ENU202

Modernizing enterprise architectures, featuring ExxonMobil

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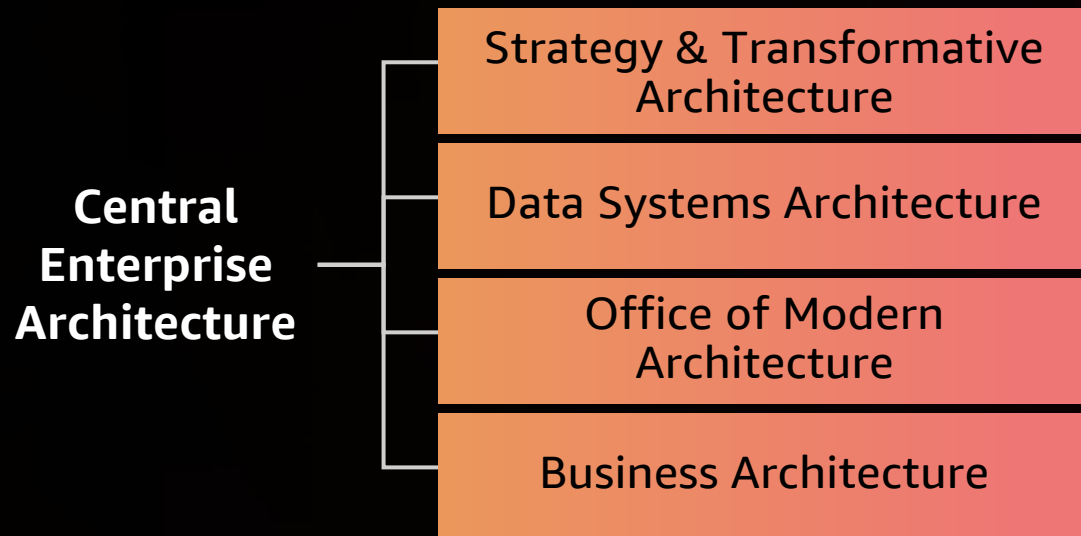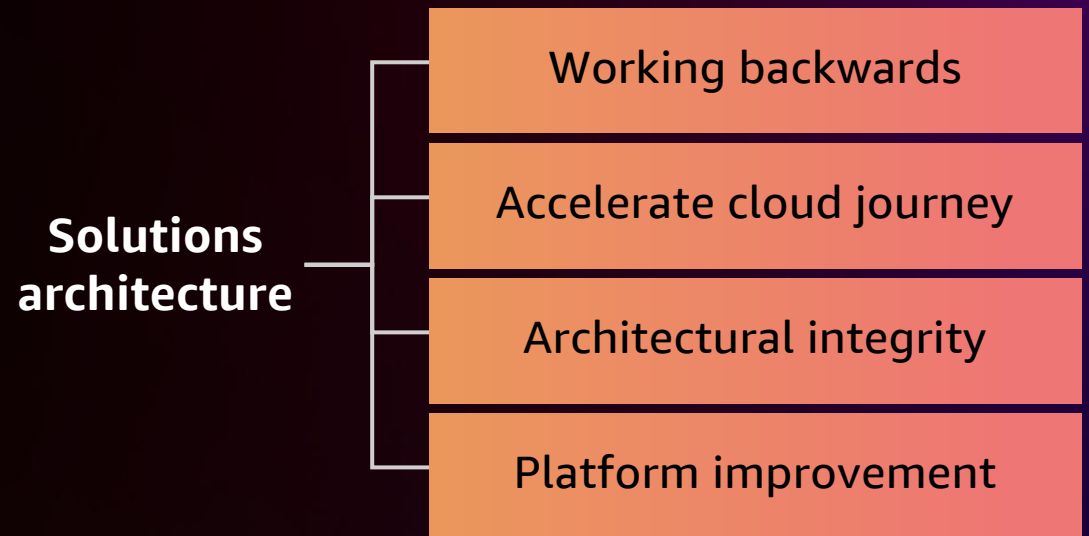Director, Worldwide Solutions Architecture
Amazon Web Services

