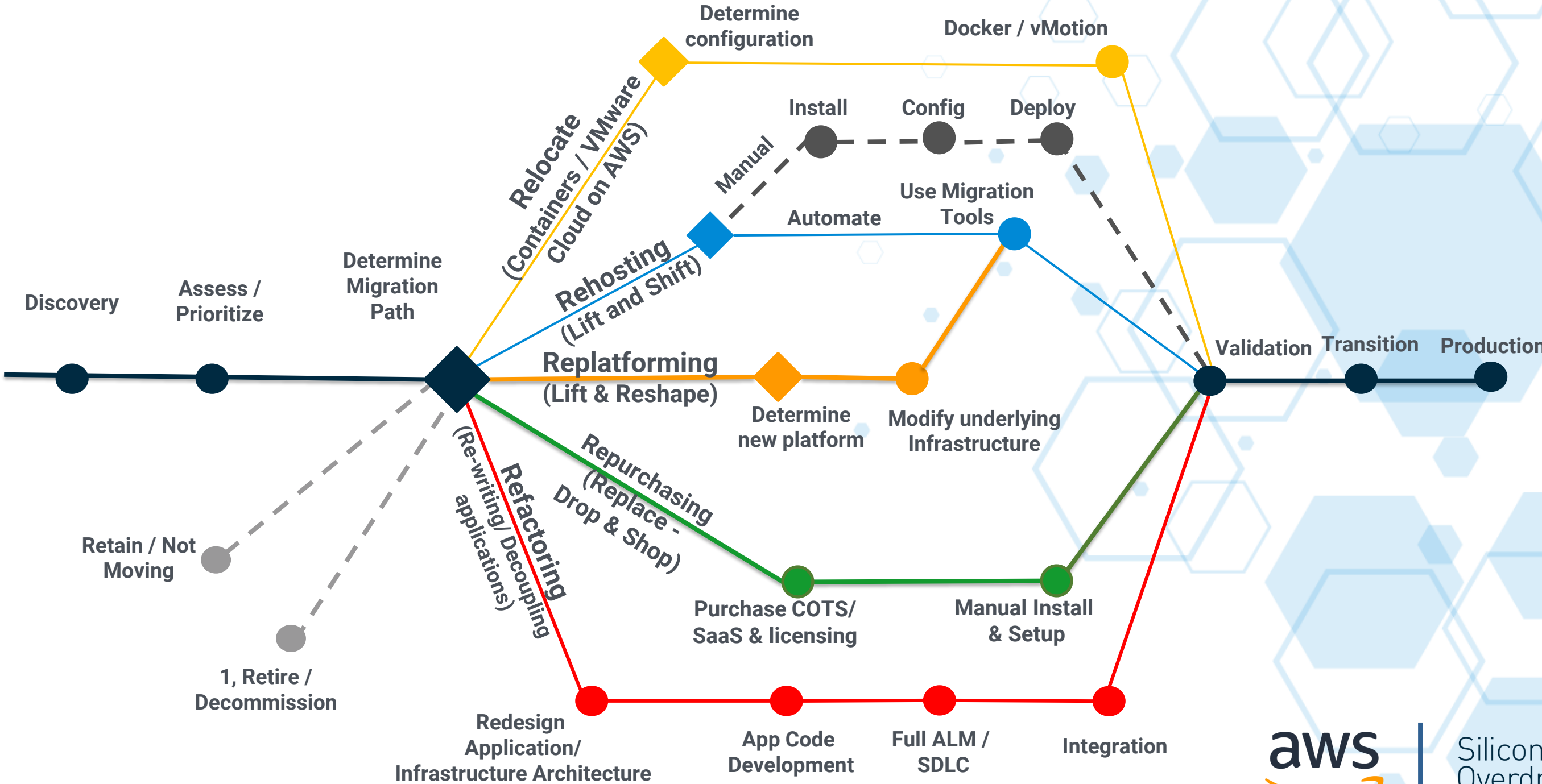
Modernization is the process of progressively transforming existing applications and infrastructure to extend into higher-value, cloud-native services that unlock new business capabilities, accelerate innovation, and reduce technical debt.



