



SUMMIT
ONLINE

O P E O 1

How to drive economic value through cost management and optimisation

Nathan Besh

Cost Lead, Well-Architected
Amazon Web Services

Agenda

Cost optimisation

Well-Architected (W-A) and Cloud Financial Management (CFM)

Domain Group

Savings Plans

What is cost optimisation?

The ability to run systems to deliver
business value at the lowest **price point**

State of cost optimisation

Do you have a security team/function?

Do you have an operations team/function?

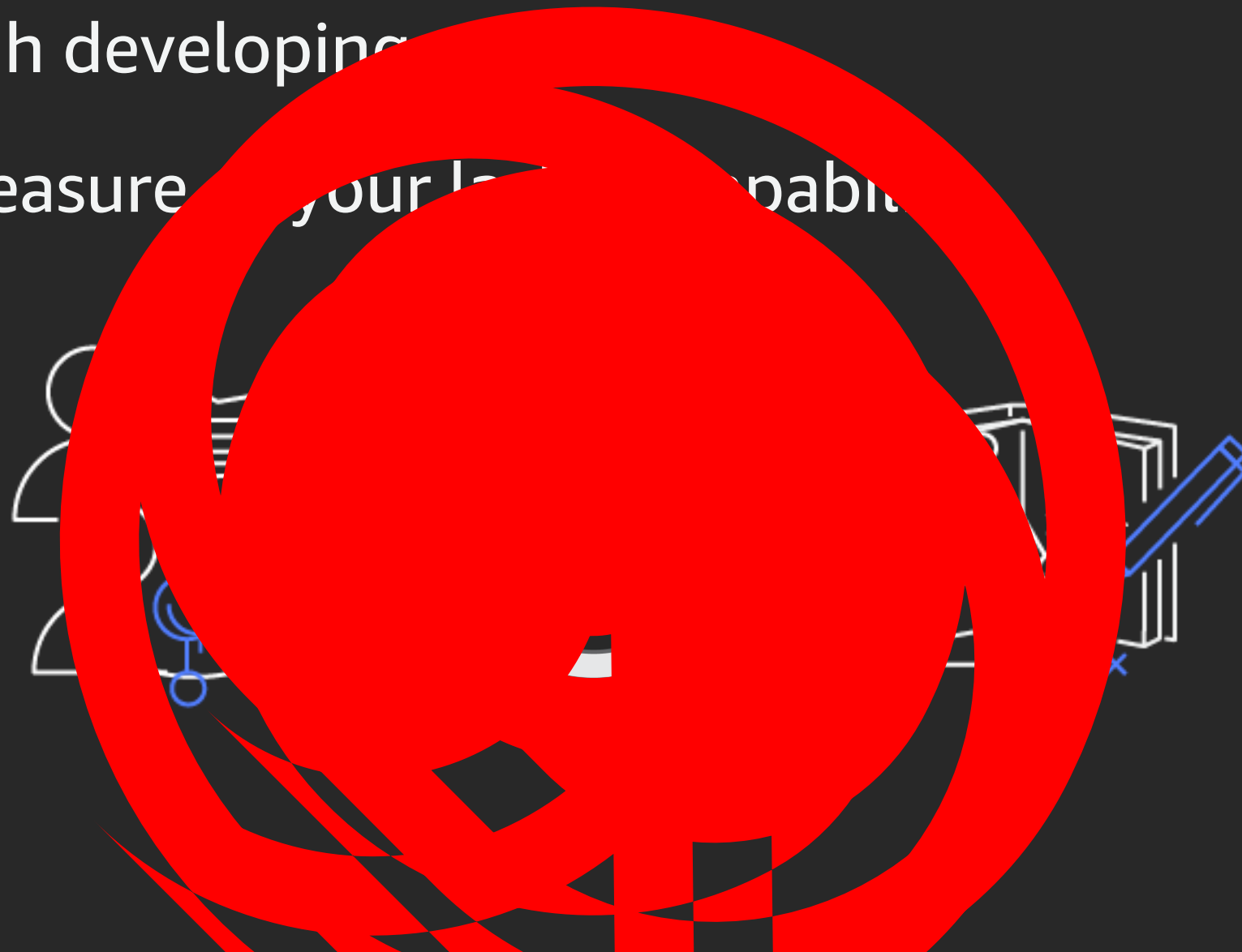
Do you have a cost optimisation team/function?

2020: Shift our focus

Billing → Value/efficiency

Long term through developing

Quick wins are measure your long-term capabilities



AWS Well-Architected



Operations



Security



Reliability



Performance
efficiency



Cost
optimisation



Review
process



Consistent



Technology
portfolio

Well-Architected (W-A) & Cloud Financial Management (CFM)

- Well-Architected
- Well-Architected whitepapers
- Well-Architected tool
- CFM = Activities enabling finance and technology to manage, optimise and predict costs on AWS
- CFM = Balance between cost, agility and control, while improving unit costs