Who we are

Todd Benner

- Chief Applications Architect
- 32 years with ExxonMobil
- Lead the Central Enterprise Architecture organization

Central Enterprise Architecture
- Strategy & Transformative Architecture
- Data Systems Architecture
- Office of Modern Architecture
- Business Architecture

Joseph Santamaria

- Director, Worldwide Solutions Architecture, Energy IBU
- Lead the AWS Energy IBU Technology group
- 15 years of industry experience as Utility CIO

Solutions architecture
- Working backwards
- Accelerate cloud journey
- Architectural integrity
- Platform improvement
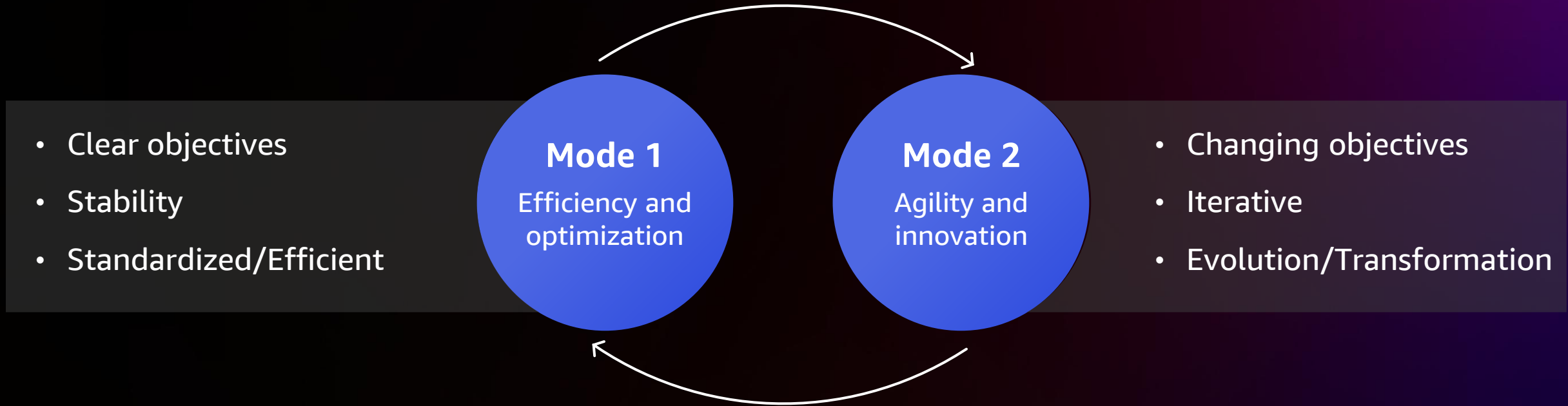
Context and background

- Accelerating energy transition

- Evolving business models

- Energy companies are transforming

- AWS accelerates agility and innovation

- ExxonMobil leads the way

Evolving my mental model ...

| Scale and focus | Speed and agility | Cloud strategy and cloud adoption |

Bimodal cloud strategy

- Clear objectives
- Stability
- Standardized/Efficient

Mode 1
Efficiency and optimization

Mode 2
Agility and innovation

- Changing objectives
- Iterative
- Evolution/Transformation

Launching our cloud journey: Enterprise architecture principles and mandates

Mandate

Authentication	Modern platform	API/Service	
Scalable security	Maintain license to operate	Deliver modular solutions	Handle data as an asset
Reuse, rent, buy, build	Simplify and automate	Design for the users	Manage solution lifecycle

The modern platform as the basis for our cloud strategy

Public cloud and PaaS first

Architect and deploy cloud-native solutions

Retire legacy on-premises solutions

Modern platform

What it says

All new solutions must be designed to run in a cloud environment. This does not mean that the solution must be immediately hosted in the cloud; however, it must be capable of being moved to the cloud at a later date with minimal impact.