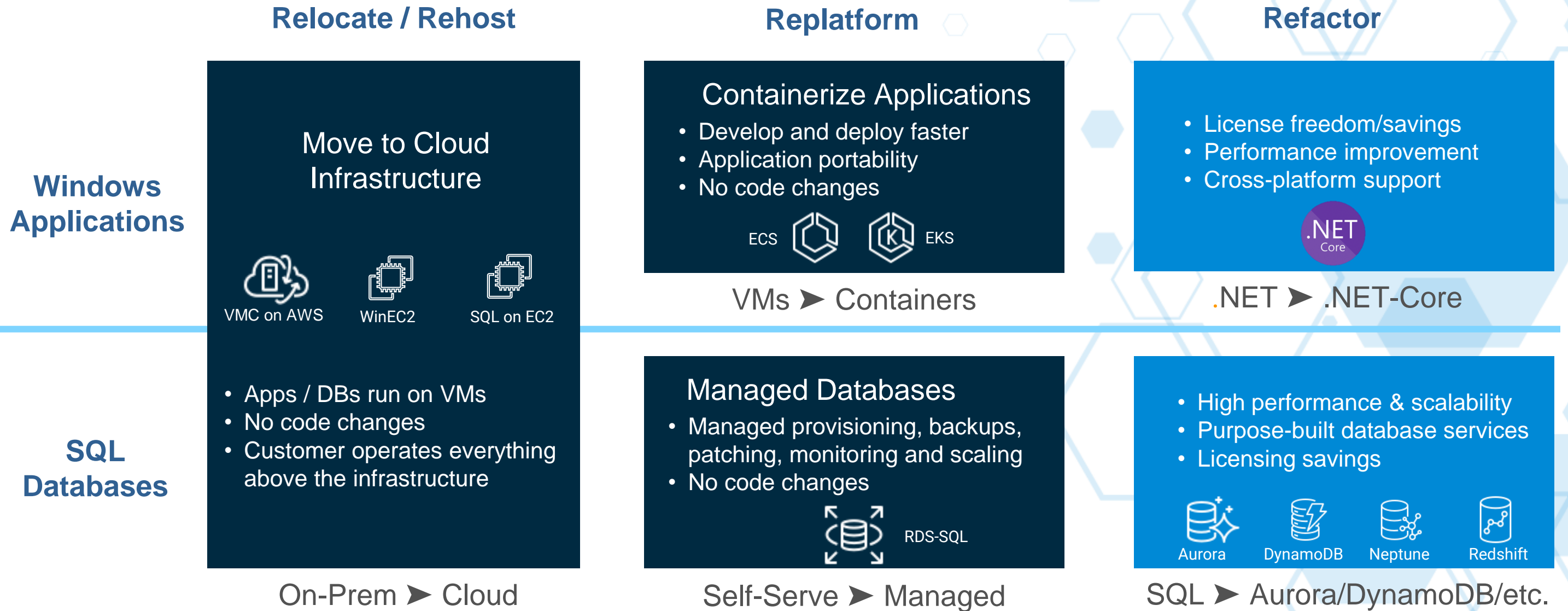
Helping You Accelerate Your Business Outcomes