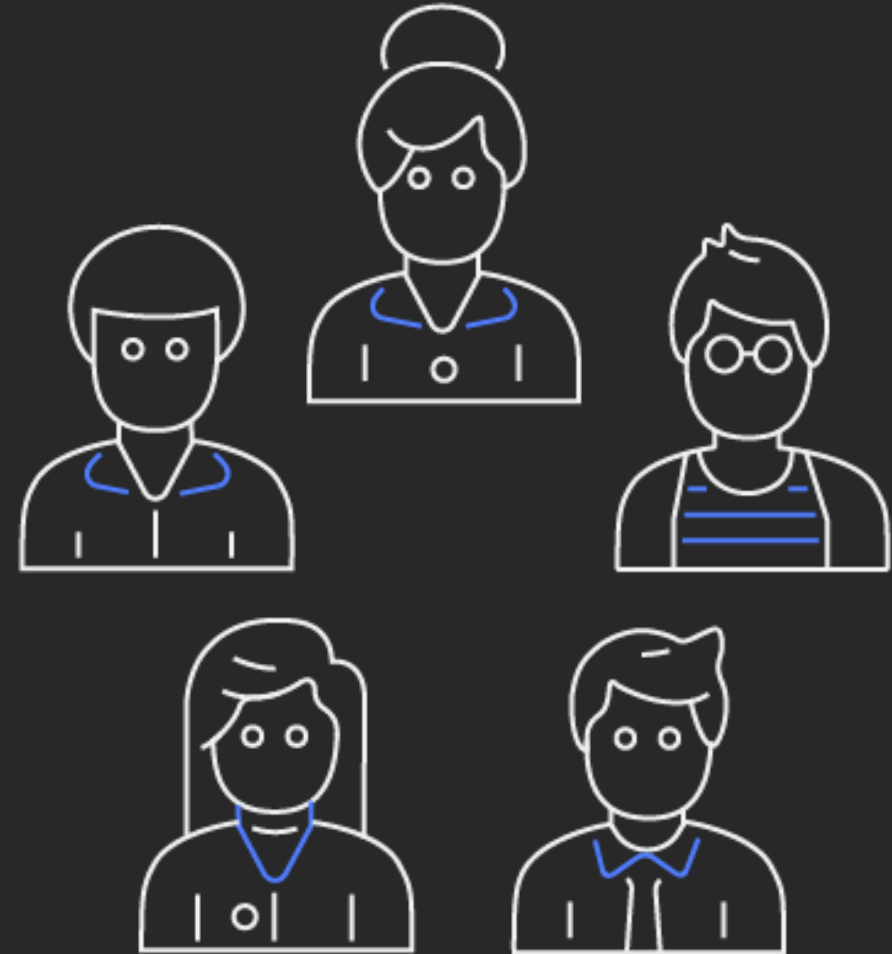


AWS Well-Architected

<https://aws.amazon.com/well-architected/>

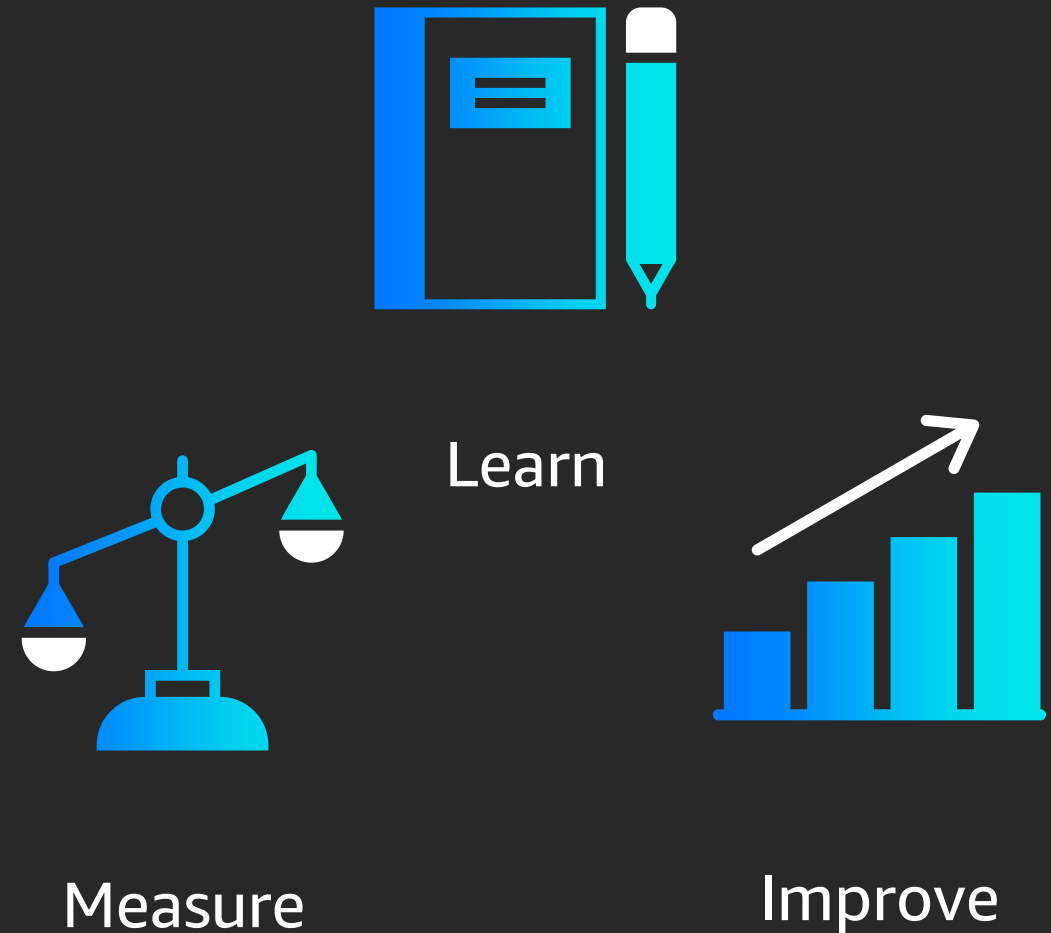
Drivers – Unique to cost

- Extrinsic
- Intrinsic
- Workload goals



