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Introduction to FinOps Training

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Course Syllabus

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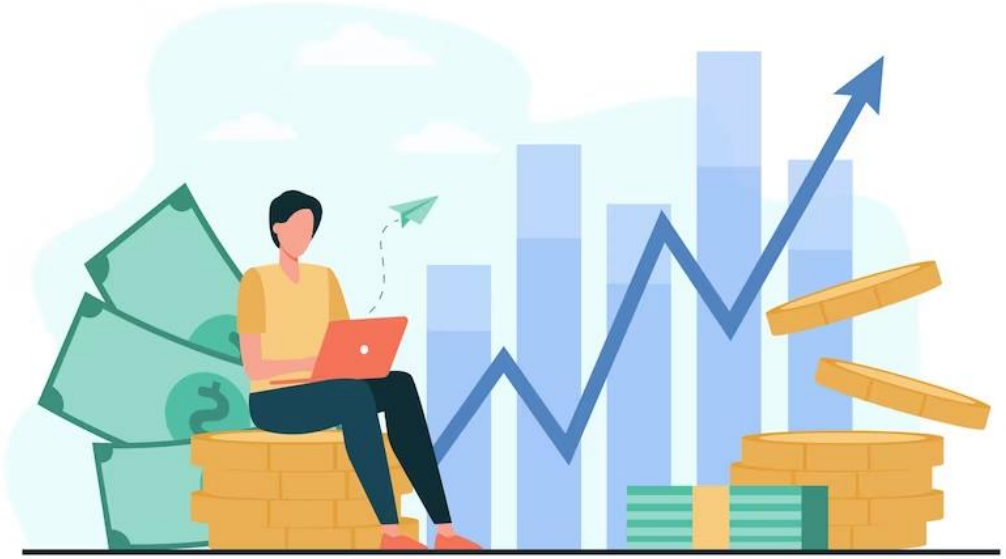
Module 1:

Introduction to FinOps

- ✓ What is FinOps?
- ✓ Why FinOps?
- ✓ Real-Time Reporting
- ✓ Role of Each Team in FinOps

What is FinOps?

- ✓ It is short for "financial operations," is a financial management approach designed for the age of cloud and scalable IT infrastructure.
- ✓ It brings together technology, business, and finance professionals with the goal of enabling a company to understand and control its cloud and IT spending and ensure it gets the most value out of its investment.



What is FinOps?

(Continued)

✓ The key principles of FinOps include:

What is FinOps?

1. ***Cost Collaboration***

- ✓ It encourages cross-departmental collaboration, breaking down the traditional silos between finance, IT, and business units.

- ✓ This collaborative approach ensures everyone has a shared understanding of the costs and benefits associated with IT and cloud decisions.

2. ***Real-Time Decision Making***

- ✓ Unlike traditional IT budgeting and cost management, FinOps works best when it is applied to real-time decision making. This is because the cost of cloud resources can vary dramatically based on usage, time, and even location.

3. ***Understanding Unit Economics***

- ✓ FinOps is about understanding the costs of your IT at a granular level - per application, per feature, per customer, etc. This is known as understanding unit economics.

What is FinOps?

4. *Accountability*

- ✓ It encourages individuals and teams to take responsibility for their usage of cloud resources.
- ✓ This might mean giving developers visibility into how their decisions affect costs, or it could mean charging business units for their actual cloud usage.

5. *Continuous Improvement*

- ✓ The FinOps practice isn't a one-off event. It is a cycle of informing, optimising, and operating that should be part of a company's ongoing operations.

Why FinOps?

- ✓ It has become a necessity for many organisations due to the evolution of cloud services and IT infrastructure.
- ✓ The shift to cloud technology has brought with it a paradigm change in how companies pay for and manage their IT resources.
- ✓ Traditional IT spending was typically capital expenditure with upfront costs, while cloud spending is often operational expenditure with variable, usage-based costs.
- ✓ This shift from predictable, fixed costs to variable costs creates the need for a different approach to IT financial management – this is where FinOps comes in.
- ✓ The following are the points that why FinOps is important:

Why FinOps?