What it means for vendors

The solution must incorporate cloud-native characteristics in the design/architecture. At ExxonMobil, we use a simple acronym called "AIMS" to refer to these:

- **Aware** of latency issues, hardware failure, and resource consumption
- **Instrumented** to enable monitoring and reporting of health, performance, and experience
- **Modular**, with a service-oriented, granular architecture to allow for rapid and independent component deployment as well as parallel scaling
- **Secured** by modern mechanisms – multi-factor authentication and encryption where needed

In cases where control of the solution design/architecture is limited or nonexistent (e.g., COTS), a minimum set of requirements must be met in order to effectively enable a future cloud migration:

- **Authentication:** The authentication protocol is able to run over the public cloud and is not tied to a specific domain.
- **Encryption:** Data in transit and at rest can be encrypted.
- **Integration:** The application is able to integrate with data and other resources located on-premises as well as in the cloud.

Accelerating the pace of migration

Progress but striving for more	Challenges to going faster	Adapting with bimodal cloud
Modernization efforts slower than anticipated	Opportunistic modernization	Addition of cloud adoption program – lift and shift from DC to the cloud
~1/3 of applications are in the cloud	Requirement for economic justification on an app-by-app basis	Modernize applications currently running in the cloud

Our relationship with AWS

1 **Listened and invested**
Understood our challenges

2 **Shared the future**
Developed PoC

3 **Validated and delivered**
Technology alignment to vision

Lift and shift
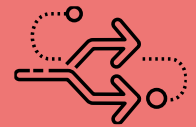
Modernization

Lift and shift

Key migration pillars

| EA principle alignment – data is an asset | We are data-centric – applications come and go | Protection parity – equal or better protection in the cloud |

Powered by AWS Nitro System

| Enables encryption of data at rest, in transit, and in use | We control the keys | Proven confidential compute capabilities |

Contact center modernization

Key modernization pillars

Cloud-based omnichannel
contact center solution

Fast and easy transition

Enhance the customer experience

Powered by Amazon Connect

Instant startup

Significant cost benefit
with pay-as-you-go pricing

Flexibility to scale and adjust
while providing a quality
customer experience

Modernization with replatforming

Key modernization pillars

Transition legacy Oracle applications without touching the code

Extend existing value streams

Minimize additional cloud provider tools for single use cases

Powered by Amazon RDS for Oracle

Reduction of IT focus on time-consuming database administrative tasks and more focus on new innovations

Enhanced availability and reliability for production workloads

Flexibility of OPEX model

Modernization with cloud-native applications

Key modernization pillars

Data harvesting from unconventional reports

Advancing beyond remedial RPA

Ability for data lifecycle analysis

Powered by Amazon Textract and Amazon Comprehend

Intelligent document processing

Natural language processing to extract insights

Access to discovered insights for business improvements

What makes AWS different?

Seeking to understand challenges

AWS starts with the customer and works backwards

Lift and shift

The start of our maturity continuum for optimization
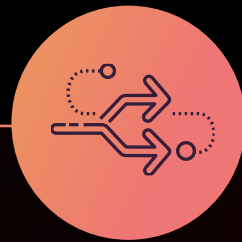
The ultimate prize

Serverless and scale to zero

"**The first step in transformation is not technical; it's very much about leadership. It's about making sure you have senior-level alignment, aggressive top-down goals that force the organization to move faster than it otherwise would, the right training, and then a thoughtful, methodical multi-year plan to make that migration.**"

Andy Jassy

CEO, Amazon

Migration and modernization projects can be challenging

These projects can be complex

- Deconstruct the on-premises technical environment
- Performance and relationship of migrating applications
- Understand the current operational processes
- Policy issues and business rules
- Security policies
- Hidden practices and knowledge
- People/Culture issues
- Regulations

Best practices ✓

- ✓ Demonstrated leadership
- ✓ Set clear business goals
- ✓ Develop cloud skills/address gaps

The highest risk has been in a stalled project or a false start and **can set a cloud program back by months, even years!**

A simple 3-step approach

Assess | Mobilize | Migrate and modernize

Rapid discovery

TCO report

AWS Migration Readiness Assessment (MRA)