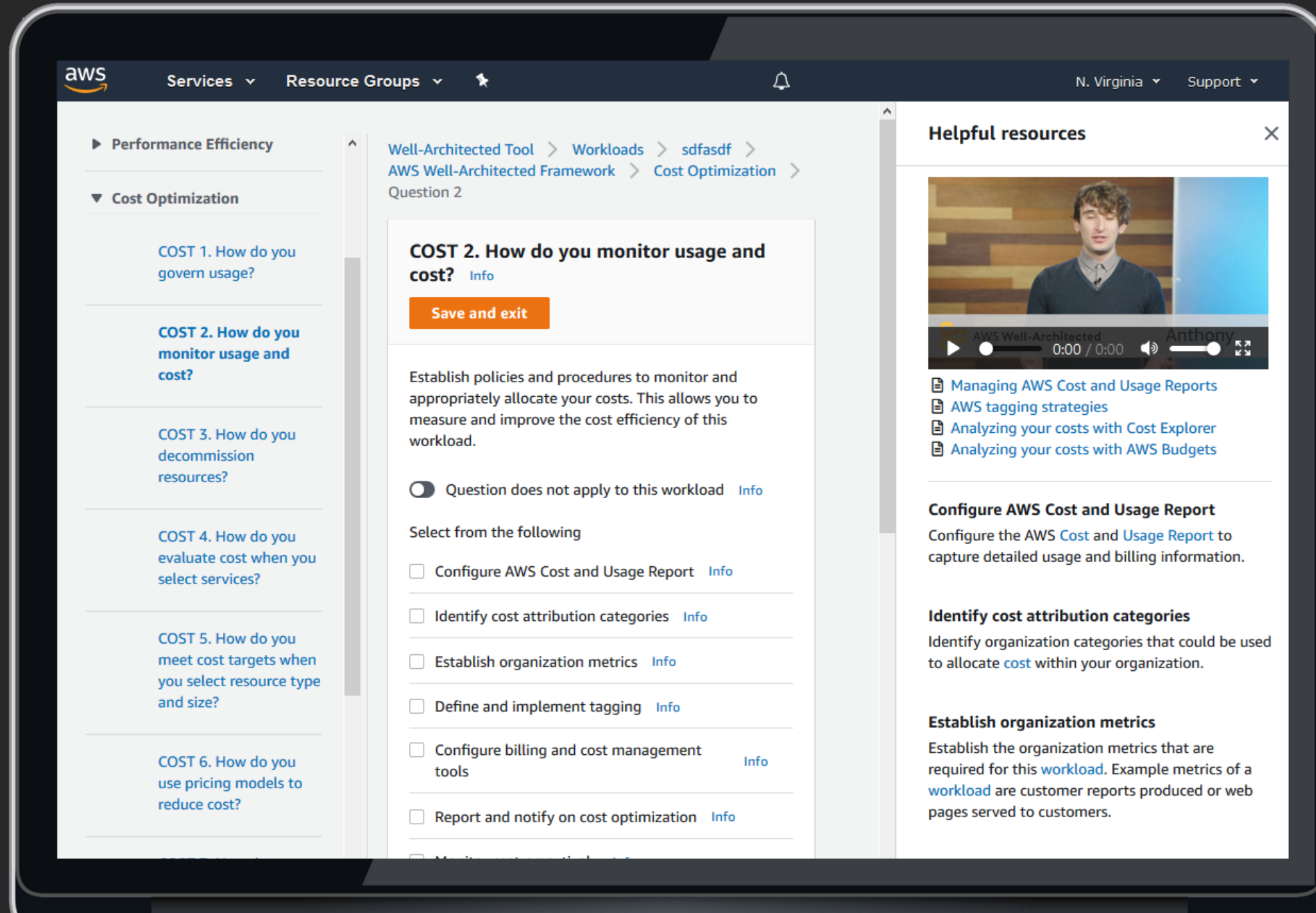
Why Well-Architected & CFM?

- Don't pay 3 times for a mistake
- Learn – Measure – Improve
 - Learning: Whitepapers and tool
 - Measure: Well-Architected tool
 - Improve: Well-Architected tool and labs



