Cloud Finance Onboarding (CFO)

CLOUD FINANCE ONBOARDING (CFO): MODULE 4

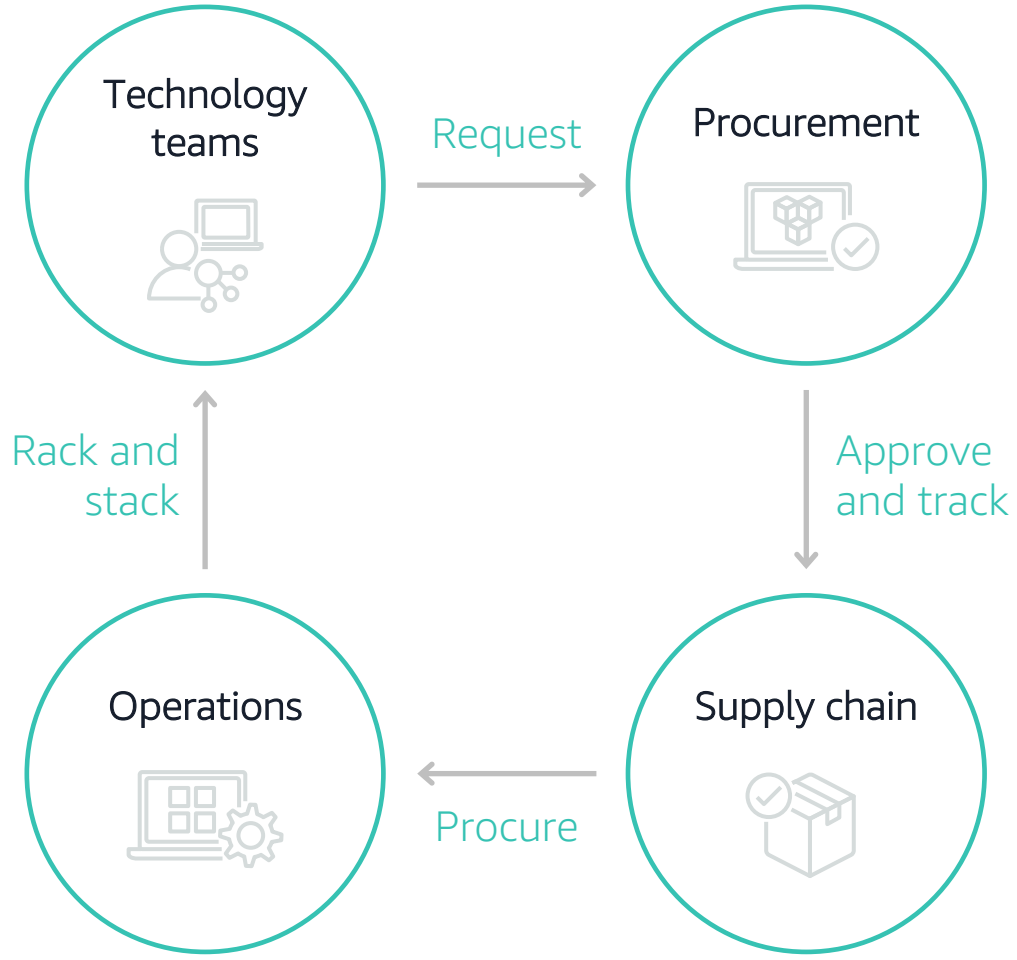
Cloud Financial Operations

AGENDA

1. New Consumption Model; Same People
2. Defining the New Organisation
3. Driving ‘Cost Aware’ Cultural Change
4. Setting the Rules: Governance and Control
5. Enacting Governance in AWS
6. Driving Scale: Automation
7. Improving Cloud Financial Operations

New Consumption Model; Same People

Moving from ‘Traditional’ IT consumption



Model

Siloed procurement

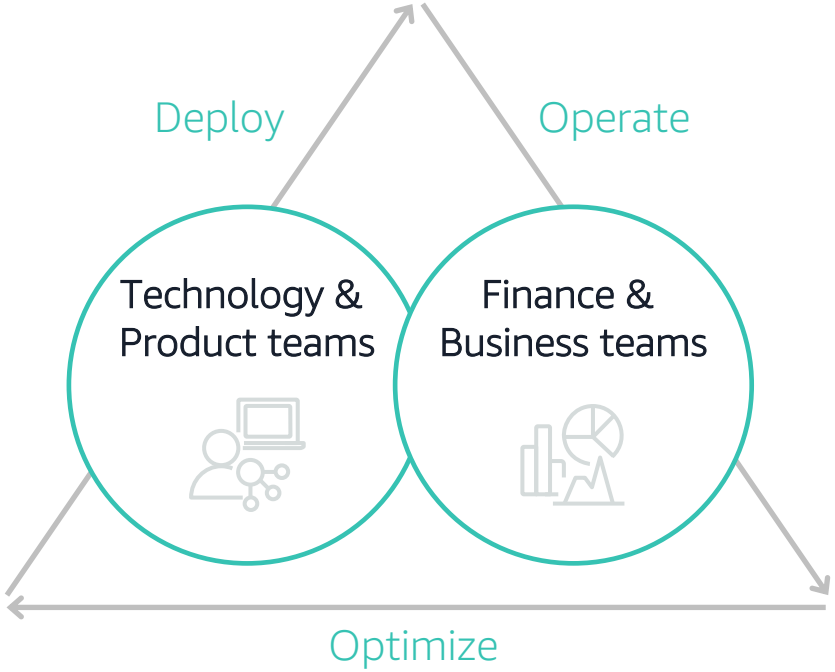
Upfront estimates of cost and capacity

Long procurement cycles

High cost of failure

Unfavorable experimentation conditions

… to a Cloud-based model …



Model

Democratized access to resources

Variable usage matches demand

Instant procurement

Low cost of failure

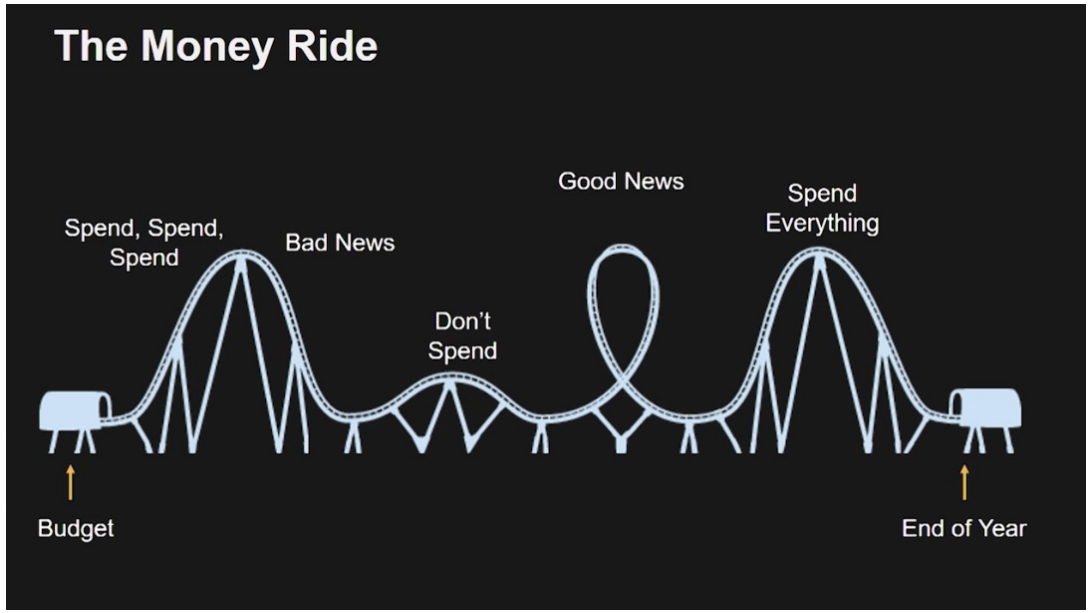
Experiment and create value

… comes with organisational growing pains

Stakeholder Misalignment

Technology and Finance teams having …
- ✓ Different languages
- ✓ Different incentives (roadmap vs. costs)
- ✓ Different organisational units (reporting lines)