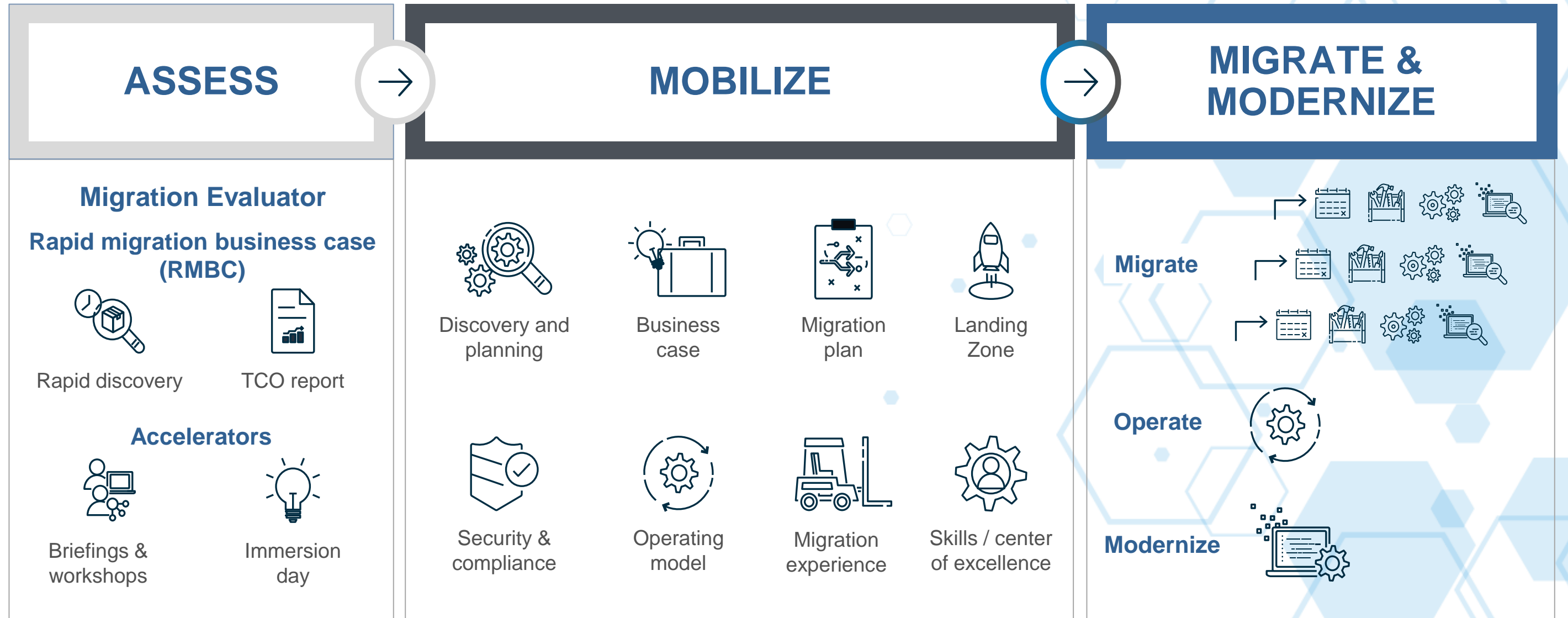
Definition of Migration and Modernization



Example: Modernizing Legacy Windows Applications



Migration and Modernization Customer Journey



DISCOVERY AND ASSESSMENT

BUILD MOMENTUM AND GAIN EXPERIENCE

ACCELERATE, SCALE MODERNIZE



Best Practices for Migration Project Delivery

When managing and delivering any project, we focus on delivering a best practices approach. This entails:

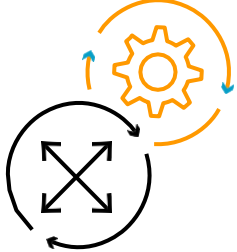
- Ensuring a strong alignment with customers' executive team
- Timelines assigned for deliverables (Silicon/Customer/Dev Teams)
- Set outcome-focused goals
- Providing easy tracking of project goals and outcomes
- Keeping all collaborators aligned
- Risk register highlighting potential blockers or delays, such as expiry of funding or software dependencies
- Implementation of best-practice security, guardrails and budget alerts
- Regular check-ins against business success metrics




AWS Well-Architected Framework Review

The Framework provides a consistent approach to evaluate your workloads against AWS best practices and help build secure, high-performing, resilient, scalable, and efficient infrastructures for your applications and workloads.

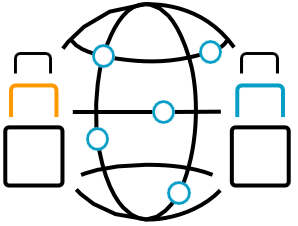
The Well-Architected Framework is based on six pillars:



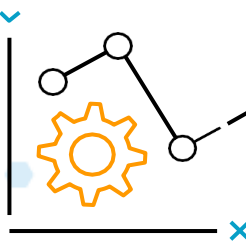
Operational Excellence




Security



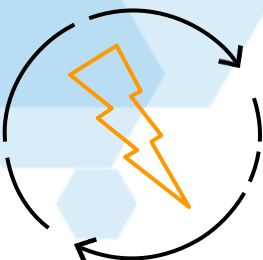
Reliability



Performance Efficiency



Cost Optimization



Sustainability

Why Use the AWS Well-Architected Framework Review

The Well-Architected Framework identifies a set of general design principles to facilitate good design in the cloud:

- Stop guessing your capacity needs.
- Test systems at production scale.
- Automate to make architectural experimentation easier.
- Allow for evolutionary architectures.
- Drive architectures using data.
- Improve through game days.