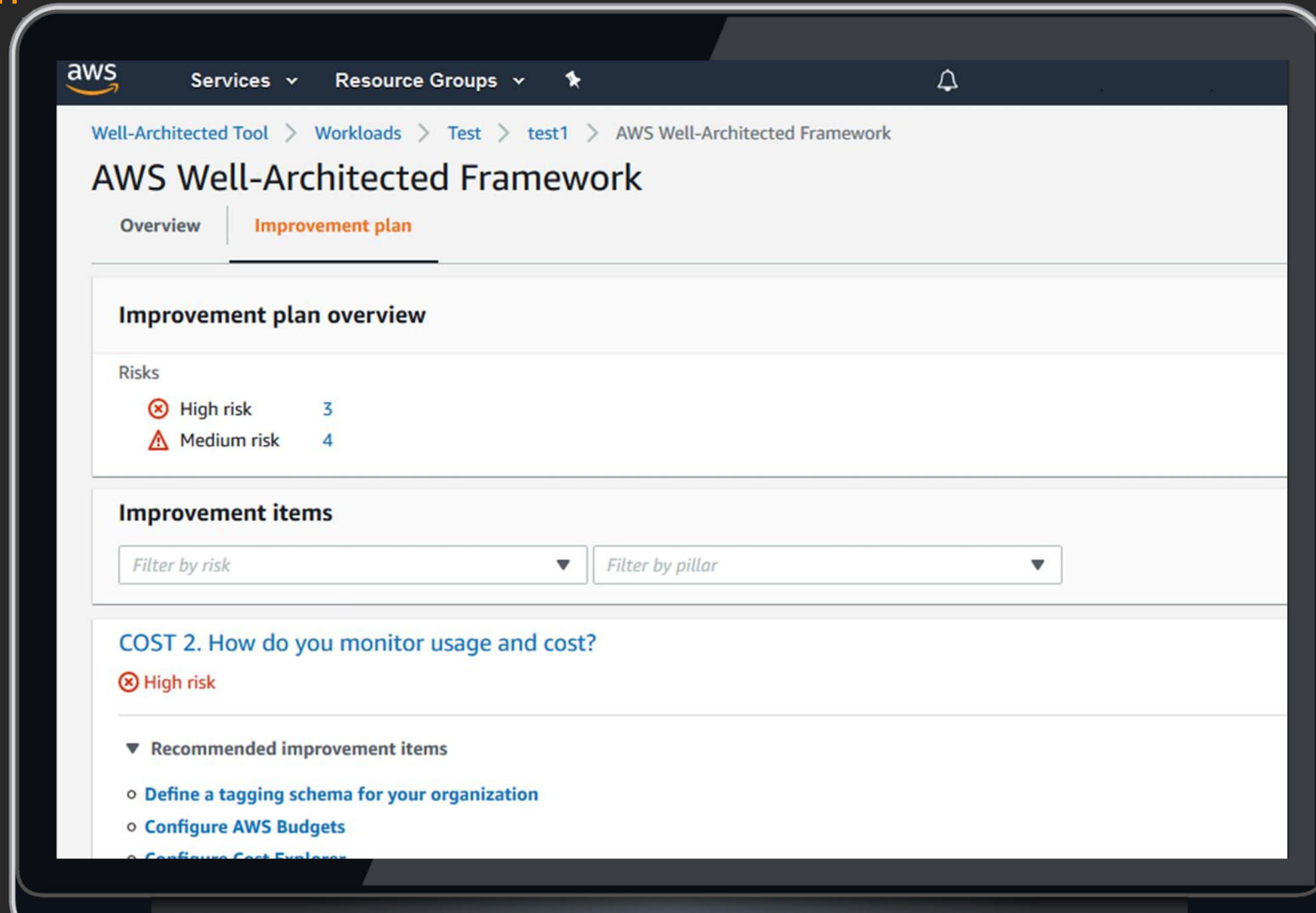
Well-Architected tool

Console view



Well-Architected tool

Improvement plan



Demo: Well-Architected labs

Domain group

Australia's home of property

Domain group

Australia's home of property

allhomes



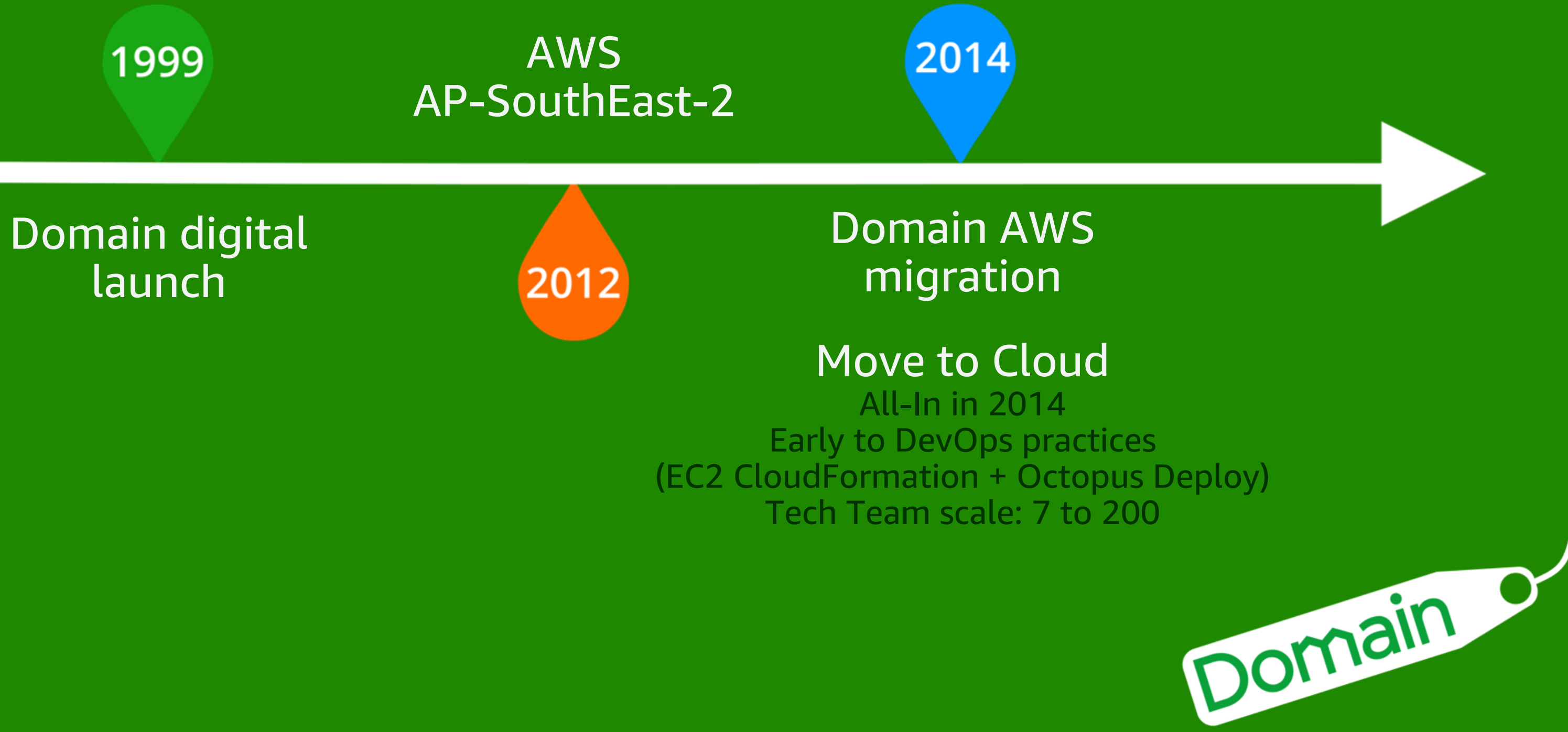
pricefinder



Commercial
Real Estate

Domain
LOAN FINDER
POWERED BY  lendi

Cloud journey



Cloud challenges



Decentralised decision making

Developers making cost decisions

Increased business cost

Growth priority
7-person tech team to 200-person tech team

Domain

Traditional cost management



Spot instances

72% over on-demand

Reserved instances

70% reserved coverage



Sleepy time

20% fleet shut-down
After hours



Limited access

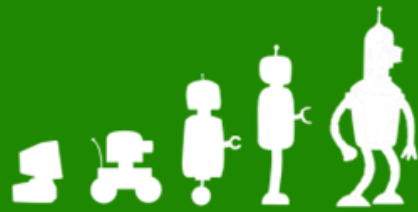