Briefings and workshops

Immersion day

Accelerators

Portfolio

Migrate

People

Platform

Migrate

Operate and optimize

Modernize

Create a case for change

Build readiness through experiences

Accelerate transformation at scale
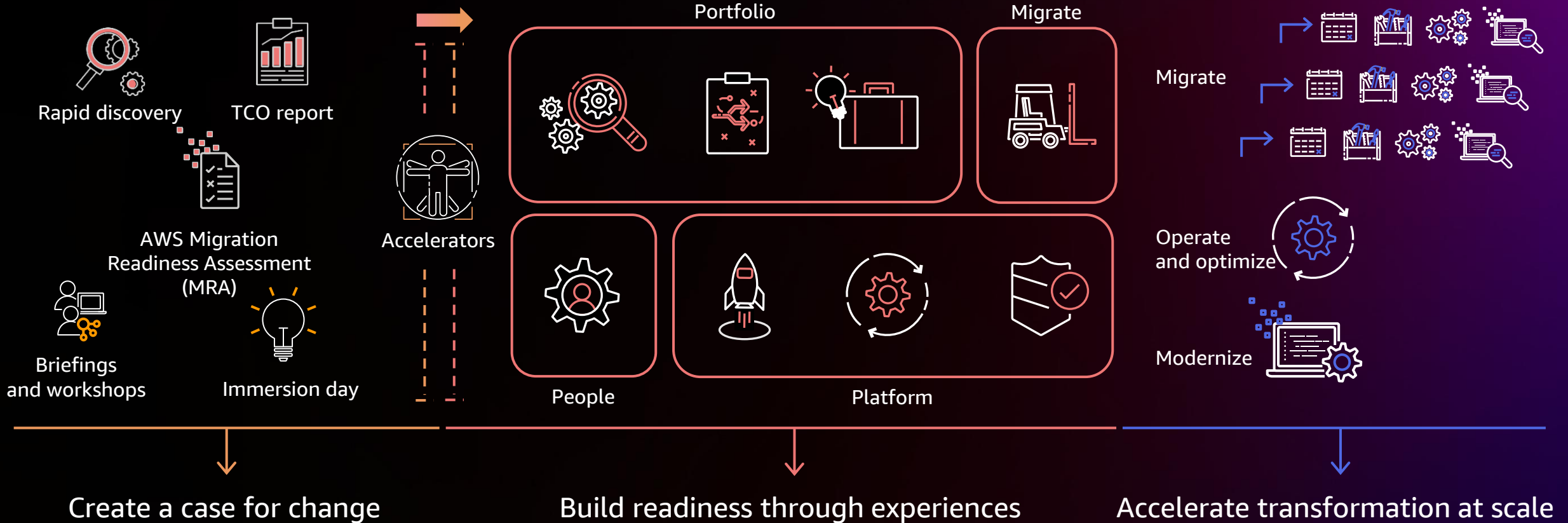
Modernizing in 2 phases
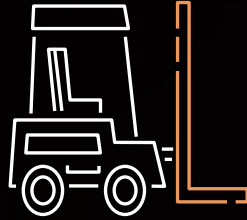
Phase 1: Migrate

Quickly gain cloud benefits

- Cost savings
- Increased productivity and agility
- Improved resilience and security
- Reduced operational risk
- Cloud skills and operational development

Phase 2: Modernize

What gets easier after applications are running on AWS

- Enterprise agility
- Continuous reinvention
- Cloud-native development
- Cost savings
- Technical modernization

Migration tools & support from AWS & AWS Partners

Assess		Mobilize			Migrate and modernize	
Inventory	Business case	Deep discovery and planning	App dependency mapping	Landing zone	Workload and data migration	Modernize
AWS Migration Hub						
AWS Application Discovery Service AWS Migration Evaluator AWS DMS Fleet Advisor	AWS Migration Evaluator AWS Migration Portfolio Assessment (MPA) AWS Cloud Economics Center AWS Migration Readiness Assessment (MRA)	AWS Application Discovery Service AWS Migration Portfolio Assessment (MPA) AWS Migration Hub Strategy Recommendations	AWS Migration Hub AWS Migration Evaluator	Landing zone AWS Control Tower	AWS Migration Hub Orchestrator AWS Application Migration Service AWS DMS/AWS SCT Cloud Migration Factory on AWS AWS DataSync	AWS Migration Hub Refactor Spaces AWS Mainframe Modernization AWS Microservice Extractor for .NET Blu Age AWS App2Container