Inconsistent Feedback Loop



… and driving counterproductive outcomes
- ✓ Spending too fast? → Innovation hampered
- ✓ Spending too slow? → Unnecessary spend (waste)

Therefore, a key to implement Cloud Financial Operations is to drive organisational change

Cloud requires a new way of “doing” business, finance and technology, by:

- Establishing a new operating model to achieve strategic business outcomes
- Creating and maintaining cross-organisation partnerships
- Building a deliberate, long-term CFM program

What does ‘good’ look like for Finance?

Examples of Cloud-related responsibilities

Role	Responsibility 1	Responsibility 2	Responsibility 3	Responsibility 4
Chief Finance Officer	Sign off on board-ready business case	Negotiate AWS contracts & establish AWS partnership	Approve large upfront commitment-based purchases	Lead & advocate innovation
Chief Accounting Officer / Financial Controller	Build the business case	Define/apply accounting treatment for cloud spend	Ensure AWS invoices are paid on time	Analyze cloud performance indicators
Financial Planning & Analysis	Build the business case	Budget and forecast cloud spend	Define and monitor cloud performance indicators	Innovate on behalf of stakeholders
Financial Analysts	Analyze cloud cost & usage & derive insights	Identify Savings Plans/RIs to reduce costs	Participate in the development of a cost allocation process	Innovate on behalf of stakeholders
Procurement	Maintain AWS in procurement system of record	Negotiate AWS contract	Create & maintain cloud contracts & POs	Innovate on behalf of stakeholders
Accounts Payable	Reconcile AWS invoices	Record AWS invoices against POs	Pay AWS invoices	Drive innovation & efficiencies in cloud AP

What does ‘good’ look like for Technology?

Examples of Cloud-related responsibilities

- Implement AWS account structure
- Tag cloud resources
- Design cost-aware products and solutions
- Use Amazon EC2[1] Spot Instances
- Identify and reduce resource waste
- Participate in cost estimation and forecasting exercises
- Identify and mitigate sources of cloud cost variances
- Build automation, governance, tools, and guardrails

[1] Amazon Elastic Compute Cloud

Implementing Cloud Financial Operations

1

Defining the New Organisation

How to adapt our ways of working to ensure transformational success

- ✓ What operational model works best for us, given our goals, size, Cloud maturity, etc.?
- ✓ What mechanisms can we use to accelerate cultural change to help embrace these new ways of working?

2

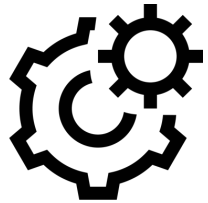
Setting the Rules (Governance and Controls)

How to implement cost controls without impacting innovation

- ✓ What is the right balance between cost controls and business agility?
- ✓ What types of controls can we apply, and what tools are available to do it on AWS?

3

Driving Scale (Automation)

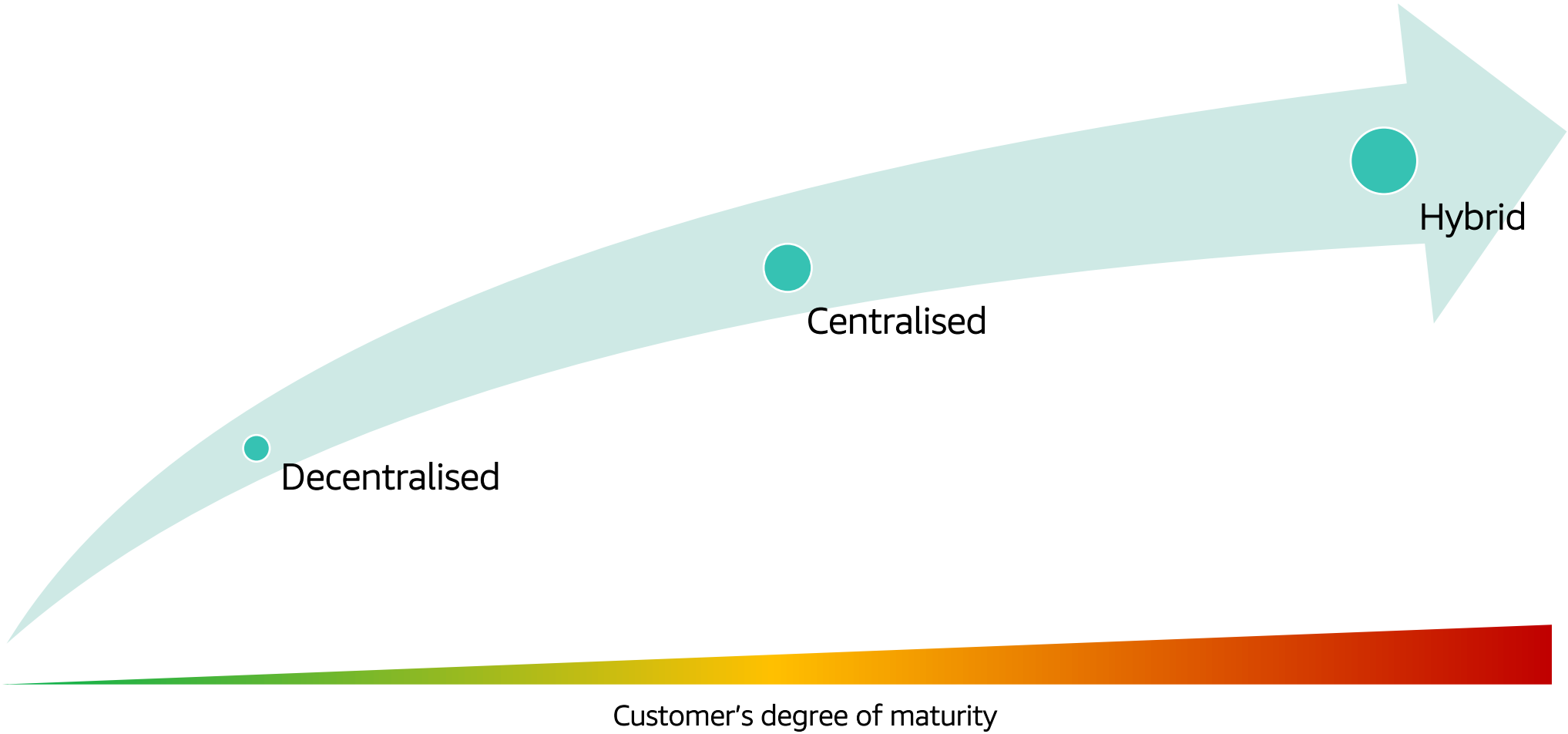


How to streamline Cloud Financial Operations as we achieve scale

- ✓ What can we achieve with automation and when is it the right time to do it?
- ✓ What are the best practices to implement automation in our organisation?