1. ***Cost Control and Optimisation***

- ✓ Without a proper understanding and control over cloud usage, costs can easily spiral out of control.
- ✓ FinOps provides a framework to track, analyse, and manage cloud costs on a granular level, helping to prevent overspending and optimise resource allocation.

2. ***Better Decision Making***

- ✓ FinOps helps organisations make informed decisions about their cloud usage by understanding the costs and benefits of different choices.
- ✓ This can result in more effective use of cloud resources and better alignment with business objectives

Why FinOps?

3. *Cultural Change*

- ✓ It encourages a culture of financial accountability among developers and IT teams.
- ✓ By making costs transparent and tying them directly to usage, it incentivises teams to use resources more efficiently.

4. *Business Agility*

- ✓ It helps businesses remain agile. By continuously monitoring and adjusting cloud usage, businesses can respond to changing needs and opportunities more quickly.
- ✓ This agility can be a key competitive advantage in today's fast-paced business environment.

Why FinOps?

5. Cross-Functional Collaboration

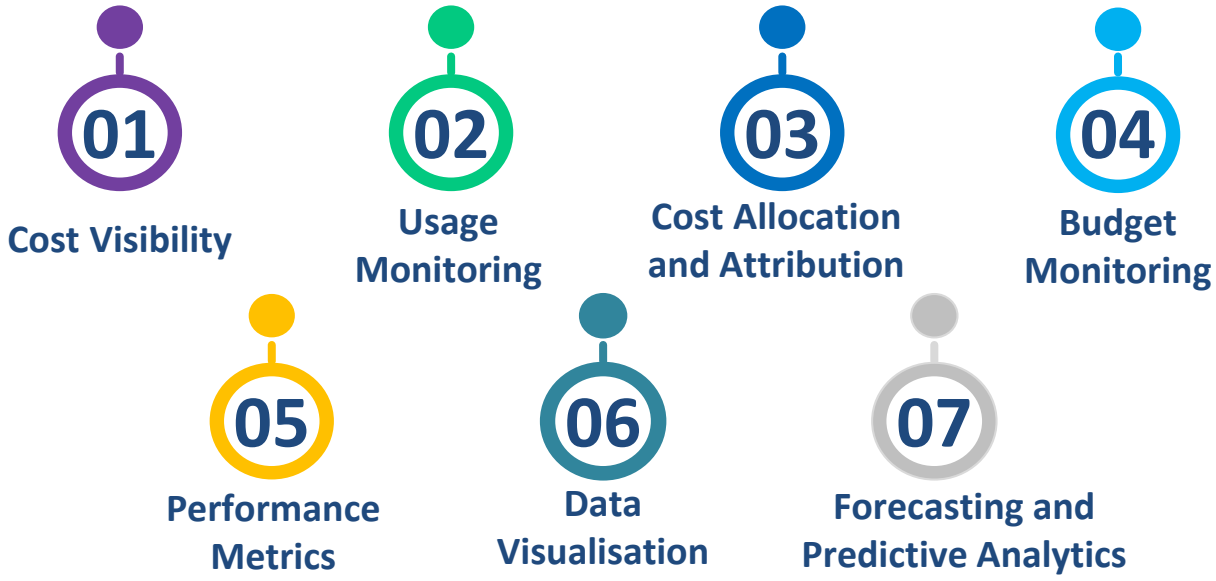
- ✓ It promotes collaboration between IT, finance, and business units, creating a shared understanding and responsibility for cloud costs and usage.

- ✓ This can lead to better decision-making and efficiency across the organisation.

Real-Time Reporting

- ✓ It is a crucial aspect of FinOps that enables organisations to have up-to-date visibility into their cloud costs and usage.

- ✓ It involves the continuous monitoring and analysis of financial and operational data, providing real-time insights and enabling prompt decision-making. The following are some key aspects:



Real-Time Reporting

1) Cost Visibility

- ✓ It allows organisations to have a granular view of their cloud costs at any given moment.
- ✓ It provides detailed information about the cost of individual resources, services, projects, or teams, allowing stakeholders to understand how costs are distributed and identify areas of high spending.