AWS Partners logos by column:
- Inventory: Cloudamize, FLEXERA, modelizeIT, DEVICE42, CloudHealth by vmware, bmc
- Business case: Cloudamize, FLEXERA, CloudHealth by vmware
- Deep discovery and planning: Cloudamize, FLEXERA, modelizeIT, DEVICE42
- App dependency mapping: FLEXERA, modelizeIT, DEVICE42, New Relic, dynatrace, APPDYNAMICS
- Landing zone: CONTINO, BESPIN GLOBAL
- Workload and data migration: Qlik Q
- Modernize: virtusa, thoughtworks, CAYLENT, MICRO FOCUS, vFunction, wipro

Partner migration tools found on aws marketplace

This is not a complete list. To view all AWS Partners for this category, visit AWS Partner Solutions Finder. This list of partners is current as of November 14, 2022.
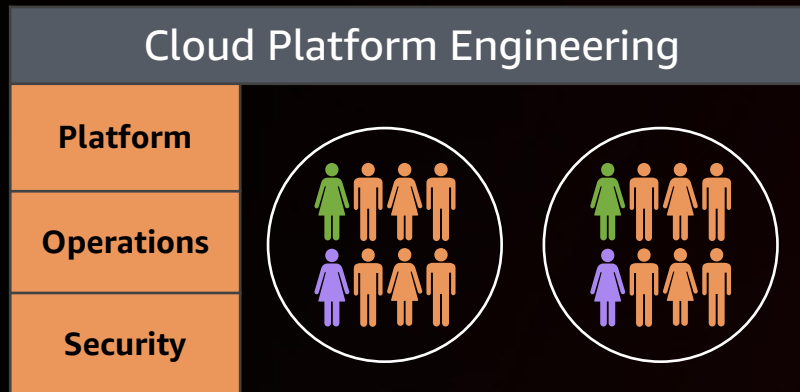
Cloud operating model

Cloud foundation team
(0–6 months)

Cloud leader
Product owner
Financial analyst
OCM/Training specialist
Cloud architect
Platform engineers

Initial cloud enablement engine
(6–12 months)

Cloud Business Office

Architecture alignment	Product management
Onboarding	Financial management
Training	Org. change management
Delivery management	

Cloud Platform Engineering

Platform
Operations
Security
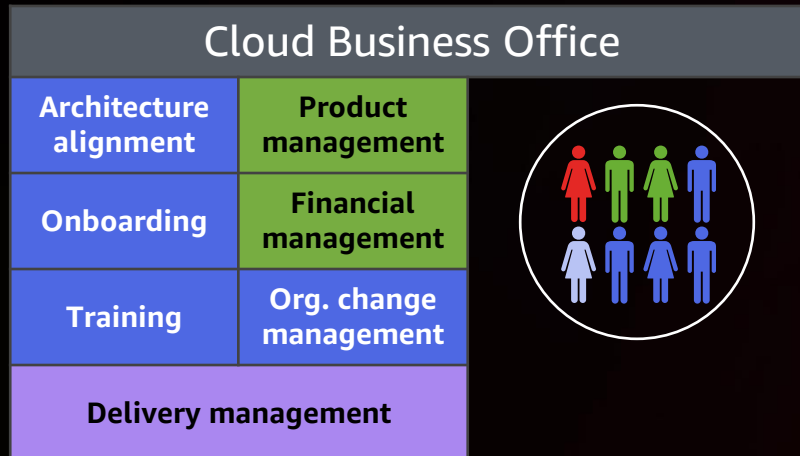
Cloud enablement engine at scale
(12+ months)