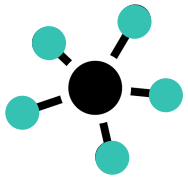
Defining the New Organisation

CFM Organisational Models (1/2)



CFM Organisational Models (2/2)

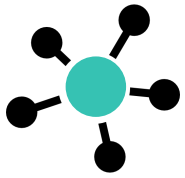
1 Decentralised



Technology teams ‘at the Edge’ manage each their own ad-hoc approach to Cloud Financial Management

- ✓ Organic approach and typical starting point
- ! By-product situation; not recommended
- ! Duplicate efforts; suboptimal results
- ! Uneven application of CFM best practices (RI/SP purchases, tagging, governance)

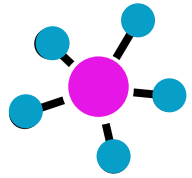
2 Centralised



A central team (internal or external) takes unified ownership of all CFM responsibilities across the organisation

- ✓ Standardised approach with central control (visibility, forecasting, governance, optimisation)
- ✓ Coordinated RI/SP purchasing with maximised utilisation and coverage rates
- ! Ideally an initial learning step before implementing a holistic hybrid model

3 Hybrid

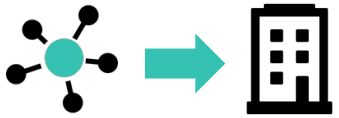


A model that acknowledges the strengths of each stakeholder to streamline CFM success with a balanced approach

- ✓ Adjusting the centralised CFM approach, with distributed responsibility (usage optimisation)
- ✓ Most advanced CFM organisational model
- ! Requires a matured cost-aware cultural change across the organisation

Centralised Organisational Models (1/2)

Outsourced
(AWS Partner)



External support from a trusted partner when economically feasible and/or strategically preferable

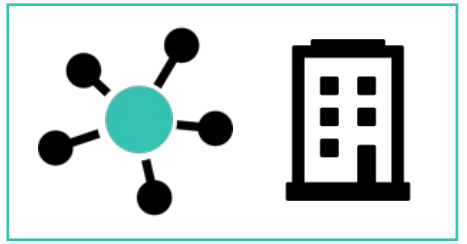
- ✓ A method to accelerate CFM outcomes via a trusted partner (e.g. AWS Partner)
- ! Requires oversight and management
- ! Requires access to cloud environments and product/owners teams

CFM Lead
(Individual)

Internal CFM function providing a single point of contact for finance, business and product teams

- ✓ Individual new hire, or re-tasked from technology team
- ✓ Suitable model for small organisations
- ! Profile with versatile background required (e.g. tech-savvy finance professional)
- ! Increased risk from lack of redundancy

CFM Team
(Part- or Full-time)



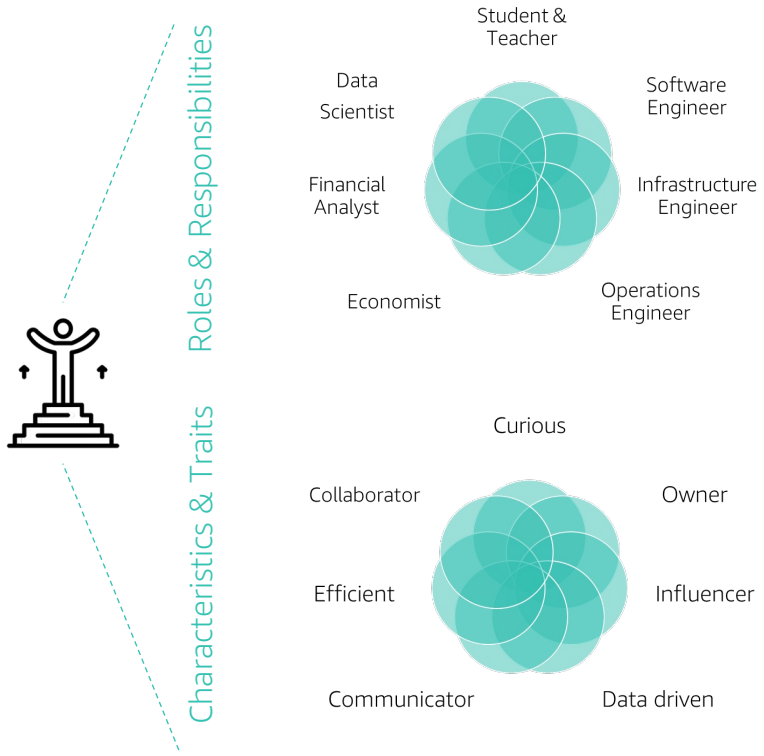
A fully-fledged internal CFM function when business scale drives increased management scope

- ✓ Part-time: overlay team re-tasked from various functions (dotted line to a CFM lead)
- ✓ Full-time: dedicated standalone team (repurposed team members or high-performing founding members)
- ! Requires higher investment

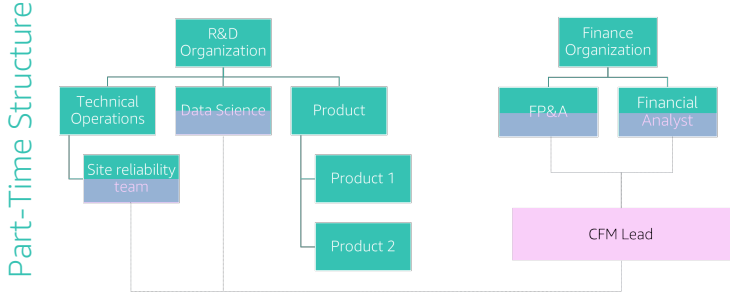
Centralised Organisational Models (2/2)

Outsourced
(AWS Partner)

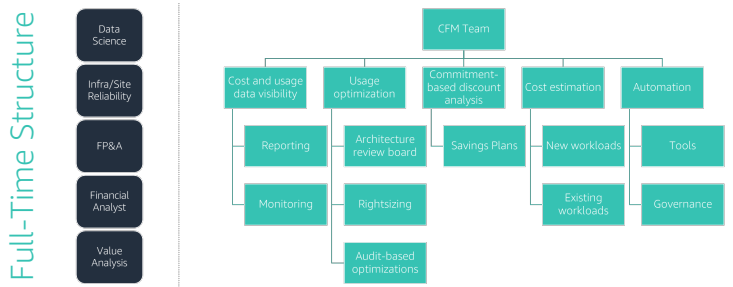
CFM Lead
(Individual)



CFM Team
(Part- or Full-time)



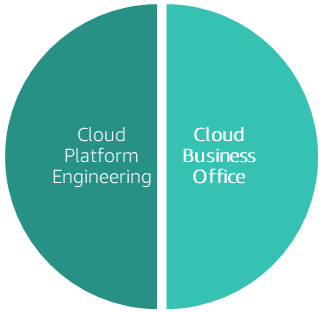
Partially repurposed time w/ dotted line into CFM Lead