Prevent rogue infrastructure

Pets vs cattle

Infrastructure as code

Domain

Catalysts for change



Evolving technology

Containers
dotnet on linux



ASX listing



Scale and growth

From startup to enterprise



Unsanctioned resources



Decentralised decision making

Domain

Fundamentals



Improved transparency

Encourage cost ownership



Enable good tech decisions

Real-time spend decisions
Without cost blow-out

Improve financial governance

Domain

Objectives

Ownership



Pin costs to each team

Benchmark team costs

Business



Reduce management overheads

Improved cost predictability

Domain

Ownership objectives



Tag everything

Team
Application
Environment

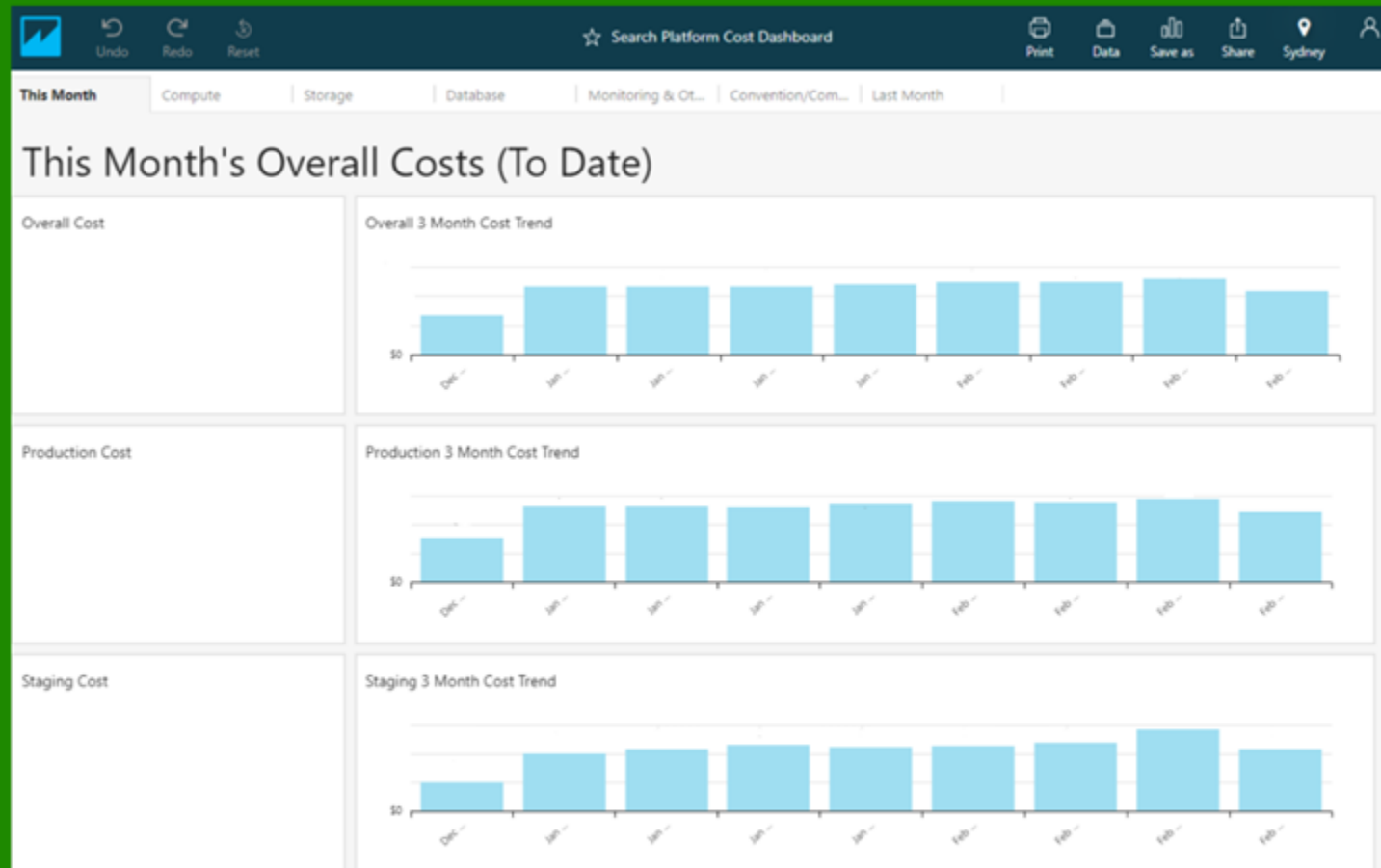
Custom AWS
quicksight dashboard
benchmarking
Visibility