Cloud Business Office

Product	Architecture	Onboarding	OCM
Financial	Delivery		Training

Cloud Platform Engineering

Platform
Operations
Security
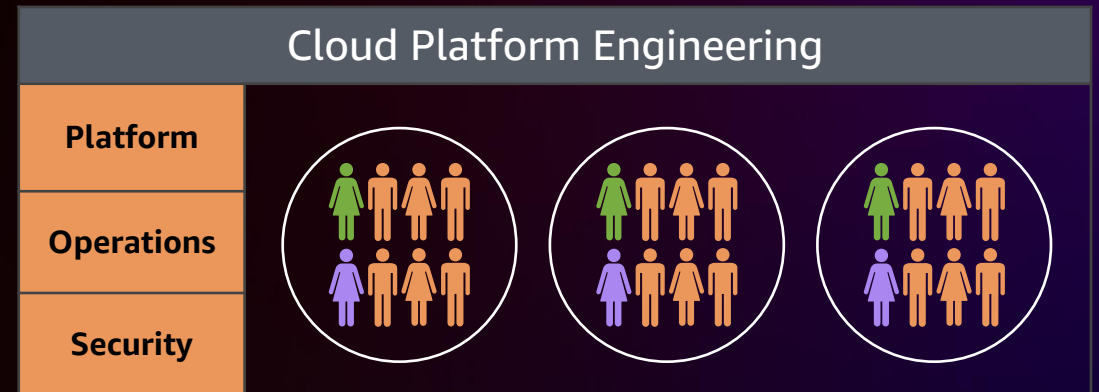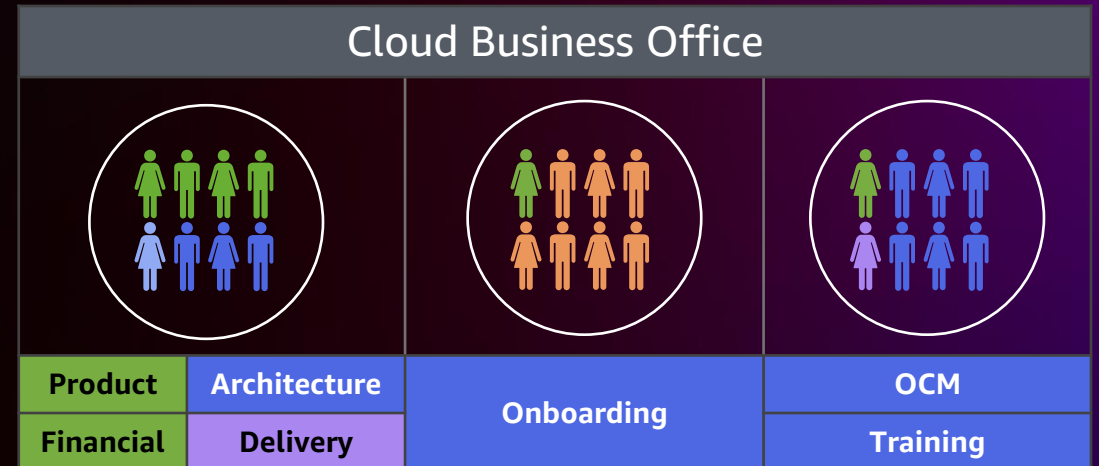
Operating your cloud

Change management

Access management

Security management

Incident management

Patch management

ITSM integration

Provisioning management

Continuity management

Reporting

Self-managed

Full control simplified with AWS tools

- AWS Service Catalog
- AWS Systems Manager
- AWS management tools and services
  - Modeling and provisioning, automation and operations, monitoring and logging
- Third-party tools

AWS Managed Services (AMS)

AWS operates your cloud with AWS best practices and compliance standards so you can focus on your business priorities

- Addresses security and compliance
- Managed AWS landing zone
- Self-service automation
- 24/7 worldwide AWS operations support engineers
- Month-to-month terms: you can take back control easily

Partner-managed

Use certified AWS Managed Service Provider (MSP) Partners to help operate your cloud

- 100+ AWS MSP Partners
- Certification program
- Third-party audit
- Full lifecycle services

https://aws.amazon.com/partners/msp/

Key takeaways

- Companies are using the cloud to innovate and accelerate the energy transition

- Architect the cloud as an enterprise platform

- Establish key architectural principles

- Progress in your cloud journey through proven stages

  - Foundation

  - Lift and shift

  - Modernize

- Find the right partners

Thank you!

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