Independent Central Autonomous Team

Hybrid Organisational Model

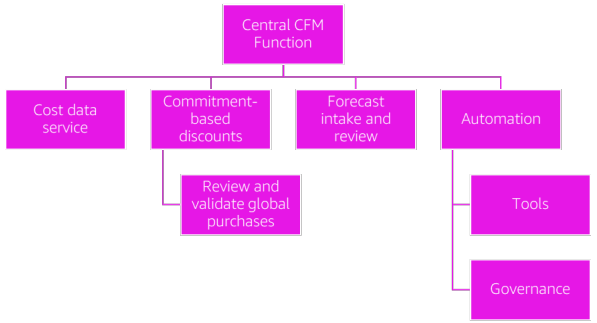
Usually part of the wider Cloud Business Office (CBO) …



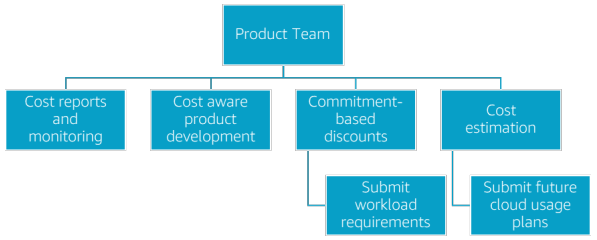
- ✓ Holistic representation of key stakeholders
- ✓ Ensures alignment between business and Cloud goals, as well as strategic and tactical execution of these across elements of people, process, and technology in a well-governed and inclusive way
- ✓ Determines CFM functions to be performed in a central fashion vs. those to be undertaken in a decentralized manner

… where rate-based optimisations are centralised and usage-based optimisations are kept at the Edge

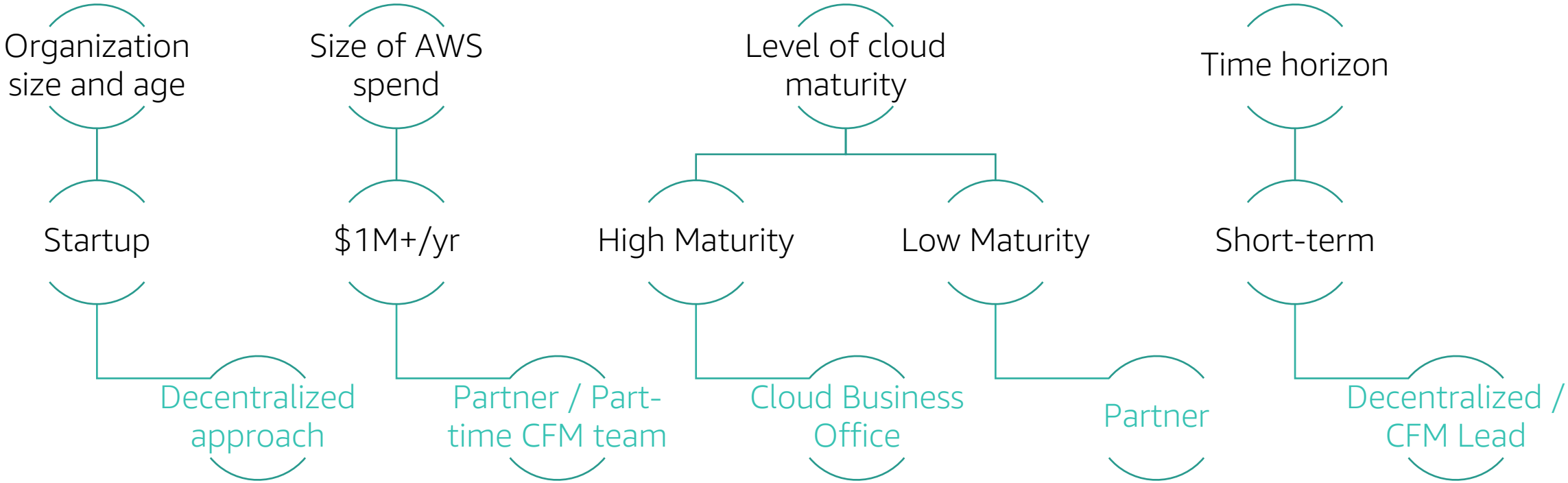
Centralised Functions



Distributed Functions



What is the Right Model?



Driving ‘Cost Aware’ Cultural Change

How to establish and mature a cost-aware culture in your organisation?

Secure Executive Sponsorship

Build Visibility & Transparency

Implement a CFM Programme

Evangelise Cloud Education

Leverage Gamification to Innovate

Celebrate Wins!

Secure Executive Sponsorship (& Goals)

Executive Sponsorship

- ✓ CFM program champion
- ✓ Funding advocate
- ✓ Escalation path

Scenario Example

'List of optimizations are not being implemented'

Goals

CFM KPIs in organisational and/or individual goal-setting

Technology teams should understand how their contributions help the organisation reach their defined goals

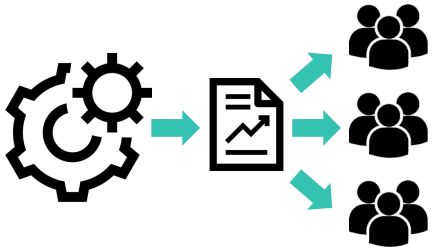
KPI Example

'Team A targets X% spend reduction for App B'

Build Visibility & Transparency

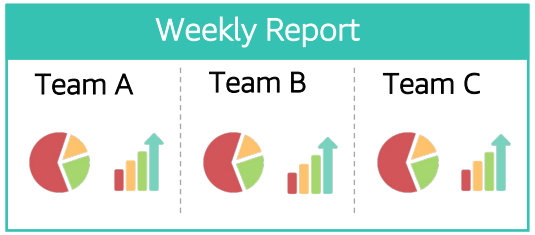
Establishing a level-playing field for all engineering/business stakeholders with timely cost reporting and priorities defined at the team level

Timely Data Reporting



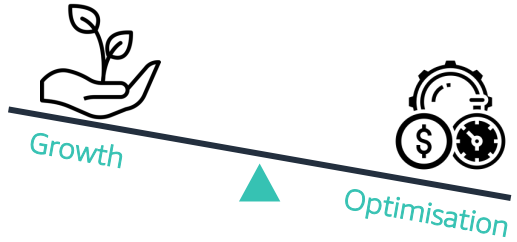
- ✓ Build out processes and automation to generate reports and make them available to applicable stakeholders

Common Language & Metrics



- ✓ Having a set of common comparison metrics across teams/products to drive awareness and prioritise action
  - ✓ 'Savings Opportunity (%)' (e.g. total potential savings as a percentage of cost incurred)
  - ✓ 'Savings Realised (%)' (e.g. total savings achieved as a percentage of total potential savings)