2) Usage Monitoring

- ✓ It tracks the usage of cloud resources, such as compute instances, storage, and data transfers, in real-time.
- ✓ It helps organisations monitor resource utilisation patterns, identify trends, and optimise resource allocation to ensure efficient usage and cost savings.

Real-Time Reporting

3) Cost Allocation and Attribution

- ✓ It enables accurate cost allocation and attribution to different departments, teams, or projects.
- ✓ It helps organisations understand the financial impact of each business unit or initiative, facilitating chargebacks or showbacks, and promoting accountability.

4) Budget Monitoring

- ✓ It allows organisations to monitor their cloud spending against predefined budgets or cost targets.
- ✓ It provides alerts and notifications when spending exceeds thresholds, enabling proactive cost management and preventing cost overruns.

Real-Time Reporting

5) Performance Metrics

- ✓ It incorporates performance metrics alongside cost data to provide a comprehensive view of cloud operations.
- ✓ It allows organisations to assess the relationship between costs and performance, identify opportunities for optimisation, and make data-driven decisions to improve efficiency.

6) Data Visualisation

- ✓ It often leverages data visualisation techniques, such as charts, graphs, and dashboards, to present financial and operational data in a clear and intuitive manner.

7) Forecasting and Predictive Analytics

- ✓ It can be combined with forecasting and predictive analytics to anticipate future cloud costs and usage. By analysing historical data and trends, organisations can project future spending patterns, estimate budget requirements, and optimise resource planning.

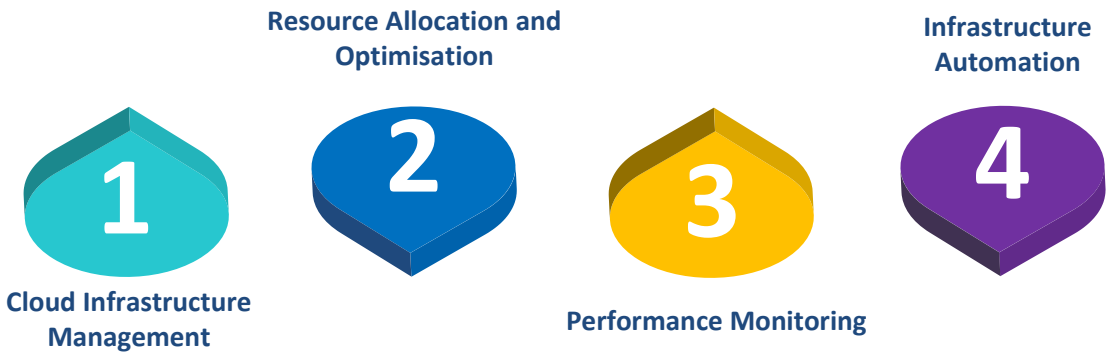
Role of Each Team in FinOps

- ✓ There are different teams play distinct roles and collaborate to achieve financial accountability, optimise cloud costs, and drive efficiency.
- ✓ The following is an overview of the roles and responsibilities of each team in FinOps:

1) Finance Team

Role of Each Team in FinOps

2) Operations/Cloud Team



3) Development/Engineering Team

Role of Each Team in FinOps

4) Business/Project Owners

5) Data Analytics/Reporting Team

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Module 2:

Language of FinOps and Cloud

- ✓ Common Lexicon
- ✓ Cloud Language Versus Business Language
- ✓ Creating a Babel Fish Between DevOps and Finance Teams

Common Lexicon

- ✓ Lexicon refers to the common terminology or vocabulary used in the field to communicate and understand complex financial concepts, principles, practices, tools, and strategies. It is a set of terms that everyone in the field uses and understands to effectively communicate about financial operations in an organisation.

1. ***Cost Allocation:*** This refers to the distribution of costs to different departments, projects, or business units within an organisation. The goal of cost allocation is to identify where and how much money is being spent.

2. ***Cloud Spend:*** A term that represents how much an organisation is spending on cloud-based services. This includes spending on cloud storage, compute power, data transfer, and software as a service (SaaS).

3. ***Budget Forecasting:*** This term refers to the process of predicting the future financial outcomes based on historical data, trends, and business insights. It is used for planning and allocating resources.

