



Cloud Finance Onboarding (CFO)



CFO

Cloud Finance Onboarding by 

CLOUD FINANCE ONBOARDING (CFO): MODULE 5

Cloud Performance Indicators

AGENDA

- 1 Measuring Cloud Spend Efficiency: KPIs
- 2 Tying Cloud Spend to Business Value: Unit Economics
- 3 Improving Cloud Performance Indicators



Measuring Cloud Spend Efficiency: KPIs

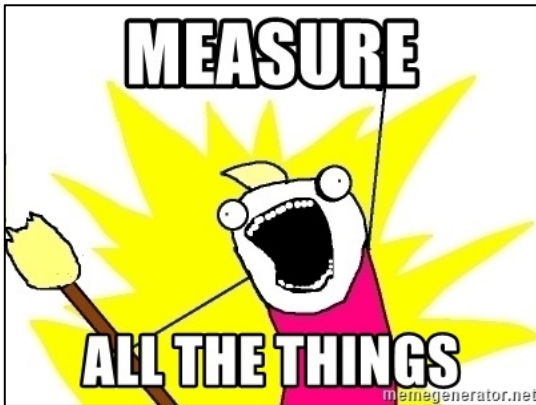


On Measuring Performance (1/3)



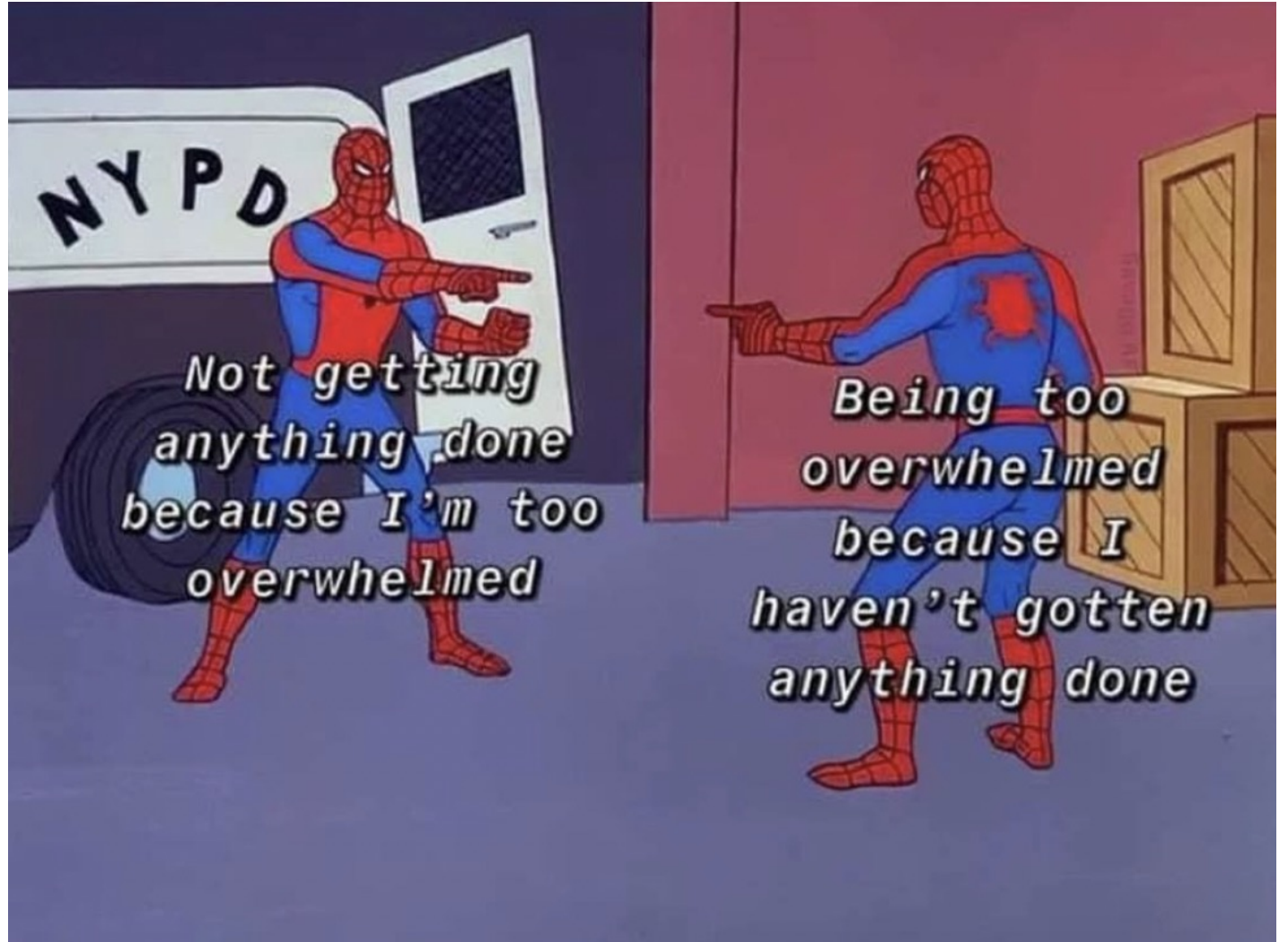
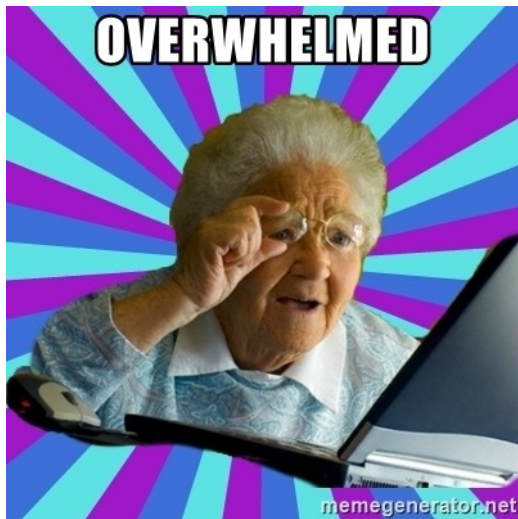


On Measuring Performance (2/3)





On Measuring Performance (3/3)





Measuring Performance: Choose your KPIs

Essential (not comprehensive)

An initial set of KPIs that aims to answer the most important questions

What?

What exactly are we trying to measure?

How can we remove ambiguity around this metric?

Why?

Why is this important?

What behaviours are we trying to incentivise?

Where?

What data do we need?

Where can we usually find this data?