Empower ownership

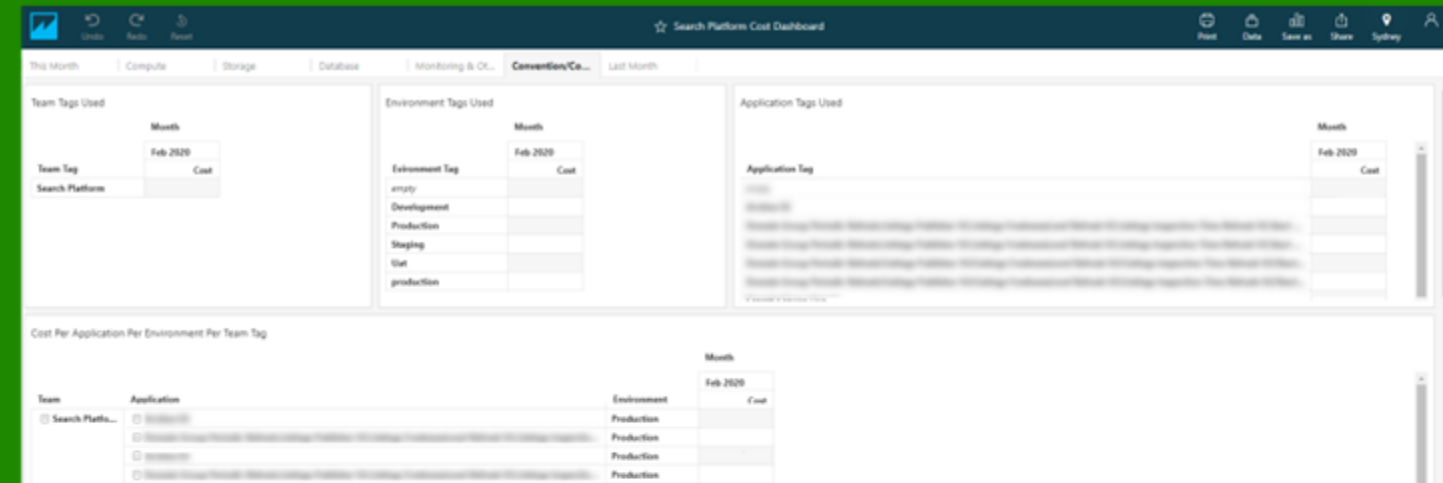
Right-sizing
Instance family
App optimisation

Domain

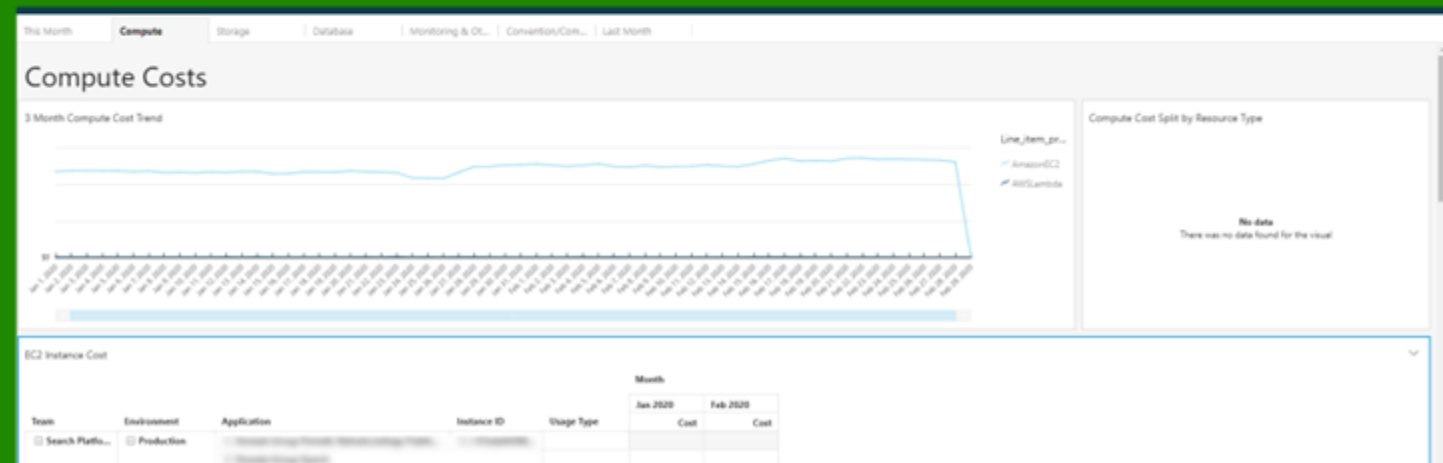
AWS QuickSight



Monthly spend trends



Tagging breakdown



Granular data

Domain

Business objectives



Improved reporting

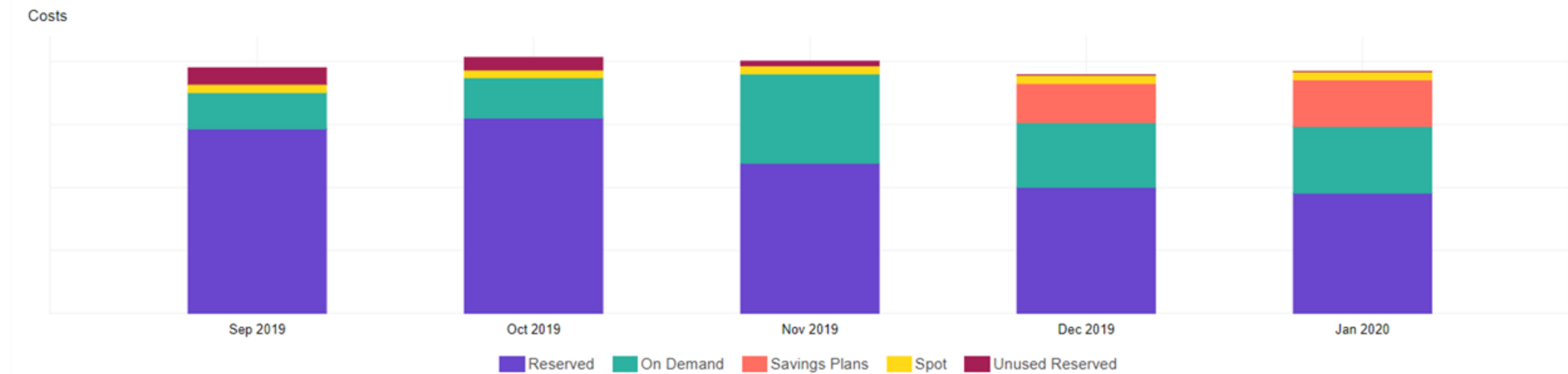
- Transparency
- Predictability
- Tagging deficiencies