4. ***Cost Optimisation:*** This term refers to the strategies and activities used to reduce costs without negatively impacting the organisation's objectives and outputs. It often involves finding cheaper or more efficient ways to do things.

Common Lexicon

5. ***Unit Economics:*** This term refers to the direct revenues and costs associated with a particular business model, expressed on a per-unit basis. It helps in understanding the profitability of a particular product or service.

6. ***CapEx (Capital Expenditure) and OpEx (Operational Expenditure):*** CapEx refers to funds used by a company to acquire or upgrade physical assets such as property, industrial buildings, or technology. OpEx, on the other hand, refers to the money a company spends on its day-to-day business operations.

7. ***Cloud Waste:*** This term refers to the resources in a cloud environment that are not being used efficiently. This could include underused or idle resources that are still incurring costs.

8. ***Showback and Chargeback:*** Showback refers to reporting back to a department or business unit about their usage and associated costs of services. Chargeback, on the other hand, is the actual recharging of those costs back to the department or business unit.

9. ***FinOps Lifecycle:*** This is a framework used in FinOps that consists of three iterative phases: Inform, Optimise, and Operate. These phases help to better understand cloud costs, make decisions around usage, and operate more efficiently.

Cloud Language Versus Business Language

✓ The following is the difference between Cloud Language and Business Language:

Cloud Language	Business Language	Explanation
Instance	Workload	✓ In cloud language, an "instance" refers to a virtual machine or server. ✓ In business language, it is referred to as a "workload" or the specific task or application running on the virtual machine.
S3 (Simple Storage Service)	Object Storage	✓ S3 is a cloud storage service provided by AWS. In cloud language, it is referred to as "object storage," where data is stored as objects. ✓ In business language, it is described as storage for digital files or objects.

Cloud Language Versus Business Language

(Continued)

Cloud Language	Business Language	Explanation
RDS (Relational Database Service)	Database Service	✓ RDS is a managed database service provided by AWS. In cloud language, it is called a "database service" as it offers pre-configured, scalable databases. ✓ In business language, it is referred to as a service for managing structured data storage and retrieval.
ELB (Elastic Load Balancer)	Load Balancer	✓ ELB is a service provided by AWS for distributing incoming network traffic across multiple servers. In cloud language, it is called a "load balancer" that balances the load among servers. ✓ In business language, it is referred to as a mechanism for distributing work evenly across multiple resources to improve performance.

Cloud Language Versus Business Language

(Continued)

Cloud Language	Business Language	Explanation
Auto Scaling	Scalability	✓ Auto Scaling is a cloud feature that automatically adjusts the number of instances based on demand. In cloud language, it is called "auto scaling" as it enables scaling resources dynamically. ✓ In business language, it refers to the ability of a system to handle increased workload or demand efficiently.
Network	Connectivity	✓ Network refers to the infrastructure and connections that enable communication between cloud resources. In cloud language, it is called "network" as it provides connectivity. ✓ In business language, it is described as the ability to establish connections and enable communication between systems or devices.

Creating a Babel Fish Between DevOps and Finance Teams

✓ To create effective communication and collaboration between DevOps and Finance, below are some steps to establish a "Babel Fish" approach:

Foster Cross-Team Collaboration: Encourage regular communication and collaboration between DevOps and Finance teams. Facilitate meetings, workshops, or joint initiatives to bring the teams together, fostering mutual understanding and collaboration.

Establish Common Goals: Align both teams around common goals and objectives. Clearly communicate the importance of cost optimisation, financial efficiency, and business value to both DevOps and Finance teams, emphasising the shared interest in achieving these goals.

Creating a Babel Fish Between DevOps and Finance Teams

Define a Common Language: Develop a shared vocabulary that blends the technical language of DevOps with the financial language of the Finance team. Create a glossary or terminology document that defines key terms and concepts used by both teams, ensuring a common understanding.

Conduct Cross-Training: Organise cross-training sessions where members of the DevOps team can learn about financial principles, cost optimisation strategies, and budgeting processes from the Finance team. Similarly, provide Finance team members with training on cloud technologies, infrastructure, and DevOps practices. This cross-training helps bridge the knowledge gap and encourages collaboration.