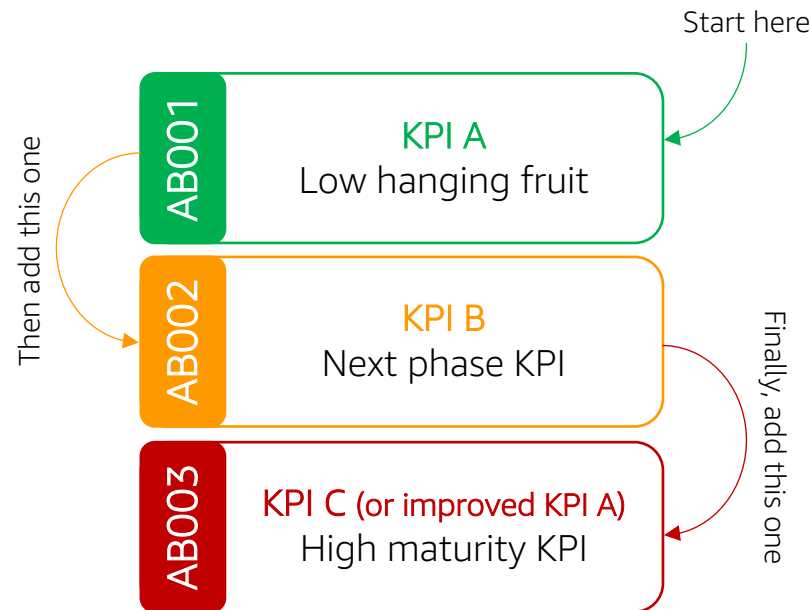
How to improve?

What can we do to improve this metric?

Where should we focus our CFM time to deliver results?

Progressive (not overwhelming)

A KPI structure that takes into account the level of complexity of implementation



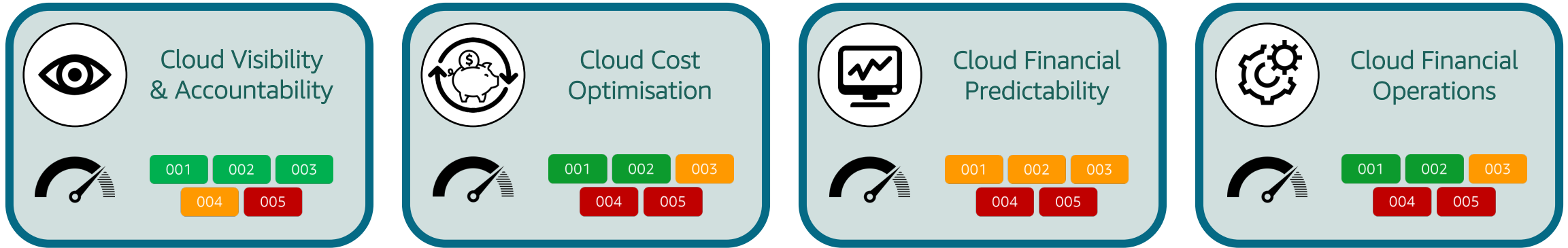
Unique to YOU

A proposal that provides flexibility to build your own dashboard based on your own circumstances

- ✓ Start point, not 'set in stone'
- ✓ Specific vs. Thought-provoking
- ✓ Can be split into different levels
- ✓ Centralised vs. At-the-Edge
- ✓ Ultimately, different for each customer; unique to you



A Proposal: 'SEE-SAVE-PLAN-RUN' Dashboard



A framework that provides a template to **measure and drive cloud financial management (FinOps) excellence** across its four main pillars / domains.



SEE (Cloud Visibility & Accountability)

		What?	Why?	Where?	How to improve?
SE001	Bill Trend Rate	AWS Spend Growth Rate (Daily, Weekly, Monthly, 3-Mo, 6-Mo, Annual)	This is a basic metric providing perspective on the trending of AWS spend, allowing as well to track unexpected behaviour.	AWS Cost Explorer: <i>Total (or Workload-specific) Cloud Spend for periods to be evaluated</i>	Observe evolution of SEE. SAVE, PLAN, RUN; to gain increased perspective into the nature of the observed growth.
SE002	Standalone Accounts Rate	Percentage of AWS accounts that do not belong to an AWS Organizations structure	AWS Organizations helps to maximise commitments utilisation by sharing, governance enforcement via sharing guardrails, and minimise oversight via consolidated billing.	AWS Organizations: <i>Linked Accounts</i> AWS Admin: <i>All Accounts</i>	Ensure that accounts that would benefit from AWS Organizations are added; and also setting an inclusive automated account creation process, to have them included by default.
SE003	Untagged Spend Rate	Percentage of AWS spend that does not correspond with any cost allocation tag	In order to maximise adequate AWS spend allocation (e.g. minimising centralised charges), companies should maximise ratio of spend that corresponds with cost allocation tags.	AWS Cost Explorer: <i>Untagged Spend</i>	Improve KPI SE004 .
SE004	Untagged Resources	Number of AWS resources that do not have a cost allocation tag	In order to maximise adequate AWS spend allocation (e.g. minimising centralised charges), companies should maximise number of resources with cost allocation tags.	AWS Tag Editor: <i>Untagged Resources</i>	Manually tag untagged resources; apply proactive IAM policies to prevent untagged provisioning; configure reactive rules to automatically detect and fix untagged resources.
SE005	Unallocated Spend Rate	Percentage of total AWS spend that has not been allocated to a business unit, product line, etc.	Adequate Cost Allocation provides collective accountability, a view on profitability, and exhaustive showback/chargeback of AWS spend.	AWS Cost Explorer: <i>Tagged (and untagged) Spend</i> AWS User: <i>Allocation Rules and Centralised View</i>	Improve KPI SE003 ; and properly define/refine allocation methods especially for both shared and 'untaggable' sources of AWS spend.



SAVE (Cloud Cost Optimisation)

		What?	Why?	Where?	How to improve?
SA001	Compute Rightsizing Opportunities*	Estimated monthly savings from: A) Rightsizing underutilised resources; AND B) Terminating idle resources	Virtualization provides multiple compute choices for customers (family, size), but it is also key to ensure we are only using what we need, since we pay for what we use.	AWS Cost Explorer: <i>Computing Rightsizing Opportunities</i>	Ensure rightsizing recommendations are considered on monthly reviews, and evaluated by tech teams, in order to minimise compute usage waste.
SA002	Commitments Utilisation Rate	Percentage of utilisation of each active SP/RI commitment (monthly)	Commitments provide drastic rate reductions for steady-state workloads, but also imply 24/7 usage: is key to maximise utilisation of each purchased commitment.	AWS Cost Explorer: <i>SP / RI Utilisation</i>	Pre-purchase: ensure to maximise flexibility possible; post-purchase: (if KPI is not close to 100%) investigate with all teams where estimated usage is not being met anymore.
SA003	Commitments Coverage Rate	Percentage of all eligible on-demand spend not covered by any active SP/RI commitment	Commitments provide drastic rate reductions for steady-state workloads, but also imply 24/7 usage: is key to gradually maximise the coverage of eligible resources.	AWS Cost Explorer: <i>SP / RI Coverage</i>	Consider coverage candidate resources on monthly reviews (with help from tech teams), and ensure to maximise flexibility possible. Also leverage AWS Organizations to share commitments.
SA004	Non-Production Elasticity Score	Ratio of Non-Production EC2+RDS Cloud Actual Spend (\$) / Total Applicable 24/7 Spend (\$)	Non-critical EC2/RDS resources (dev/test/staging) can be scheduled to run only during office hours (40 hours/week), paying only for what we need to use, and saving up to 76%.	AWS Cost Explorer: <i>Actual and Applicable Spend</i> AWS User: <i>Allocation Rules</i>	Improve KPI SE005 (proper cost allocation), and consider on quarterly reviews opportunities for improving savings on non-production resources.
SA005	Modernisation Opportunities*	Estimated monthly savings from migrating EC2, RDS, ElastiCache, OpenSearch and EBS resources to their respective latest generation versions	Customers should embrace all cost-efficiency opportunities stemming from AWS evolving its offering via resource modernisation.	AWS Cost Explorer: <i>Current Applicable Spend</i> AWS User: <i>Latest Generation Pricing and Matching</i>	On one hand, be aware of AWS' latest generation announcements; and on the other hand, consider these opportunities on quarterly reviews, and evaluated by tech teams.