Compute Savings Plan

- Improved wastage
- Less overheads
- Flexibility



Compute savings plan



Savings plan effectiveness

17% more cost effective than reserved instances
Significant less wastage

Domain

Next steps



Tagging

Remove untagged resources

SleepyTime

On-demand
More control & elasticity



Further Account Segmentation

Separation of concerns
Improve team-structure alignment

Increase SavingsPlan

As RI contracts expire



Savings Plans

Savings Plans

Flexibility and management costs

Standard RI	Regional RI (AZ)	Size Flex (AWS Linux) (AZ, Size)	Convertible RI (AZ, size, family, OS, tenancy)
Instance Savings Plan (AZ, size, OS, tenancy)			Compute Savings Plan (AZ, size, family, OS, tenancy, region, service)
Highest discount up to 72%			High discount up to 66%

Savings Plans

Allocation of discounts

	Account A			
	OD Spend	SP Spend	Discount	Saving \$
Instance Type 1				
Instance Type 2				
Instance Type 3	\$ 100.00	\$ 40.00	60%	\$ 60.00
Instance Type 4	\$ 181.82	\$ 100.00	45%	\$ 81.82
Instance Type 5	\$ 61.54	\$ 40.00	35%	\$ 21.54
Instance Type 6	\$ 18.75	\$ 15.00	20%	\$ 3.75
Instance Type 7	\$ 5.88	\$ 5.00	15%	\$ 0.88
Instance Type 8				
Instance Type 9				
Totals:	\$ 367.99	\$ 200.00		\$ 167.99

AWS organisations – account structure

Savings Plans

The downside of flexibility and valid recommendations

30 Instances of x1e.xlarge at 100% Utilisation

On Demand: \$18,264

Savings Plan: \$11,256

Saving: \$7,008 = 38% discount

1 Instance of x1e.32xlarge at 63% Utilisation

On Demand: \$12,273

Savings Plan: \$12,005

Saving: \$268 = 2% discount

Valid Recommendation for x1e

Savings Plan: \$23,261

Saving: \$7,276 = ~23% discount

Savings Plans – Research results

How much should I purchase?