AWS will provide customers with \$5000 in AWS Usage Credits when they leverage an approved AWS Well-Architected Partner like Silicon Overdrive to improve a workload.



MLOps

Gareth Bowers



What is MLOps?

MLOps is the production of Machine Learning models.

It is the DevOps for Machine Learning, it entails building out the infrastructure services to support Machine Learning in AWS Cloud, including deploying Infrastructure as Code (IaC) using version control, CI/CD Pipeline and ML Pipelines.



Why should you use MLOps?

- Transform your business at scale
- MLOps accounts for the unique aspects of AI/ML projects
- MLOps refers to a methodology that is built on applying DevOps practices to machine learning workloads
- Like DevOps, MLOps relies on a collaborative and streamlined approach to the machine learning development lifecycle
- MLOps is the discipline of integrating ML workloads into release management, CI/CD, and operations



Benefits of MLOps

Adopting MLOps practices gives you faster time-to-market for ML projects by delivering the following benefits.

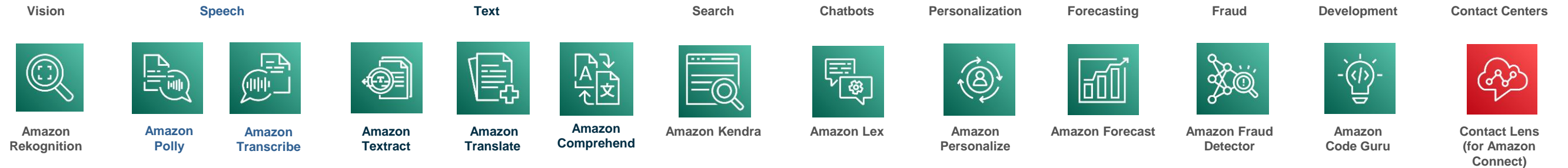
- Productivity
- Repeatability
- Reliability
- Auditability
- Data and model quality



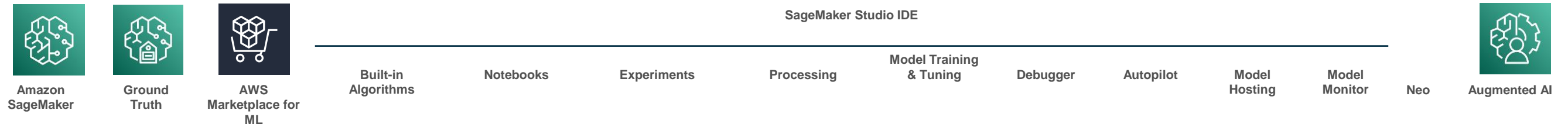
AWS ML Service Offerings

Broadest and most complete set of Machine Learning capabilities

AI Services



Machine Learning Services



Machine Learning Frameworks and Infrastructure



Case Studies

Gareth Bowers



Education Client

About the Client: The client is dedicated to transforming the lives of children living in urban poverty through improved education, health and family economic stability.

The Challenge: Their current solution incorporates an on-prem environment to ingest, transform and present data to stakeholders. The on-prem environment was causing bottlenecks, with the nightly ELT taking over 8 hours to complete. This created hesitancy to scale the operation and add more data sources to the ELT as it would no longer complete the process over night.

Increasing the resources of the on-prem environment improved the situation by reducing the time to complete, but realised that this would not be a viable or scalable long-term solution. It also resulted in expensive hardware only being used for a small portion of the day / week.



Education Client

The Solution: The client commissioned Silicon Overdrive to architect and build a high-performance, fully scalable POC environment that demonstrated how AWS could manage their platform and the 10TB+ of learner and educator data.

The environment was architected using Amazon EC2 for the ELT, Aurora Data Staging, Aurora Data Warehouse and an Amazon Redshift Data Mart.

The Outcome: Silicon Overdrive delivered a POC environment that is fully scalable and demonstrated the ingestion of data to the Staging Database, copying and transforming the data from the Data Warehouse to the Data Mart, and the Analysis and Visualisation of the aggregated data in Amazon QuickSight linked to role defined user types.