PLAN (Cloud Financial Predictability)

		What?	Why?	Where?	How to improve?
PL001	Bill Shock Frequency*	A: Percentage of set budgets that breach unwanted thresholds (a.k.a. 'Bill Shocks') in a given period B: Total number of 'Bill Shocks'	Customers should feel in control of their AWS spend and ideally avoid any surprises (e.g. Bill Shock), by building on their cloud financial predictability.	AWS Budgets: <i>Number of budget alerts</i>	Recalibrate based on observed behaviour; identify and fix root cause for breaching unwanted thresholds (AWS Cost Explorer, AWS Cost Anomaly Detection)
PL002	Bill Shock Variance	Percentage of the delta between total variance and total set budget amount (in the budget's period)	This provides context into the severity of the Bill Shocks that actually occur.	AWS Budgets: <i>% Budget Variance (in Budget History)</i>	Recalibrate based on observed behaviour; identify and fix root cause for breaching unwanted thresholds (AWS Cost Explorer, AWS Cost Anomaly Detection)
PL003	Forecast Accuracy: Monthly	Percentage of the delta between actuals and forecast (on a monthly basis)	Good forecasts are the basis for good cloud financial predictability, and helping avoid Bill Shocks. It's all about setting the expectations right.	AWS Cost Explorer: <i>Actuals</i> AWS User: <i>Forecasts</i>	Fine-tune your forecasting: method (simple trend-based, simple driver-based, ML-based, unit-metrics-based), and external factors (customer growth, seasonality, workload roadmap)
PL004	Bill Shock Remediation Time	Average time to evaluate and remediate any observed 'Bill Shock' in a given period	Remediation speed is key to mitigate collateral damage (e.g. endless Lambda functions, dev/test environment compute/database resources, etc.)	AWS Budget Actions: <i>Automated remediation native tool</i> External to AWS: <i>Customer Ticketing System (e.g. JIRA)</i>	Implement automated remediation actions in AWS Budget Actions; or implement ticketing systems (e.g. JIRA) to help drive awareness and speed in solving remediation requests.
PL005	Forecast Accuracy: Daily	Percentage of the delta between variance and forecast (on a daily basis)	Some use cases might require more granularity in forecasting periods (workloads' earlier stages, or when cash preservation is crucial). This KPI may need some automation support.	AWS Cost Explorer: <i>Actuals</i> AWS User: <i>Forecasts</i>	Fine-tune your forecasting: method (simple trend-based, simple driver-based, ML-based, unit-metrics-based), and external factors (customer growth, seasonality, workload roadmap)



RUN (Cloud Financial Operations)

		What?	Why?	Where?	How to improve?
RN001	CFO Education Score	Percentage (or weighted average) of all relevant stakeholders that have completed a defined set of basic FinOps / Cloud certifications	Cloud Financial Management is an evolving process that requires all stakeholders to achieve optimal Cloud fluency (how to operate in a dynamic spend environment)	External to AWS: <i>Customer Repository</i>	Lead a process of organisational culture change, education evangelising, senior executive championing, celebrating educational wins.
RN002	Governance Score	Percentage (or weighted average) of all governance methods (e.g. AWS Tools) that are being actively used by the CFM programme	The idea is to encourage the organisation to actively think how to enact governance in their Cloud usage, with the aim to accelerate efficient Cloud adoption.	AWS Console: <i>Service Configurations</i> CFM Stakeholders: <i>Who is doing it?</i>	Revise the topic on a quarterly basis, where the benefits of each option are evangelised, understood and planned for piloting and launch.
RN003	CFO CSAT Score	Average NPS from all relevant stakeholders on the actual CFM Programme	Especially in earlier stages, it is important to get a view/opinion from all the relevant stakeholders; including a numerical value (e.g. NPS) plus a space for anecdotes.	External to AWS: <i>Customer Repository</i>	Both act on the feedback received, as well as communicate, communicate, communicate to avoid surprises and maximise stakeholder alignment.
RN004	Optimisation Evolving Score*	A: Average time to evaluate optimisation recommendations B: # of recommendations implemented C: \$ of savings achieved	Whilst optimisation is key, any recommendation needs assessment; therefore it is recommended to start with assessment speed, then implementation, then actual savings.	External to AWS: <i>Customer Ticketing System (e.g. JIRA)</i> AWS Cost Explorer: <i>AWS (delta) Spend</i>	Implement ticketing systems to help drive awareness and speed in implementing this type of request.
RN005	CFO Running Cost	Total cost of running Cloud Financial Operations (FTEs and Automation Tools)	Finding the right balance between human effort and automation usually involves scale as a key deciding factor, and this KPI helps assess when automation makes sense.	External to AWS: <i>Employee/Salary Data, and Cost of Building/Running Tools</i>	Identify FTE efficiencies along the journey, or shift to automation as scale justifies it. Also, on tools: reduce overall AWS bill (for tools charging based on AWS bill).

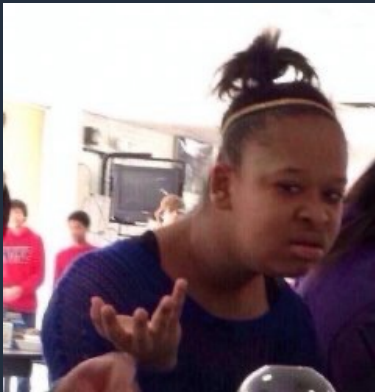
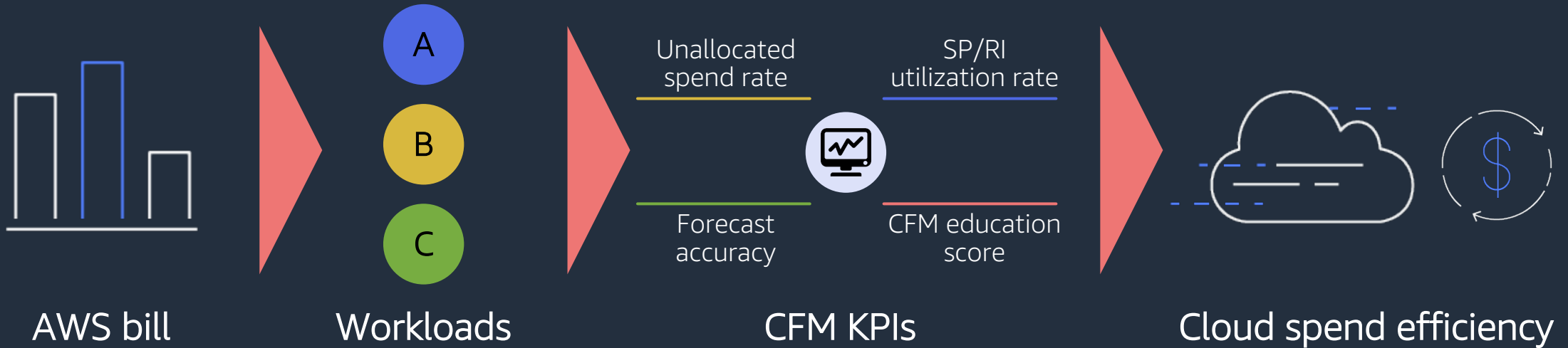


Tying Cloud Spend to Business Value: Unit Economics



Measuring Cloud Spend Efficiency: KPIs

Using CFM KPIs to drive **ownership** and **cloud spend efficiency**



Business owner

What does this really mean for **me**?