Creating a Babel Fish Between DevOps and Finance Teams

Establish a FinOps Team: Create a dedicated FinOps team or working group that includes representatives from both the DevOps and Finance teams. This team will serve as a bridge between the two departments, facilitating communication, sharing insights, and driving FinOps practices within the organisation.

Share Data and Insights: Enable access to cloud cost and usage data for both DevOps and Finance teams. Provide visibility into resource consumption, cost trends, and optimisation opportunities. This shared data empowers both teams to make informed decisions and work together towards cost optimisation.

Creating a Babel Fish Between DevOps and Finance Teams

Regular Reporting and Review: Implement a reporting mechanism that provides regular updates on cloud costs, savings achieved, and progress towards financial goals. Conduct periodic reviews where both teams can analyse the reports together, discuss cost-saving initiatives, and identify areas for improvement.

Leverage Automation and Tools: Utilise cloud management tools, cost analysis platforms, and automation capabilities to streamline financial reporting, analysis, and optimisation processes. This allows both teams to work with accurate and up-to-date data, enabling more efficient collaboration.

Creating a Babel Fish Between DevOps and Finance Teams

Encourage Feedback and Continuous Improvement: Establish a culture of continuous improvement by encouraging feedback from both DevOps and Finance teams. Regularly seek input, suggestions, and insights from team members to identify areas for enhancement and optimise FinOps practices further.

- ✓ By implementing these steps, you can create a "Babel Fish" approach that enables effective communication, shared understanding, and collaboration between DevOps and Finance teams.
- ✓ This collaborative approach will drive financial efficiency, cost optimisation, and improved business outcomes.

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Module 3:

FinOps Lifecycle

- ✓ Principles of FinOps
- ✓ FinOps Lifecycle

Principles of FinOps

✓ The following are the principles of FinOps:

1. **Collaboration Across Business, Technology, and Finance**: FinOps is a team sport involving professionals from multiple disciplines. Communication and collaboration between these departments is crucial to drive effective financial decisions around cloud usage.

2. **Variable Spend Under Management**: Unlike traditional IT expenditures which are typically capital expenses, cloud spending is an operational expense. Organisations need to adapt to this different model, treating cloud spend as a variable cost that can be managed and optimised.

3. **Real-time Decision Making**: The flexibility of the cloud enables dynamic and real-time decision-making. Organisations should aim to make financial decisions at the same speed that their developers can provision resources.

Principles of FinOps

4. **Everyone Takes Ownership of Their Cloud Usage**: Teams should be accountable for their own cloud usage. In FinOps, there is an emphasis on visibility and chargeback, with teams being able to see what they're spending and where.

5. **Decentralised Control, Centralised Enablement**: While decision-making is decentralised, there needs to be centralised financial oversight and control. This could involve a FinOps team or a cloud center of excellence that provides the tools, best practices, and governance necessary to manage cloud spend.

6. **Iterative Improvement**: FinOps is not a set-and-forget process. The aim should be continual improvement, with organisations consistently looking for ways to manage their cloud costs more effectively.

FinOps Lifecycle

- ✓ The FinOps Lifecycle is a key part of managing and optimising cloud costs. This lifecycle is an iterative process that involves three main phases: *Inform*, *Optimise*, and *Operate*. Each phase has specific steps that guide a company's FinOps practices.

FinOps Lifecycle

- ✓ The FinOps Lifecycle is a key part of managing and optimising cloud costs. This lifecycle is an iterative process that involves three main phases: Inform, Optimise, and Operate. Each phase has specific steps that guide a company's FinOps practices.

1. ***Inform:*** This phase is all about providing visibility into cloud costs and usage. It is about understanding where and how much money is being spent. This phase typically involves:

   - **Unit Metrics Development**: This involves establishing meaningful metrics that allow you to measure the cost-effectiveness of cloud usage.

   - **Allocation**: Here, cloud costs are distributed to different departments, projects, or business units based on usage.

   - **Showback/Chargeback**: Showback is about reporting back to departments or business units about their cloud usage and associated costs. Chargeback is the process of recharging those costs back to the departments.