University of the Witwatersrand - Sakai Migration

About the Client: The University of the Witwatersrand (Wits) is a multi-campus South African public research university situated in the northern areas of central Johannesburg.

The Challenge: Wits had an urgent requirement to move their Sakai Learning Management System (LMS) from their on-premise servers to the cloud due to the COVID-19 lockdown and to ensure availability, security and compliance.

After experiencing an outage on their on-premise Sakai environment at peak demand, the University started exploring cloud solutions to ensure the availability of their LMS to their students and faculty.



University of the Witwatersrand - Sakai Migration

The Solution: The Silicon Overdrive team worked closely with the Wits and AWS Public Sector teams to architect and implement a secure, fault-tolerant and highly-available solution.

The Outcome: WITS achieved a highly available solution, ensuring that WITS students and staff have uninterrupted access to the Sakai LMS.

- Migrated by team in under one month.
- No downtime since the LMS went live.
- Zero-rated data charges to save student costs



The eAr Academy

About the Client: The eAr Academy is a fully digital, online music education platform offering curriculum-based courses.

The Challenge: The solution involved a custom LMS (Learning Management System) to be built that would meet their specific requirements and subscription model. In addition, they needed a highly available, resilient, secure, compliant and scalable solution to meet their specific requirements for video consumption, subscription model and payment gateways.



The eAr Academy

The Solution: Using the principles of the Well-Architected Framework, our team architected a best-practice, secure and compliant solution that is highly available and scalable.

The Outcome: Our team developed and deployed the custom LMS platform faster than what would have been traditionally possible. Application enhancements can be deployed rapidly and risk-free to ensure the availability of the service for the students. Very high POPIA and GDPR compliance scores were achieved, ensuring the students' information security.

By leveraging the best-practice architectures and AWS managed services, The eAr is able to seamlessly scale to meet the rapid uptake of new students on the platform.



AWS Funding

Ross Davie



We Can Assist Your Team

Architect a secure, highly available and scalable best practice solution on AWS for your workloads. This is a free-of-charge service.

Apply for AWS Funding to assist you to migrate to AWS. This is a free-of-charge service.

Once the funding is available, we will assist your team to migrate your workloads to AWS. Our services for the migration can either be partly or fully funded by AWS.



AWS Funding Programs

As Advanced Consulting Partners, we can help access the below AWS Funding, where eligible, to support your migrations to AWS and improve your workloads.

Proof-of-Concept (POC) Funding

As Advanced Consulting Partners, we can access funding to help you run a Proof-of-Concept (POC) on AWS.

Optimization and License Assessment (OLA)

We offer free Windows and SQL database licensing assessments to help customers save when migrating to the cloud.



AWS Funding Programs

AWS Migration Acceleration Program (MAP) and MAP Lite Funding

With MAP, we can help you accelerate your cloud migration and modernization journey with an outcome-driven methodology.

Windows Modernization Program (WMP) Funding

By offsetting AWS Partners' fees for both modernization discovery and re-platforming, the AWS WMP helps customers modernize platforms by migrating to AWS.



AWS Funding Programs

AWS Well-Architected Framework Review (WAFR) Credits

We can conduct AWS Well-Architected Framework Reviews (WAFR) to evaluate and improve your existing workloads to:

- 1) Reduce risk and costs
- 2) Improve reliability, security and compliance
- 3) Meet Governance, go-to-market and stakeholder requirements.

You can obtain \$5000 in AWS Usage Credits per workload in the process that can be used to fund the WAFR and improvements.



AWS Volume Discounts & Cost Management

You can opt to link your AWS accounts with Silicon Overdrive, to benefit from AWS

- Consolidated billing
- Credit sharing across accounts
- AWS usage volume discounts
- Switch from paying AWS via credit card to being invoiced by us monthly in arrears
- Reduced cost on AWS through ongoing cost management and optimisation, using CloudHealth, free of charge



Free 2 Hour AWS Consultancy

We are happy to assist Education and NPO organisations with 2 hours of free AWS consultancy to:

- Clarify Technical questions
- Provide Architectural advice
- Discuss AWS Funding options
- Discuss potential Cost Savings
- Help gain a deeper understanding of the Cloud Journey

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Thank You

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