How profitable is my BU, solution, feature?



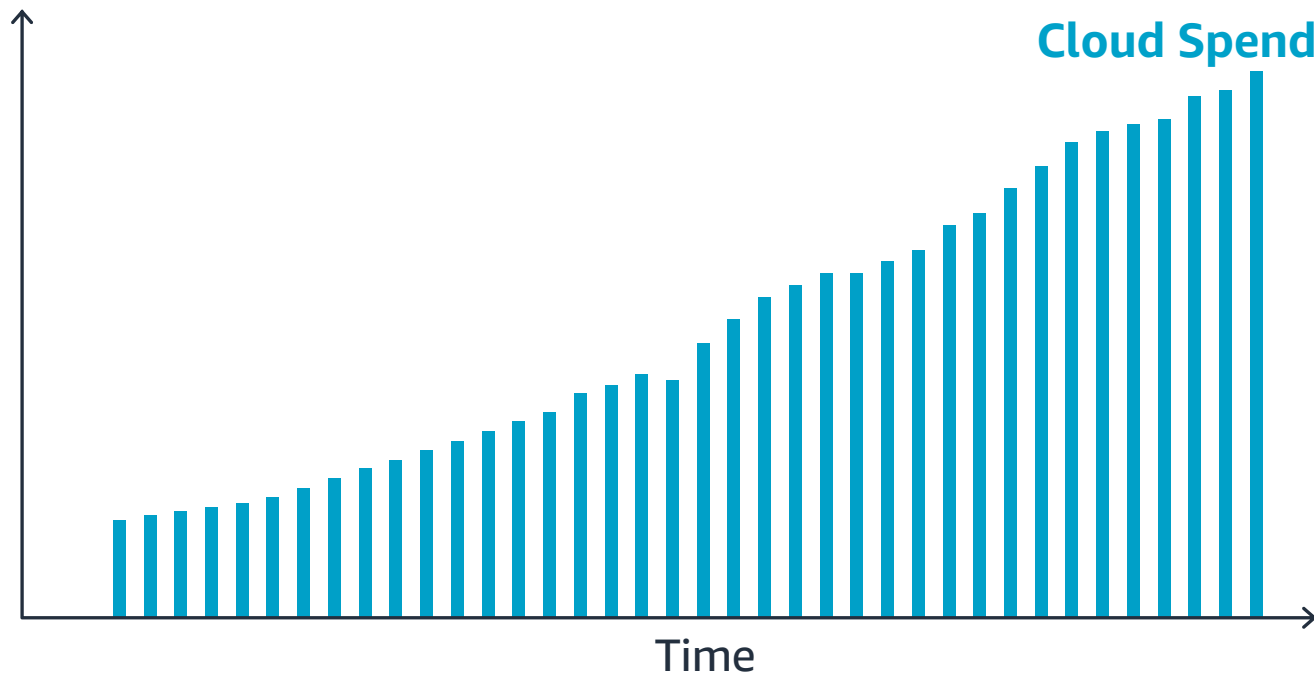
Senior leadership

Am I bringing the expected returns from leadership and/or shareholders?



The Cloud Spend Conundrum

As organisations increase their cloud footprint, each time the cloud bill goes up, a debate typically opens about **whether spend is good or bad**



Was it because of inefficient usage patterns being built up over time?

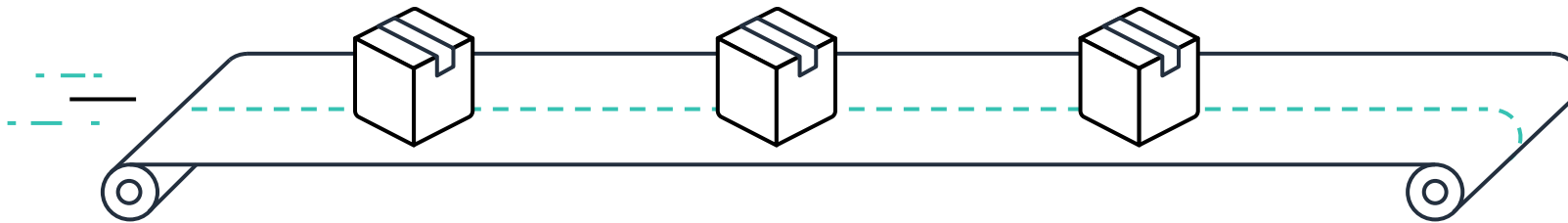
Was it because of acceleration in our cloud migrations?

Was it actually due to **organic business growth**?



Cloud Unit Economics

A 'Unit Metric' is a measure of **costs** (or **consumption**) associated with a particular business model (e.g. service, workload), expressed on a per-unit basis

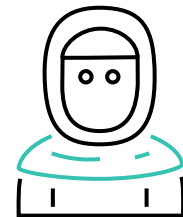


$$\frac{\text{AWS spend \$}}{\text{Demand Driver}} = \text{incremental unit cost}$$

$$\frac{\text{AWS resource usage}}{\text{Demand Driver}} = \text{incremental unit consumption}$$



Product owner



Engineer



Finance
team member



IT professional



Demand Drivers

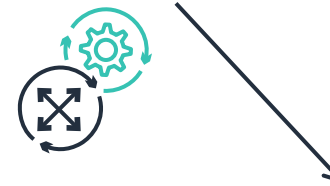
Finding the right unit metrics is a fine art, and it relies on **finding the right 'demand drivers'** (those most highly correlated to cloud spend)