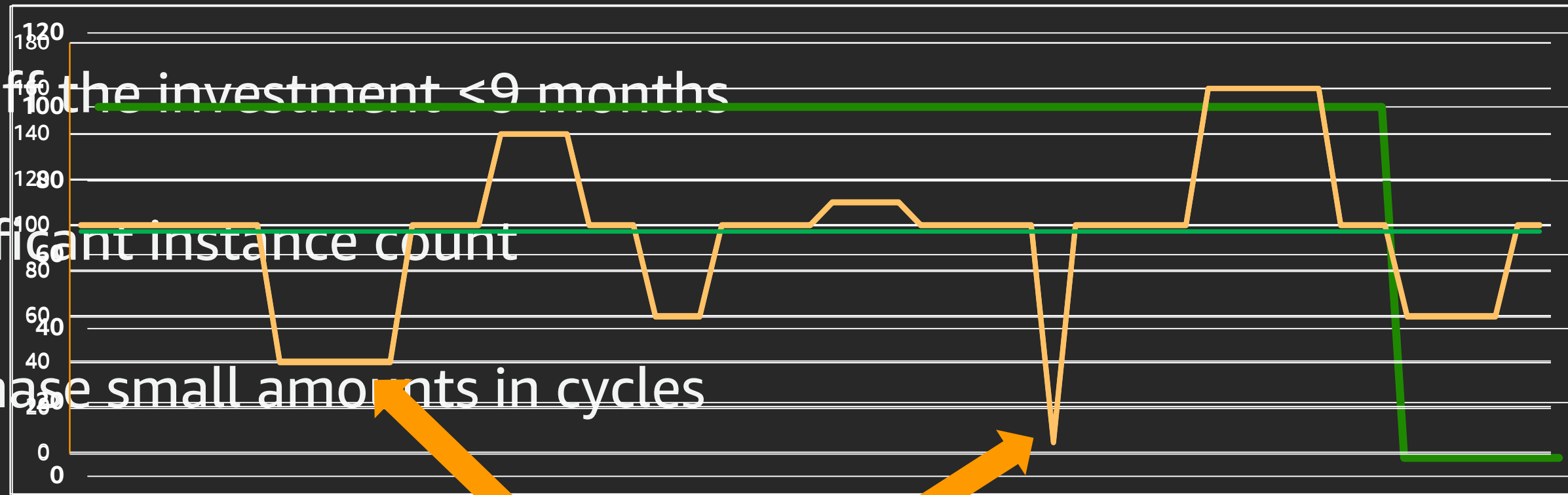
Lowest point of sustained usage/spend

Steady/positive usage trend

Pay off the investment < 9 months

Significant instance count

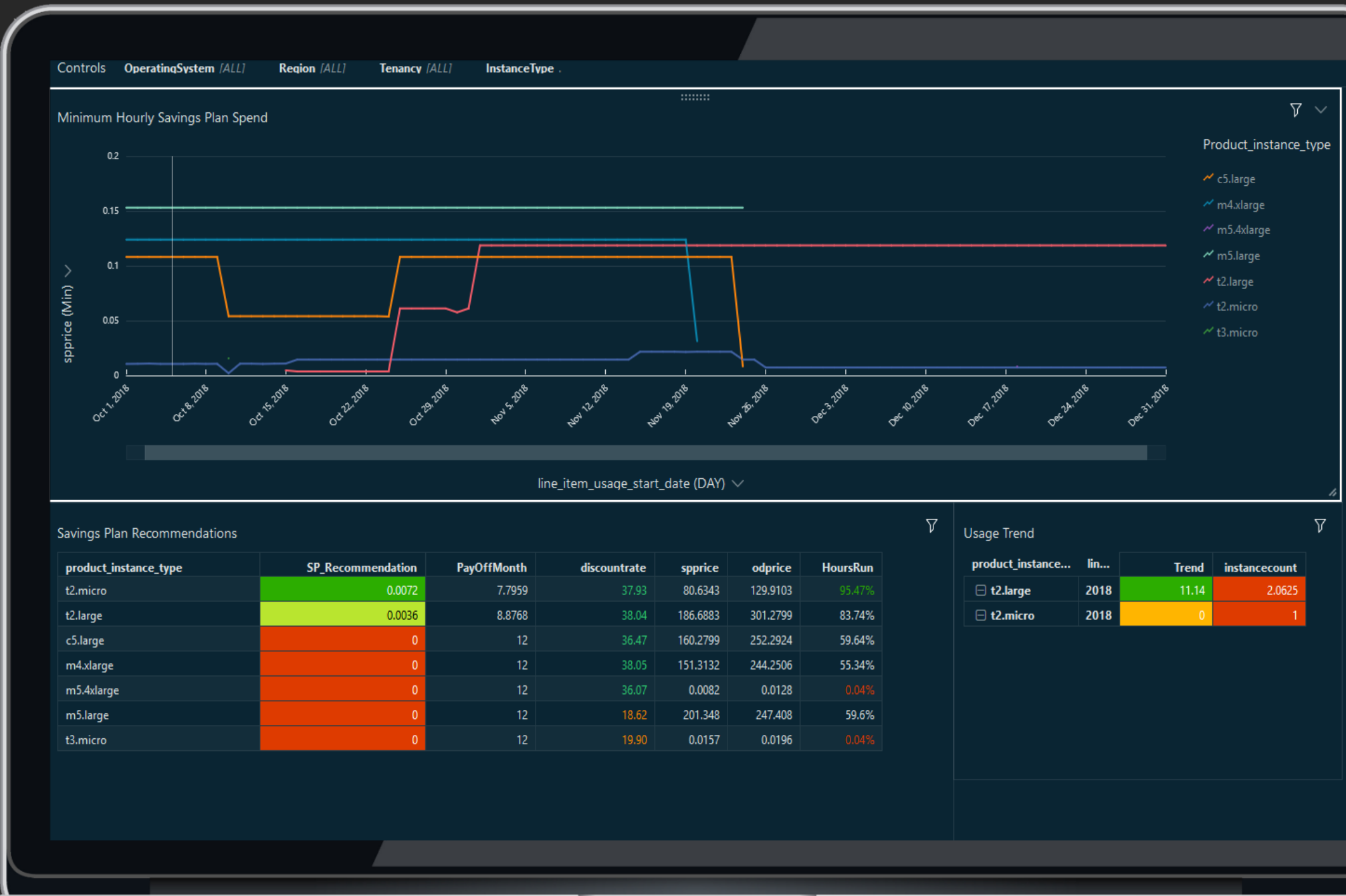
Purchase small amounts in cycles



Savings Plans

Well-Architected Labs

Pricing model analysis



Savings Plans

Well-Architected Labs

Pricing model analysis – Discount allocation

Results										
	line item usage account id	line item usage start date	product instance type	product location	product operating system	product tenancy	ODPrice	SPPrice	DiscountRate	
1	836060457634	2018-10-01 00:00:00.000	m4.xlarge	US East (N. Virginia)	Linux	Shared	0.2	0.1239	38.050000000000004	
2	011254002932	2018-10-01 00:00:00.000	t2.micro	US East (N. Virginia)	Linux	Shared	0.0696	0.04319999999999995	37.931034482758626	
3	836060457634	2018-10-01 00:00:00.000	t2.micro	US East (N. Virginia)	Linux	Shared	0.0696	0.04319999999999995	37.931034482758626	
4	836060457634	2018-10-01 00:00:00.000	t2.nano	US East (N. Virginia)	Linux	Shared	0.0058	0.0036	37.93103448275862	
5	836060457634	2018-10-01 00:00:00.000	c5.large	US East (N. Virginia)	Linux	Shared	0.34	0.216	36.47058823529412	
6	836060457634	2018-10-01 00:00:00.000	t2.micro	EU (London)	Linux	Shared	0.0132	0.0091	31.060606060606055	
7	836060457634	2018-10-01 00:00:00.000	m5.large	US East (N. Virginia)	Windows	Shared	0.376	0.306	18.617021276595747	
8	836060457634	2018-10-01 01:00:00.000	m4.xlarge	US East (N. Virginia)	Linux	Shared	0.2	0.1239	38.050000000000004	
9	836060457634	2018-10-01 01:00:00.000	t2.micro	US East (N. Virginia)	Linux	Shared	0.0696	0.04319999999999995	37.931034482758626	
10	011254002932	2018-10-01 01:00:00.000	t2.micro	US East (N. Virginia)	Linux	Shared	0.0696	0.04319999999999995	37.931034482758626	
11	836060457634	2018-10-01 01:00:00.000	t2.nano	US East (N. Virginia)	Linux	Shared	0.0058	0.0036	37.93103448275862	
12	836060457634	2018-10-01 01:00:00.000	c5.large	US East (N. Virginia)	Linux	Shared	0.34	0.216	36.47058823529412	
13	836060457634	2018-10-01 01:00:00.000	t2.micro	EU (London)	Linux	Shared	0.0132	0.0091	31.060606060606055	
14	836060457634	2018-10-01 01:00:00.000	m5.large	US East (N. Virginia)	Windows	Shared	0.376	0.306	18.617021276595747	
15	836060457634	2018-10-01 02:00:00.000	m4.xlarge	US East (N. Virginia)	Linux	Shared	0.2	0.1239	38.050000000000004	
16	836060457634	2018-10-01 02:00:00.000	t2.micro	US East (N. Virginia)	Linux	Shared	0.0696	0.04319999999999995	37.931034482758626	
17	011254002932	2018-10-01 02:00:00.000	t2.micro	US East (N. Virginia)	Linux	Shared	0.0696	0.04319999999999995	37.931034482758626	

Thank you!

Nathan Besh

natbesh@amazon.com