Team Priorities Accounted For



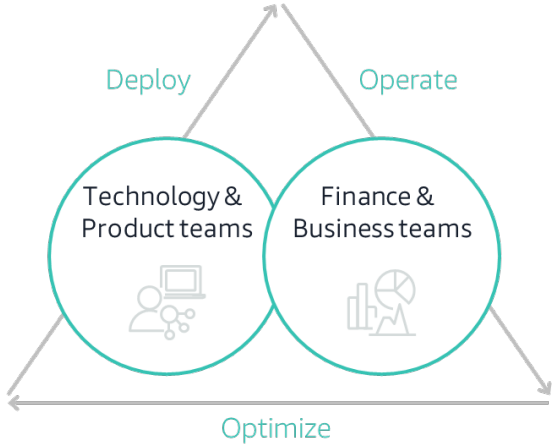
- ✓ Team's 'time-to-deliver' must be allocated for cost optimisation initiatives;

  OR

- ✓ Team's budget need to allocate increased spend due to time focused on growth activities instead

Implement a CFM Programme (1/2)

Defined Partnership between Finance and Technology



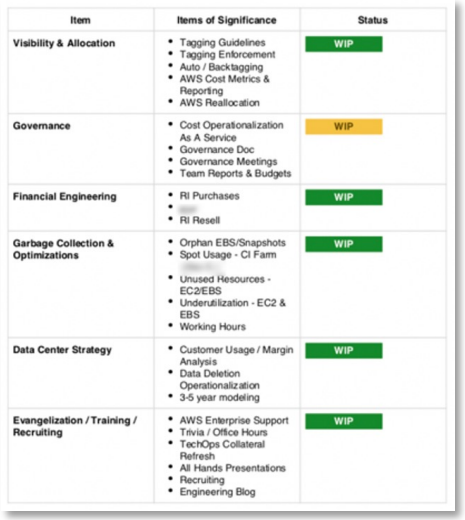
An established cadence to drive the CFM agenda

Daily/Weekly
Variance analysis, budget reviews, capital asks
(upfront commitment-based purchases)

Monthly
Monthly close, cloud spend review, new cloud workload reviews

As-needed
Forecast preparation

Centralised Programme Backlog



Item	Items of Significance	Status
Visibility & Allocation	• Tagging Guidelines • Tagging Enforcement • Auto / Backtagging • AWS Cost Metrics & Reporting • AWS Reallocation	WIP
Governance	• Cost Operationalization As A Service • Governance Doc • Governance Meetings • Team Reports & Budgets	WIP
Financial Engineering	• RI Purchases • • RI Resell	WIP
Garbage Collection & Optimizations	• Orphan EBS/Snapshots • Spot Usage - CI Farm • • Unused Resources - EC2/EBS • Underutilization - EC2 & EBS • Working Hours	WIP
Data Center Strategy	• Customer Usage / Margin Analysis • Data Deletion Operationalization • 3-5 year modeling	WIP
Evangelization / Training / Recruiting	• AWS Enterprise Support • Trivia / Office Hours • TechOps Collateral Refresh • All Hands Presentations • Recruiting • Engineering Blog	WIP

A mechanism to prioritise, assign and track all initiatives

Defining Priorities
Resource availability, low-hanging fruit, ROI

Outlining Outcomes
Qualitative (new processes, new workloads), Quantitative (ROI, expected savings)

Tracking Lifecycle
Recommendations being investigated vs. idle, resources involved, idle time

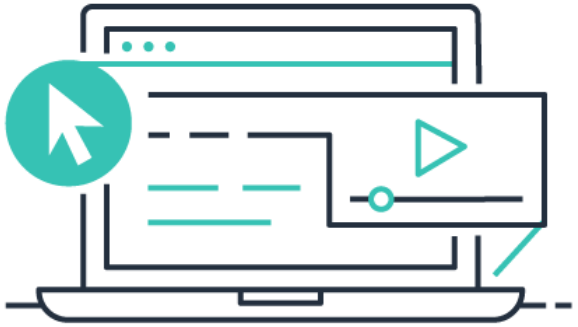
Implement a CFM Programme (2/2)

Example of a 'Year One' CFM Programme Roadmap

	Q1	Q2	Q3	Q4
Measurement & Accountability		✓ Weekly Month To Date/Month Over Month spend analysis ✓ Tagging dictionary definition		
Cost Optimisation	✓ Existing Compute Savings Plans refresh		✓ New Savings Plans purchases ✓ Bi-annual tag-based resource cleanup exercise	
Planning & Forecasting				✓ Bottom-up service-level forecasting implementation ✓ Accounting memo on chargeback methodology sent
Cloud Financial Operations	✓ Internal Cost Management Blog creation ✓ Partnership with FP&A team implementation	✓ Tech team Cost Management education roadshow delivery ✓ Weekly "Cost Optimization" trivia launch	✓ Reactive tag governance strategy design ✓ Cost Optimization intern hire (to help with automation)	✓ Amazon EC2->EBS tag copy tool launch ✓ Weekly "Cost Optimization" office hours launch

Evangelise Cloud Education (1/3)

AWS Training and Certification offers resources you need to develop your team, innovate in the cloud, and transform your organization



Digital training

On-demand courses so your team can learn about the latest services when and where it's convenient

Classroom training

In-person and virtual training from instructors who teach your team in a hands-on learning environment

AWS Certification

Identify skilled professionals to lead cloud initiatives using AWS

Evangelise Cloud Education (2/3)

FOUNDATIONAL

Six months of fundamental AWS Cloud and industry knowledge

PROFESSIONAL

Two years of experience designing, operating, and troubleshooting solutions using the AWS Cloud

ASSOCIATE

One year of experience solving problems and implementing solutions using the AWS Cloud

SPECIALTY

Technical AWS Cloud experience in the Specialty domain as specified in the exam guide

Evangelise Cloud Education (3/3)

AWS Ramp-Up Guide: Cost Management

For business and technical professionals

aws training and certification

AWS Training and Certification has created this and other **AWS Ramp-Up Guides** to help build your knowledge of the AWS Cloud. Each expertly curated guide features free digital training, classroom courses, videos, whitepapers, certifications, and other information you're looking for. To enroll in training and certification exams, and track your progress, visit **aws.training** and set up a free account. To provide suggestions on Ramp-Up Guides, please contact **rampupguides@amazon.com**.

Learn the fundamentals of AWS Cloud		
LEARNING RESOURCE	**DURATION**	**TYPE**
AWS Ramp-Up Guide: Cloud Practitioner	10 minutes	Ramp-Up Guide »

Step 1: Learn cost management fundamentals and pricing concepts		
LEARNING RESOURCE	**DURATION**	**TYPE**
AWS Pricing	10 minutes	Webpage »
How AWS Pricing Works	3.5 hours	Whitepaper »
Cloud Financial Management with AWS	15 minutes	Webpage »
Introduction to AWS Billing and Cost Management	10 minutes	Digital Training »
AWS Cost Optimization	10 minutes	Webpage »
AWS Well-Architected Framework	6 hours	Whitepaper »
AWS Well-Architected	1.5 hours	Digital Training »
Cost Optimization Pillar: AWS Well-Architected Framework	3 hours	Whitepaper »
AWS Cost Explorer	30 minutes	Webpage »
TCO and cost optimization: Best practices for managing usage on AWS	15 minutes	Blog Post »
Amazon EC2 Reserved Instances	10 minutes	Webpage »
Amazon EC2 Spot Instances	10 minutes	Webpage »