Demand
driver activity



Cloud
resource usage



Demand
driver activity



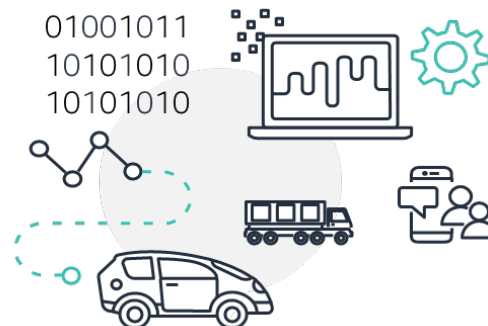
Cloud
resource usage

Examples

Daily/weekly/monthly active
customers or users

Seconds or GB of video streamed

Successful API responses



Page clicks

Order lines processed

Event occurrences

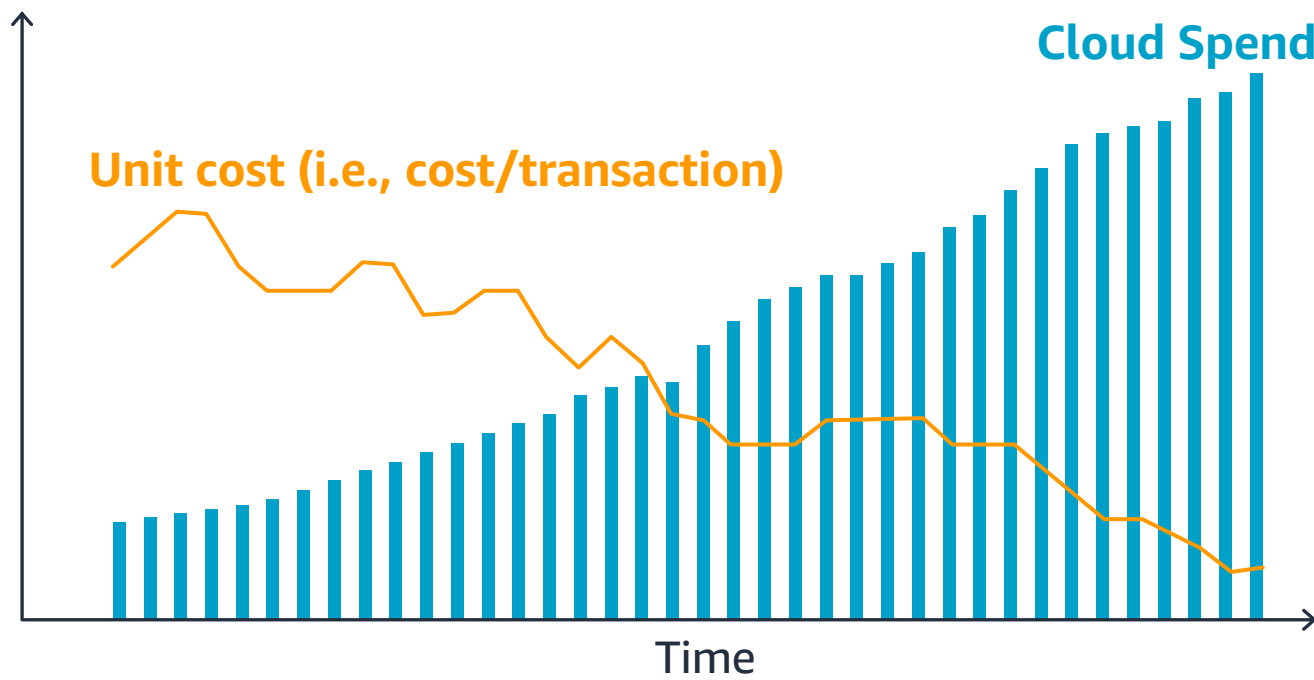
Concurrent logins





Unit Metrics: CFM/FinOps Nirvana

Unit Metrics help to identify the value of allowing a certain amount of spend to capture additional revenue



A rising cloud spend pattern now put into perspective with a declining 'unit cost' trend, showing increased economies of scale (e.g. 'a good thing')



Example (1/2)

If 'Active Customers' shows high correlation (R^2) with AWS spend ...



Active Customers



AWS resources
consumption



Demand
driver activity



Cloud
resource usage

Unit
Metric

AWS \$ / Active Customer

Allowing you to move from 'Cloud Usage' metrics ...

Total AWS invoice \$
\$ / Amazon EC2¹ hour
\$ / GB storage
\$ / GB of Data Xfer
\$ / AWS service consumption units

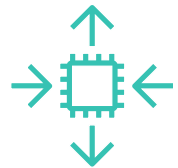
... to more contextualized 'Business Success' metrics

Total AWS \$ / Active Customer
Amazon EC2 \$ / Active Customer
GB \$ total storage / Active Customer
Data Xfer \$ / Active Customer
Individual AWS services \$ / Active Customer



Example (2/2)

AWS resources in their respective units of consumption can also be used to **quantify engineering efficiency** when expressed with the 'unit metric' as the denominator



Amazon EC2
hours

Active Customer



GB
storage

Active Customer



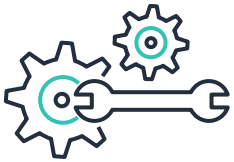
Individual AWS
service unit of measure

Active Customer



Unit Metrics in Context (1/2)

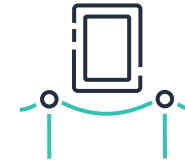
When is it okay to increase unit cost or unit resource consumption?



Fixing a bug



Implementing a
regulatory requirement



Rolling out infrastructure for new
features or products



Unit Metrics in Context (2/2)

Initial Business Decision



Introduction of a 'free tier' customer segment to drive initial adoption, and ultimately conversion to paid tiers

Potential observations

Increase in spend actually **costing more** than projected increase in revenue, whilst conversion rates have peaked

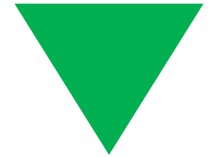
With a **better customer experience** management expects an increased conversion into paid tiers driving long-term value

Finetuning Business Decision

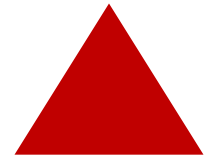
Decrease performance of supporting resources for free-tier customers to reduce costs and rebalance P&L

Increase performance of supporting resources for free-tier customers to improve UX, drive conversion and rebalance P&L

Unit Metric Impact



Reduced
'AWS \$ / Active Customer' showing the effects of **driving efficiency**



Increased
'AWS \$ / Active Customer' reflecting **true cost of operations** (still a good thing!)



Application: Driver-based Forecasting



A SaaS product currently responds to 1.5 million API calls a month and costs \$13,750 to operate (total allocated AWS bill) — the cost per successful call (our unit metric) stands at ~\$0.0091

At a granular level (for 1.5 million calls) the service costs are:

Amazon EC2	\$4,000	\$0.0027/call
Amazon S3	\$2,000	\$0.0013/call
AWS Elastic Block Store gp2	\$5,000	\$0.0033/call
Amazon API Gateway	\$1,500	\$0.0010/call
Data transfer	\$ 750	\$0.0005/call
AWS Lambda	\$ 500	\$0.0003/call

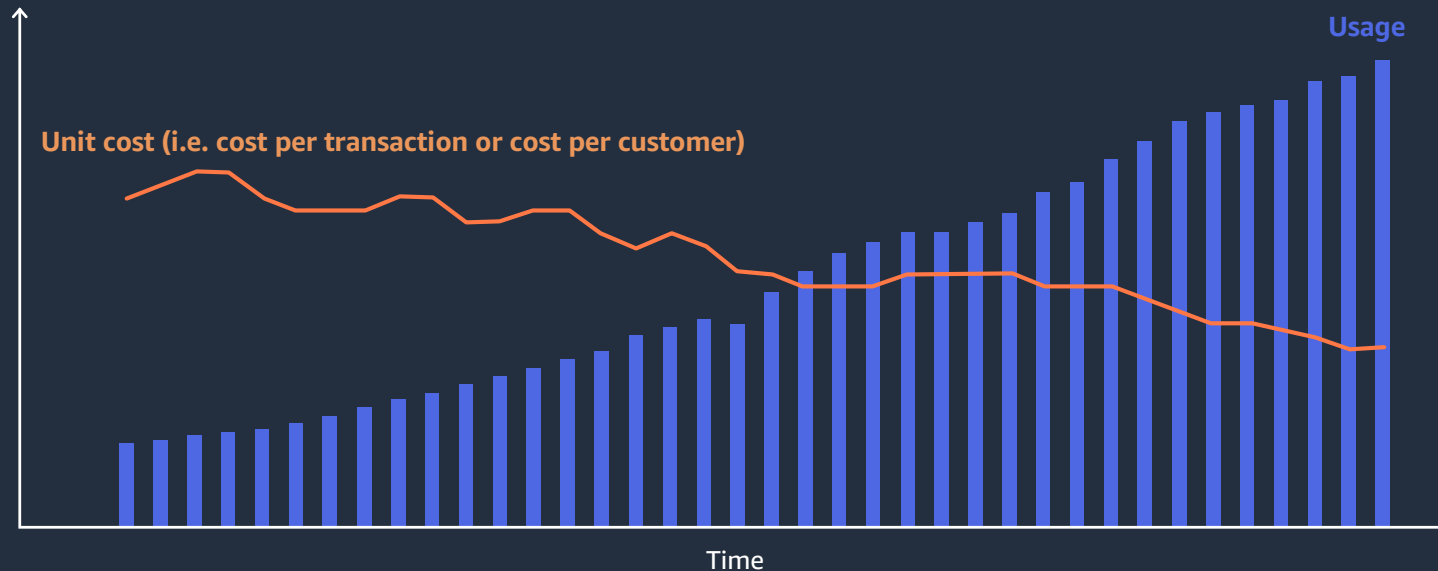


What is the estimated impact to both operating cost and resource usage by adding a new customer forecasted to make 2 million additional API calls a month?



Measuring Business Success: Unit Economics

Using unit economics to **translate 'Cloud Spend Efficiency' into 'Business Success'**



January: 'Our cloud spend per card transaction is 54 cents'

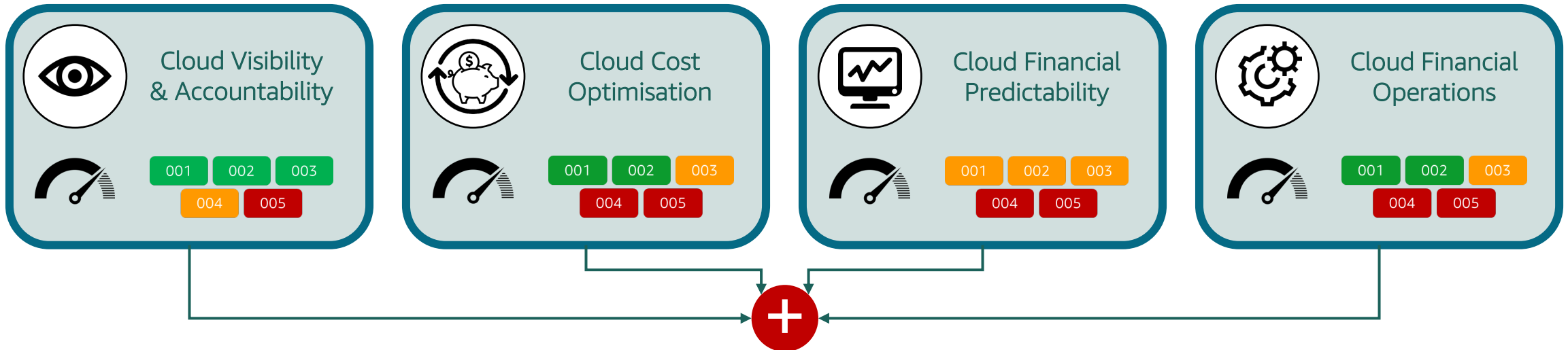
December: 'Our FinOps Team has managed to reduce this by 25% to 40 cents, increasing contribution margin by 14%'





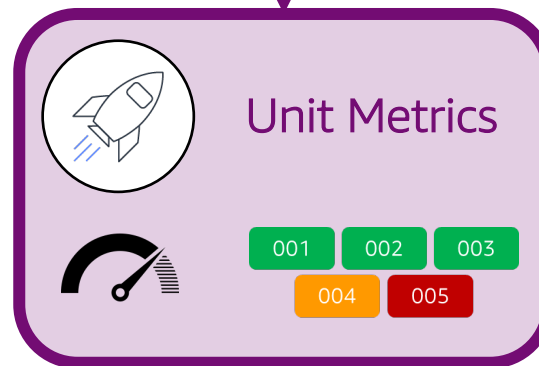
Full Proposal: 'SEE-SAVE-PLAN-RUN-FLY' Dashboard

1 Start here, by focusing on 'Cloud Spend Efficiency'



2

... so you can progressively focus here, and be able to ultimately measure and drive 'Business Success'





FLY (Unit Metrics 'a.k.a. FinOps Nirvana')