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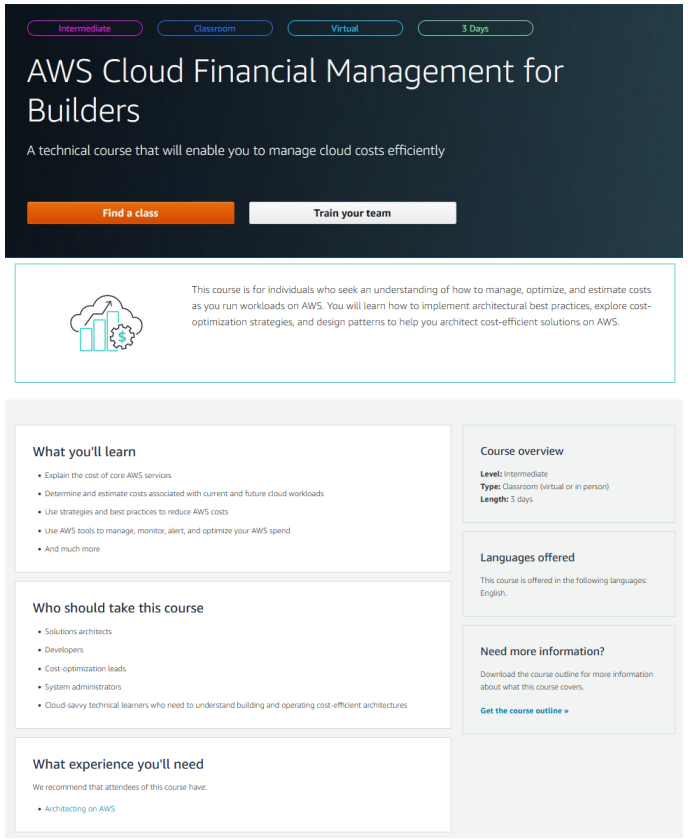

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Leverage Gamification to Innovate

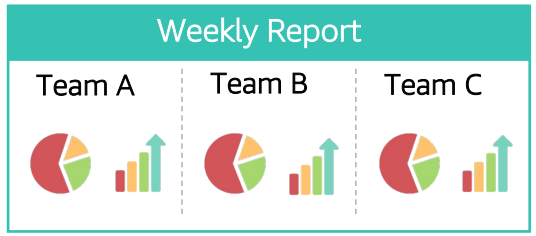
Hands-on Collaboration via Hackathons

- ✓ Gamification Task: Build a POC in a company's internal 'hackathon'
- ✓ Solution Proposed: Auto-tagging of every launched EC2 instance using a Lambda function
- ✓ Technical Result: POC launched into the new account provisioning process, ensuring proper tagging for all EC2s
- ✓ Bigger Result: A collaboration aimed at strengthening bonds between finance and technology teams, as well as solidifying common Cloud language (both ways) and cost-aware culture

Celebrate the Wins!

Recognising individuals (and/or teams) who go above and beyond in how they use Cloud efficiently, goes a long way

Using Data-driven Inputs



- ✓ Public Cost Dashboards
- ✓ Common Metrics

Cost savings
RI/SP coverage
Unit Costs Improvements
Best practices

Holding Organisational High-Visibility Events

- ✓ Drive awareness and ownership
- ✓ Example Events

Weekly Dashboard Improvement
Monthly Cost Quiz
Quarterly Frugality Award
Annual 'In The Clouds' Award

Delivering Awards to Winners

- ✓ Keep motivation high across the teams
- ✓ Example Awards

Gift Cards
Team Lunches / Outings
Formal Recognition

Setting the Rules: Governance and Controls

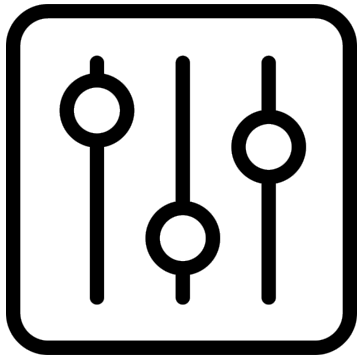
Cloud Financial Governance and Controls

Cloud Financial Governance

Definition of processes, policies, and procedures regarding how cloud is consumed

These manifest as frameworks that standardise cloud usage across organizations and lines of business

Cloud Financial Controls



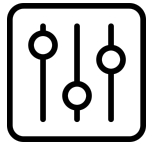
Implementation of processes, policies, and procedures to enact governance frameworks

Can be implemented in two ways:

- ✓ Proactive → Allowing (or not) user actions; OR
- ✓ Reactive → Automatic remediation actions

Examples

Governance



Controls

Governance		Controls
'All compute instances must have either 12-month daily or 24-month monthly backups'	Proactive	Implement backups and retention policies in AWS Backup
'Only use approved t4g instance type for development environments'	Proactive	Restrict resource provisioning to t4g using AWS Identity and Access Management (IAM) policies
'Ensure all cloud resources have an <owner> user defined tag'	Reactive	Implement the 'required-tags' AWS Config rule to identify non-compliant resources
'Unused non-production Amazon EC2 and Amazon RDS instances should be shut-down on weekends'	Proactive	Implement the AWS Instance Scheduler solution and tag resources to be included in weekly schedules

Why are cloud financial governance and controls important?

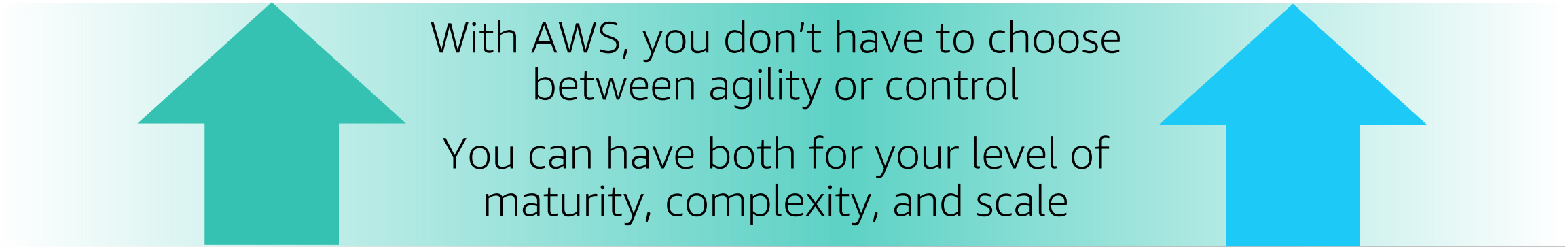
Safeguarding your organization against anything that can go wrong, from going wrong*

- Eliminate shadow IT and maverick spend
- Standardize how cloud resources are procured and deployed
- Establish fiscally responsible cloud usage at scale

*Murphy's Law

Control vs. Agility Conundrum: On Premises

Control vs. Agility Conundrum: On AWS



Governance / Control

- Enable
- Provision
- Operate

Secure & Compliant

- Operations & Spend Management

Agility

- Experiment
- Be productive
- Empower distributed teams
- Self-service access
- Respond quickly to change

Finding the right balance for your organization

Business Profile

Startup vs Global Enterprise

Cloud Maturity

New to cloud
vs
Experienced
with cloud

Process

Augment vs Create

Type of Control

Proactive vs Reactive

Enacting Governance in AWS

What types of controls are there in AWS?