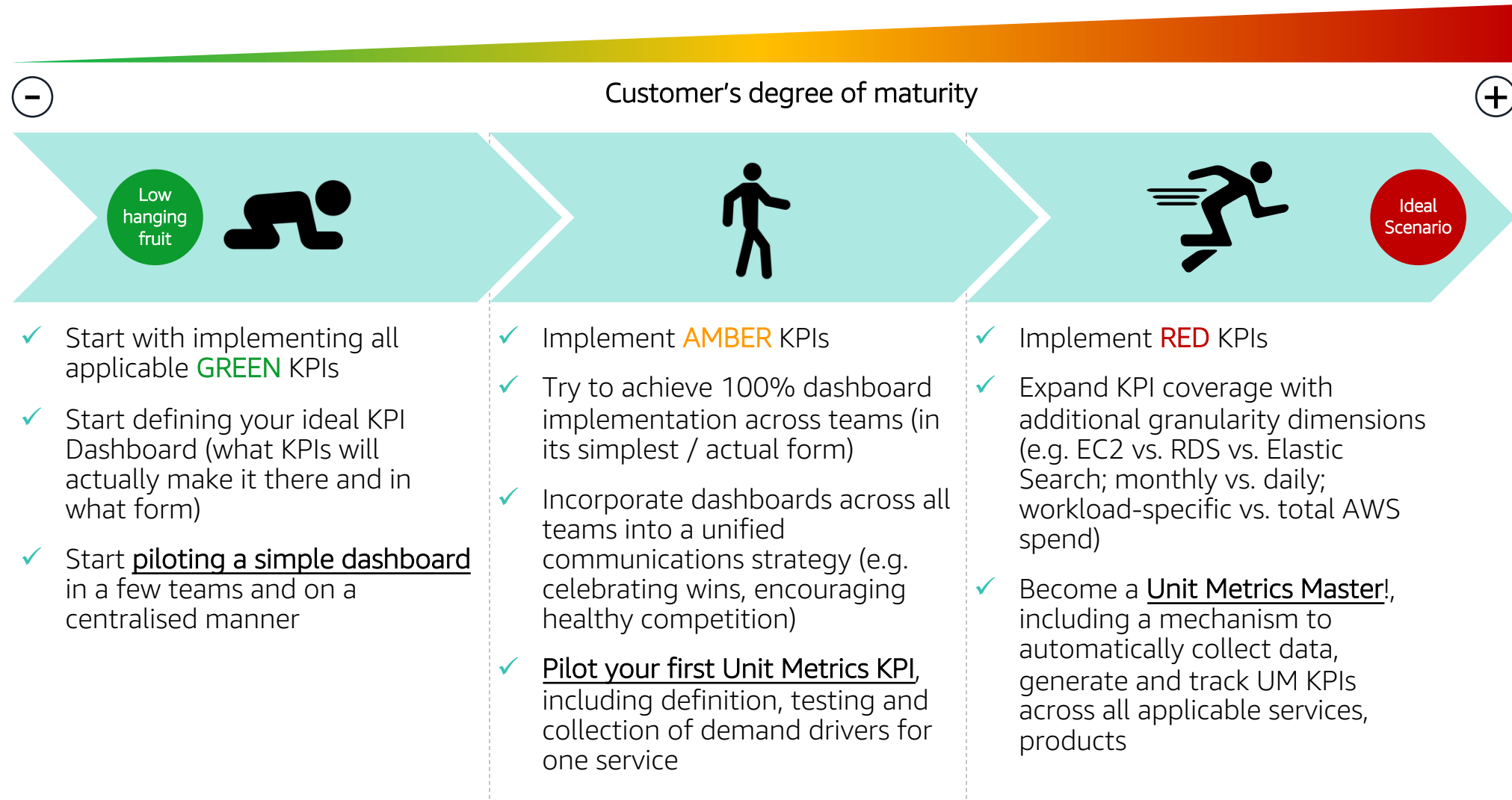
		What?	Why?	Where?	How to improve?
UM001	Overall Spend to Revenue Ratio	Ratio of Total Cloud Spend (\$) to Total Applicable Revenue (\$)	Begin here your Unit Metrics monitoring journey. It provides a 'quick and dirty' way to determine if growth in Cloud spend is correlated to profits for the organisation.	AWS Cost Explorer: <i>Total Cloud Spend (\$)</i> External source: <i>Total Revenue (\$)</i>	Easily affected by various business decisions (e.g. free tier offerings, marketing campaigns), compromising the integrity of the KPI. <u>Recommended as a temporary KPI.</u>
UM002	EC2 Compute Efficiency Ratio	Ratio of Total EC2 Compute Spend (\$) to Total EC2 Running Hours (hrs) (in a given month)	Operational Unit Metric (engineering efficiency) to aim for the most cost efficient usage of EC2-based compute; one of the key drivers of AWS spend.	AWS Cost Explorer: <i>EC2 Spend (\$)</i> , and <i>EC2 Running Hours (hrs)</i>	A combination of evolving SEE. SAVE, PLAN, RUN; in particular Savings Plans, elasticity, newer generation EC2, containerisation, serverless compute.
UM003	S3 Storage Efficiency Ratio	Ratio of Total S3 Storage Spend (\$) to Total S3 Storage Size (GB) (in a given month)	Operational Unit Metric (engineering efficiency) to aim for the most cost efficient usage of S3-based storage, one of the key drivers of AWS spend.	AWS Cost Explorer: <i>S3 Spend (\$)</i> and <i>S3 Storage Size (hrs)</i>	A combination of evolving SEE. SAVE, PLAN, RUN; in particular S3 storage tiers (Infrequent Access, Intelligent Tiering, Glacier, Glacier Deep Archive).
UM004	Workload Spend to Revenue Ratio	Ratio of Workload-specific Cloud Spend (\$) to Total Applicable Revenue (\$)	An improvement from UM001 . It provides increased granularity, and a KPI per individual service. Requires proper Workload-specific cost allocation.	AWS Cost Explorer: <i>Workload-specific Spend (account, tag, cost category)</i> External source: <i>Service-specific Revenue</i>	Easily affected by various business decisions (e.g. free tier offerings, marketing campaigns), compromising the integrity of the KPI. <u>Recommended as a temporary KPI.</u>
UM005	Workload Spend to Transaction Ratio	Ratio of Workload-specific Cloud Spend (\$) to identified demand driver (e.g. # of transactions/API calls in the same period)	A further improvement from UM004 . Requires finding a suitable demand driver with a strong correlation to a Workload-specific Cloud spend.	AWS Cost Explorer: <i>Workload-specific Spend (account, tag, cost category)</i> External source: <i>Service-specific Demand Driver</i>	Scale usually brings a natural improvement, but also we can ensure to have the best possible demand driver (e.g. high correlation to Workload-specific Spend)



Improving Cloud Performance Indicators



Where to start





Who is responsible for what (personas)



Finance Persona

- ✓ Validate and **make available business data** (outside AWS) required for obtaining KPIs (especially for UNIT METRICS)



FinOps Persona

- ✓ Lead the process of **defining a Dashboard Roadmap**, with all KPIs to be included (definition, calculation, data required, and ownership)
- ✓ Deliver a **timely KPI reporting** mechanism for all stakeholders, defined at the team level



Tech Persona

- ✓ Validate and **make available cloud usage data** (AWS) required for obtaining KPIs
- ✓ Commit to the **improvement of all KPIs**, both directly (by implementing optimisation recommendations on your own workloads) as well as indirectly (by evangelizing KPI wins across the organisation)

Thank you ... but few more things ...