AWS Resources Management

Access

Users (and systems) overall ability to access AWS, as well as specific resources and accounts

Provisioning

Users ability to create (provision) specific new AWS resources (EC2 instances, RDS, EBS volumes, etc.) that can drive additional cost

Spin up/down

AWS capability to spin up/down (turn on/off) specific AWS resources as a cost avoidance mechanism (EC2/RDS on non critical environments, such as dev)

Monitoring

AWS ongoing monitoring capability of specific AWS resources to ensure compliance against a set of defined rules (e.g. your governance framework)

AWS Marketplace Management

Procurement

Users ability to procure third-party software via AWS Marketplace

AWS Financial Management

Consolidated Billing

Organisations capability to manage a single billing source for multiple AWS accounts (and still reap scale-based discounts)

Consolidated RI/SP

Organisations capability to maximise utilisation of centrally managed financial commitments (RI/SP) to multiple AWS accounts

Purchase Orders

Organisations capability to self-manage its Purchase Orders, matching with corresponding AWS invoices and manage lifecycle

Which AWS tools can we use for this?

Report and monitor

- AWS Cost Explorer
- AWS Billing
- AWS Cost and Usage Report
- AWS Budgets
- AWS Compute Optimizer
- AWS CloudTrail
- Amazon CloudWatch

Govern and control

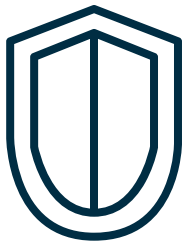
- AWS Organizations
- AWS Identity and Access Management
- AWS Service Catalog
- AWS Budgets Actions
- AWS Purchase Order Management
- AWS Cost Anomaly Detection
- AWS Marketplace
- AWS Control Tower
- AWS Well-Architected Tool
- AWS Trusted Advisor
- AWS License Manager
- AWS Config
- Amazon CodeGuru
- AWS Backup

Automate

- AWS CloudFormation
- AWS OpsWorks
- Amazon EC2 Auto Scaling
- Amazon Application Auto Scaling
- Amazon S3 Analytics and Intelligent Tiering
- Instance Scheduler
- AWS Systems Manager

The focus of this section will be around these ten services

AWS Identity and Access Management



Give people (and systems) permission on how to operate in AWS, and to do only what we want them to do

- ✓ Create and manage AWS identities (users, groups and roles)
- ✓ Use permissions to allow and deny access to AWS resources
- ✓ Define who can do what on AWS through ‘Control as Code’
  - ✓ Example: Assign your builders ‘read-only’, ‘developer’, or ‘administrator’ permissions
  - ✓ Example: Define IAM policy to restrict ‘developer’ users from launching a EC2 family type

Define who can do what on AWS: via Control as Code	√	√

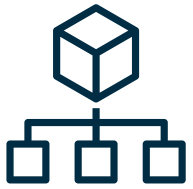
AWS CloudFormation

Model, provision, and manage AWS and third-party resources by treating infrastructure as code

- ✓ Create and manage a collection of AWS resources from coded templates
- ✓ Enable orderly and predictable provisioning and updating of resources
- ✓ Incorporate configuration data on provisioning templates
- ✓ Enforce compliance of AWS resources by only allowing the provisioning of resources with approved pre-configured CloudFormation templates

Enforce Compliance of Resources: via pre-configured templates	√	√

AWS Organizations

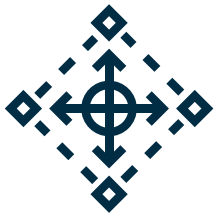


Centrally manage and govern your environment as you scale your AWS multi-account footprint

- ✓ Create new AWS accounts and group them in 'Organizational Units' (OUs) to organize your workflows
- ✓ Eliminate 'Maverick' spending and maximise commitment (RI/SP) utilisation rate through consolidating billing and floating of committed discounts
- ✓ Apply SCPs (Service Control Policies) to restrict permissions (on access and resource provisioning) for every applicable account (and OU) in your organisation

Eliminate Maverick Spending: via Consolidated Billing					√			
Maximise Centralised Commitment Utilisation: via Consolidated RI/SP							√	
Restrict Provisioning of Non-Compliant Resources: via SCPs	√	√						

AWS Control Tower

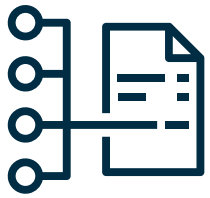


Automate the setup of a secure AWS multi-account environment

- ✓ Set up and govern a secure AWS multi-account environment: a Landing Zone
- ✓ Ensure deployment of AWS best practice blueprints and compliance guardrails across your landing zone
- ✓ Restrict creation of accounts within set of defined compliance guardrails

Restrict Creation of Accounts: within set compliance guardrails	√	√

AWS Purchase Order Management



Manage easily your AWS purchase orders (POs) in a self-service manner

- ✓ View all purchase order information including their value, remaining balance, status, and effective/expiration dates
- ✓ Manage multiple POs, define how they map to invoices through line item configurations, and access invoices generated against POs
- ✓ Manage PO status, track PO balance and expiration, and configure contacts to receive email notifications for PO expiration and balance depletion

Manage Purchase Orders: via invoice matching & lifecycle management

AWS Service Catalog

Provide builders in your organisation with a pre-approved catalog of resources to provision

- ✓ Restrict provisioning of AWS resources through a pre-approved catalog, ensuring deployments are compliant, correctly tagged, within budgets, and centrally managed

Restrict Provisioning of Resources: via pre-approved catalog

AWS Marketplace

Find a curated digital software catalog; to find, buy, test, and deploy software

- ✓ Get the software you need in minutes with just a few clicks or use the 1-Click deployment option; ready to run on AWS
- ✓ Only pay for what you use through various flexible payment options and receive discounts on longer or custom terms
- ✓ With the 'Private Marketplace' feature, restrict access through a customized catalog of pre-approved third-party software from AWS Marketplace

Restrict Contracting of Third-Party Software: via pre-approved catalog

AWS Instance Scheduler

Automate the starting and stopping of Amazon Elastic Compute Cloud (Amazon EC2) and Amazon Relational Database Service (Amazon RDS) instances

- ✓ Reduce operational costs by automatically stopping resources that are not in use (idle) and starting resources when their capacity is needed again, based on a pre-defined schedule
  - ✓ Example: save up to 70% for those instances that are only necessary during regular business hours (weekly utilisation reduced from 168 hours to 50 hours)

Save Costs by Scheduling Automatic (Spin-up / Spin-down) Idle Resources

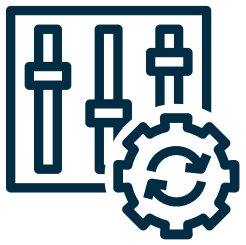
AWS Budgets Actions

Define a number of reactive actions, in response to a defined budget overrun

- ✓ Configure responses that will be applied automatically (or via workflow approval process) once an AWS Budget target has been exceeded, as a remediation action
  - ✓ Responses can include restricting the provisioning of additional resources (via IAM or SCP), and spinning down specific running Amazon EC2 or Amazon RDS resources

Monitor Resources for budget-specific Non-Compliance			√					
Restrict Provisioning of additional Resources: when over budget	√							
Spin-down (turn off) Resources: when over budget		√						

AWS Config



Simplify compliance auditing, security analysis, change management, and operational troubleshooting

- ✓ Continuously monitor and record your AWS resource configurations
  - ✓ Evaluate recorded configurations against pre-defined ‘compliant’ configurations
- ✓ Apply reactive (remediation) actions if configurations are found to be ‘non-compliant’ based on a number of resource properties such as tags, size/family, region deployed, etc.

Monitor Resources for Non-Compliance				√				
Apply reactive actions based on Resource Tags, Size, Region	√	√	√					

Driving Scale: Automation

There are always different approaches

Do-It-Yourself
(basic self-service)

Automated
(using your AWS environment)

Assisted
(with AWS Partners)

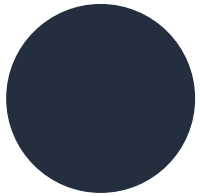
Taking initial steps / Exploring options

Spectrum of customer involvement

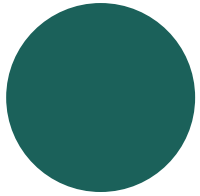
Working with a third-party / Automating the process

Automation

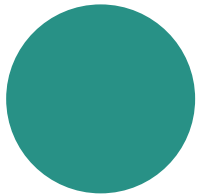
Streamlining Cloud Financial Operations as we reach scale, via enabling the following capabilities



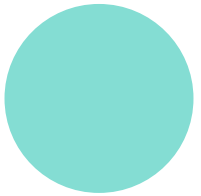
Metrics-driven cost optimisation (via MDCO*)



Automated and self-regulating governance standards (e.g. tagging policies)



Tightly integrated CFM processes (e.g. optimisation initiatives linked into existing tools like JIRA)



CFM Scale beyond FTE growth (e.g. respecting optimum CFM team size)

Increased productivity from shifting FTE time from manual operations into value-added activities

Criteria to Consider (before implementing)

Define Desired Outcomes

Being prescriptive about the outcome and level of automation required for each use case

- ✓ Tag Governance
  - ✓ Identify and notify non-compliant resource owners
  - ✓ Stop/block non-compliant resources
  - ✓ Establish 'remove/delete' policy for non-compliant resources
- ✓ Scheduling Resources
- ✓ Usage Reduction
  - ✓ Notify resource-owners
  - ✓ Establish 'auto-stop/resize' in certain environments

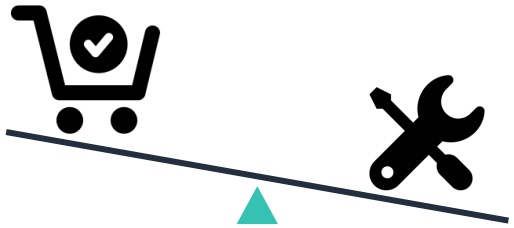
Validate Automation Use Case

Understanding if the organisation has enough scale to justify the investment (e.g. whether it is the right time)

- ✓ Outline human effort required to perform a manual process
- ✓ Obtain all cost drivers of implementing an automated solution for the use case (e.g. implementation, operation and maintenance costs)
- ✓ Perform an analysis to understand when (and if) is the right time to move from a manual process to an automated one

Best Practices (when implementing)

Buy vs. Build



Ensure the right balance between level of control and investment required

- ✓ Understand options available: cloud native tools, self-built, third party (hosted or SaaS)
- ✓ Consider compliance requirements that play a role in decision (e.g. HIPAA, SOC2, or PCI)
- ✓ Start (if possible) with cloud native and/or third party tools, as they have gone through a learning process (similar as you would)

Security

Ensure granting 'least privilege' security principle for all automation tools

- ✓ Granting ONLY the maximum level of permissions required to complete the task
- ✓ Especially important when using third-party tools, via a gradual approach
  - ✓ Start with READ ONLY mode
  - ✓ Move into notifications feeding your automation tools
  - ✓ Then eventually allow performing actions themselves

Getting Started

Take a progressive approach when implementing automation tools

- ✓ Start with INFORM mode
- ✓ Drive awareness of tools across the organisation to build confidence
- ✓ Perform gradual tool testing (e.g. on dev/test environments, small accounts)
- ✓ Measure performance, and iterate
- ✓ Move to FULL AUTOMATION mode

Example: MDCO

Metric-Driven Cost Optimisation

A method for executing automated optimisations based on monitoring key metrics within target thresholds

- ✓ MDCO is about knowing when is the optimal time to perform optimisations
- ✓ Primary MDCO rule: *don't do anything until you have a metric that measures the impact of your actions*

Core Principles of MDCO

Data as the ultimate trigger for driving organisations to take action

- ✓ Computers perform the measuring, not humans (e.g. loading billing data, generating optimisation recommendations)
- ✓ Target lines (on metrics) are crucial for providing a threshold from which you can derive a trigger point for alerts and actions

MDCO applied to Savings Plans (+RIs)

An MDCO method for rate-based optimisation, to maximise coverage and minimise human oversight

- ✓ Cadence-driven rate-based optimisation (for purchasing RIs/SPs) is fine to get started, but
  - ✓ Performing purchases slowly can leave substantial savings on the table
  - ✓ Looking at commitments too often may result in time wasted

Improving Cloud Financial Operations

Where to start

Customer's degree of maturity

Low hanging fruit

Ideal Scenario

- ✓ Start with either a decentralised or CFM-Led centralised CFM model
- ✓ Agree Executive Sponsorship and establish CFM partnership between Finance and Tech
- ✓ Begin with manual governance tasks (e.g. shutting down idle instances)
- ✓ Reach CFM basic education level (e.g. FinOps Practitioner)

- ✓ Broaden scope to a team-based centralised CFM model
- ✓ Implement a centralised CFM programme backlog
- ✓ Define common lexicon for measuring teams' performance and celebrate wins
- ✓ Introduce reactive governance guardrails (e.g. AWS Config)
- ✓ Evangelise tailored Cloud education across main stakeholders

- ✓ Evolve into a hybrid CFM model
- ✓ Deploy automated dashboards for near-real-time teams' performance comparison
- ✓ Automate governance policies with proactive AWS controls (CloudFormation)
- ✓ Implement MDCO-based commitments mgmt. process
- ✓ Organise Hackathons to accelerate collaboration between Finance and Tech teams

Who is responsible for what (personas)

Finance Persona

- ✓ Validate financial governance policies proposed by the FinOps team
- ✓ Validate feasibility of all CFM automation initiatives proposed by the FinOps team

FinOps Persona

- ✓ Agree Executive Sponsorship of CFM
- ✓ Establish and coordinate CFM partnership between Finance and Tech (daily/weekly cadence, celebrating wins, Hackathons)
- ✓ Deliver a timely cost reporting mechanism for all stakeholders, defined at the team level
- ✓ Outline governance strategy for cloud usage in the organisation, including policies and controls
- ✓ Define and ensure fulfilment of Cloud education curriculum tailored to corresponding stakeholders

Tech Persona

- ✓ Own processes when using a decentralised CFM model
- ✓ Validate (and implement) all optimisation initiatives recommended
- ✓ Implement all proactive and reactive controls across all accounts (Control as Code via AWS IAM, Preconfigured CloudFormation templates, SCPs on AWS Organizations, scheduling dev/test instances when not in use, remediation actions via AWS Budget Actions and AWS Config)

Thank you