Next week: 30min with CFM Experts

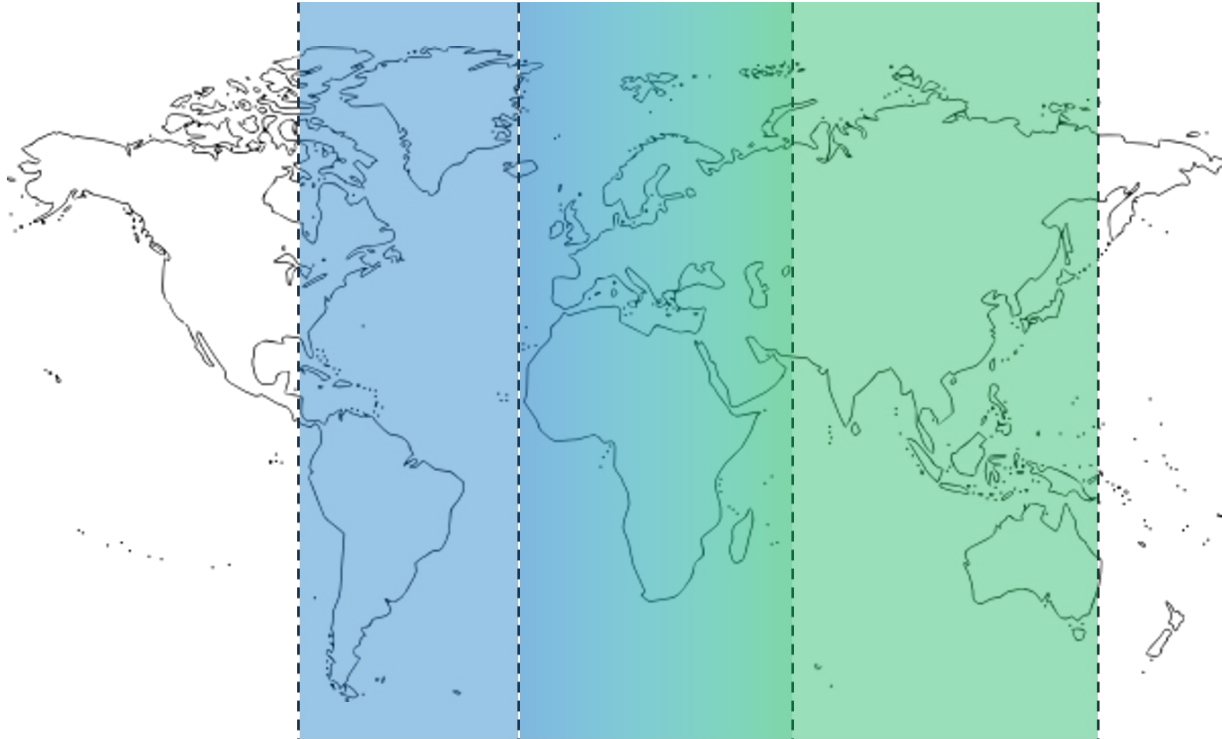
More
Questions
Open Room
30min

Wednesday
March 1st

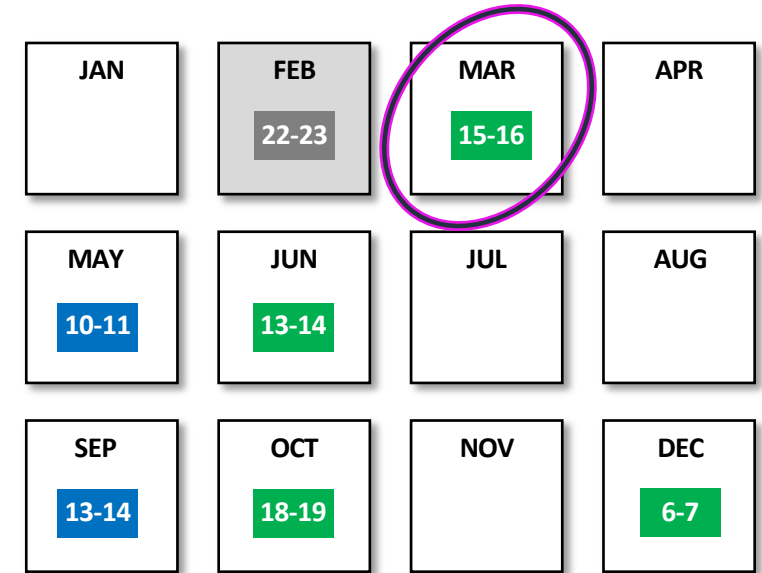
<https://chime.aws/7964562977>



7 editions in 2 time blocks covering 16 time zones



BLUE BOTH GREEN



BLUE ZONE
[13-18h CET]



GREEN ZONE
[08-13h CET]



CFM Capability Assessment

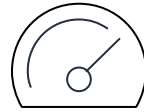
A mechanism to measure a company's maturity in its **cloud financial management capabilities**, identify gaps and areas of improvement, and create a **bespoke action plan and recommendations** leveraging AWS best practices



Inputs and Observations

The assessment consists of multiple capabilities/enablers across the four (4) CFM pillars (See, Save, Plan, Run)

AWS CFM practitioner facilitates the information gathering through interviews, rapid surveys and observations from current usage and spend trend analysis



Evaluation and Results

Level of maturity measured for each of the four (4) CFM pillars and summarized for overall CFM score

Top 10 and bottom 10 capabilities as quick findings

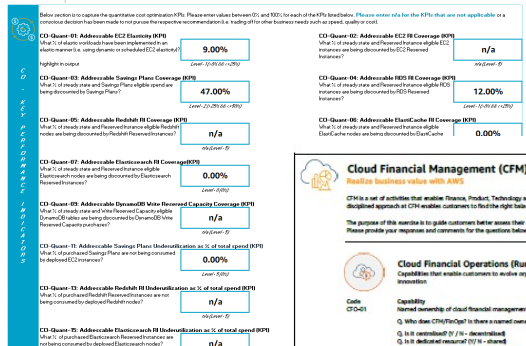
Heat-map and detailed view of all capabilities scored between a range of 0-5 maturity level



Recommendations & action plan

Extended engagement with Cloud Economics team for tailored recommendations and enablement focussing on key pain points identified

Detailed report with analysis and implementation plan to build CFM roadmap and run CFM as a program



Cloud Financial Management (CFM) - Capability Assessment Questionnaire

CFM is a set of activities that enable Finance, Product, Technology and Business organizations to manage, optimize and predict costs as they grow their usage of AWS. A disciplined approach at CFM enables customers to find the right balance between agility and control, while improving unit economics and cost efficiency.

The purpose of this exercise is to guide customers better assess their current CFM capabilities in order to create actionable remediation plan and address areas of weakness. Please provide your responses and comments for the questions below.

Cloud Financial Operations (Run)
Capabilities that enable customers to make organizations, processes, automation and tools to establish a self-sustaining cost-aware culture of innovation.

Code	Capability	Response	Comments
CTO-01	Internal ownership of cloud financial management activities	Yes	
CTO-02	Executive sponsorship for cloud financial management activities	Yes	
CTO-03	Business partnership/relationship between Finance & Technology organization	Yes	
CTO-04	Finance team partner with Tech team	Yes	
CTO-05	Finance team partner with Tech team	Yes	
CTO-06	Finance team partner with Tech team	Yes	
CTO-07	Finance team partner with Tech team	Yes	



Cloud Financial Management (CFM) - Capability Assessment

Realize business value with AWS

Overall Maturity Level: 2.49

Overall Maturity Score: 2.49

Overall Maturity Level: 2.49

Capability	Maturity Score
1. Using AWS Cost Explorer (MA-01)	5.00
2. Using AWS Cost and Usage Report (MA-02)	5.00
3. Using AWS Cost Explorer (MA-03)	5.00
4. Using AWS Cost Explorer (MA-04)	5.00
5. Using AWS Cost Explorer (MA-05)	5.00
6. Using AWS Cost Explorer (MA-06)	5.00
7. Using AWS Cost Explorer (MA-07)	5.00
8. Using AWS Cost Explorer (MA-08)	5.00
9. Using AWS Cost Explorer (MA-09)	5.00
10. Using AWS Cost Explorer (MA-10)	5.00

Room for Improvement - 10 Least Mature Capabilities

Capability	Maturity Score
1. Cost monitoring and alerts (MA-01)	0.00
2. Monitoring resource efficiency (MA-11)	0.00
3. Monitoring resource efficiency (MA-12)	0.00
4. Predictable cost optimization (CO-01)	0.00
5. Addressable EC2 Instance (CO-01)	0.00
6. Addressable EC2 Instance (CO-02)	0.00
7. Addressable Savings Plan (CO-03)	0.00
8. Addressable Reserved Instance (CO-04)	0.00
9. Addressable Reserved Instance (CO-05)	0.00
10. Addressable Reserved Instance (CO-06)	0.00