FinOps Lifecycle

2. ***Optimise:*** This phase involves using the information gathered in the Inform phase to find ways to reduce costs and improve efficiency. This can involve:

   - **Rate Optimisation**: This involves taking advantage of savings plans, reserved instances, or spot instances to reduce costs.

   - **Resource Optimisation**: This involves right-sizing services or eliminating waste to ensure you're not paying for more than you need.

   - **Budget & Forecast**: This is the process of predicting future cloud costs based on past usage and current trends. It helps with planning and allocating resources.

FinOps Lifecycle

3. ***Operate:*** The Operate phase is about applying the lessons learned in the Optimise phase to daily operations. This phase involves:

   - **Continuous Improvement**: This is an ongoing process of monitoring and adjusting cloud usage and costs to ensure they remain aligned with business needs and objectives.

   - **Governance & Compliance**: This involves ensuring that cloud usage complies with organisational policies and industry regulations.

✓ Throughout this lifecycle, communication and collaboration are key. The goal is to enable better decision-making around cloud usage and cost, and to drive accountability for those costs across the organisation.

✓ FinOps is a continuous process, and organisations should be constantly moving through these phases as they manage and optimise their cloud costs.

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Module 4:

Allocation

- ✓ Why Allocation Matters?
- ✓ Chargeback Versus Showback
- ✓ Amortisation
- ✓ Creating Goodwill and Auditability with Accounting
- ✓ Going Beyond Cloud with the TBM Taxonomy

Why Allocation Matters?

✓ The following are some reasons why allocation matters:

Why Allocation Matters?

1) *Visibility*

- ✓ It helps in providing visibility into who is spending what, and where the money is going. This can reveal insights about the cost-effectiveness of different projects or teams.

2) *Accountability*

- ✓ When teams can see how much they are spending, they are more likely to take responsibility for their usage. This can encourage more efficient use of resources.

3) *Budget Management*

- ✓ Knowing where money is being spent can aid in budget planning and management. It can help identify areas where spending is high and needs to be controlled.

Why Allocation Matters?

4) *Chargeback/Showback*

- ✓ In some organisations, costs are charged back to the department that incurred them, or at least shown to that department to make them aware of their spending. This can incentivise departments to be more mindful of their spending.

5) *Cost Optimisation*

- ✓ By properly allocating costs, you can identify underused resources, analyse usage patterns, and make informed decisions to optimise costs. For example, you might identify idle compute instances that can be shut down to save money.

6) *Business Decisions*

- ✓ Allocation can inform strategic decisions. For instance, understanding the costs associated with a particular product or service can guide pricing strategies, investment decisions, or even whether to continue offering that product or service.

Chargeback Versus Showback

✓ The following is the difference between Chargeback and Showback:

	Chargeback	Showback
Definition	A method where the costs incurred by a department are billed directly back to that department.	A method where the costs incurred by a department are reported back to that department, but not billed.
Financial Impact	Direct financial impact as departments are billed for their usage.	No direct financial impact; it is primarily for information and awareness.
Accountability	High, as departments directly bear the cost of their operations.	Medium, as departments are made aware of their costs but don't bear them directly.
Cost Control	Higher potential for cost control because departments will actively want to reduce costs to their budget.	Potentially less control over costs because there's no direct financial consequence for departments that overspend.
Implementation	More complex, as it requires accurate cost allocation and billing processes.	Simpler to implement, as it primarily involves reporting and doesn't require the setup of internal billing processes.
Business Impact	Can lead to more responsible usage of resources and potentially significant cost savings.	Can lead to increased awareness of costs, which might indirectly lead to more responsible usage. But, impact on cost savings is lower.

Amortisation

- ✓ It refers to the process of spreading the cost of an intangible asset or a capital expenditure over its estimated useful life.
- ✓ It is commonly used to allocate the expenses associated with long-term assets, such as software development costs, patents, copyrights, or other intangible assets.
- ✓ When a company incurs a significant cost to acquire or develop an intangible asset, it cannot expense the entire cost in the year of acquisition.
- ✓ Instead, it spreads the cost over the asset's estimated useful life through the process of amortisation.
- ✓ This practice aligns the expenses with the economic benefits derived from the asset over time.

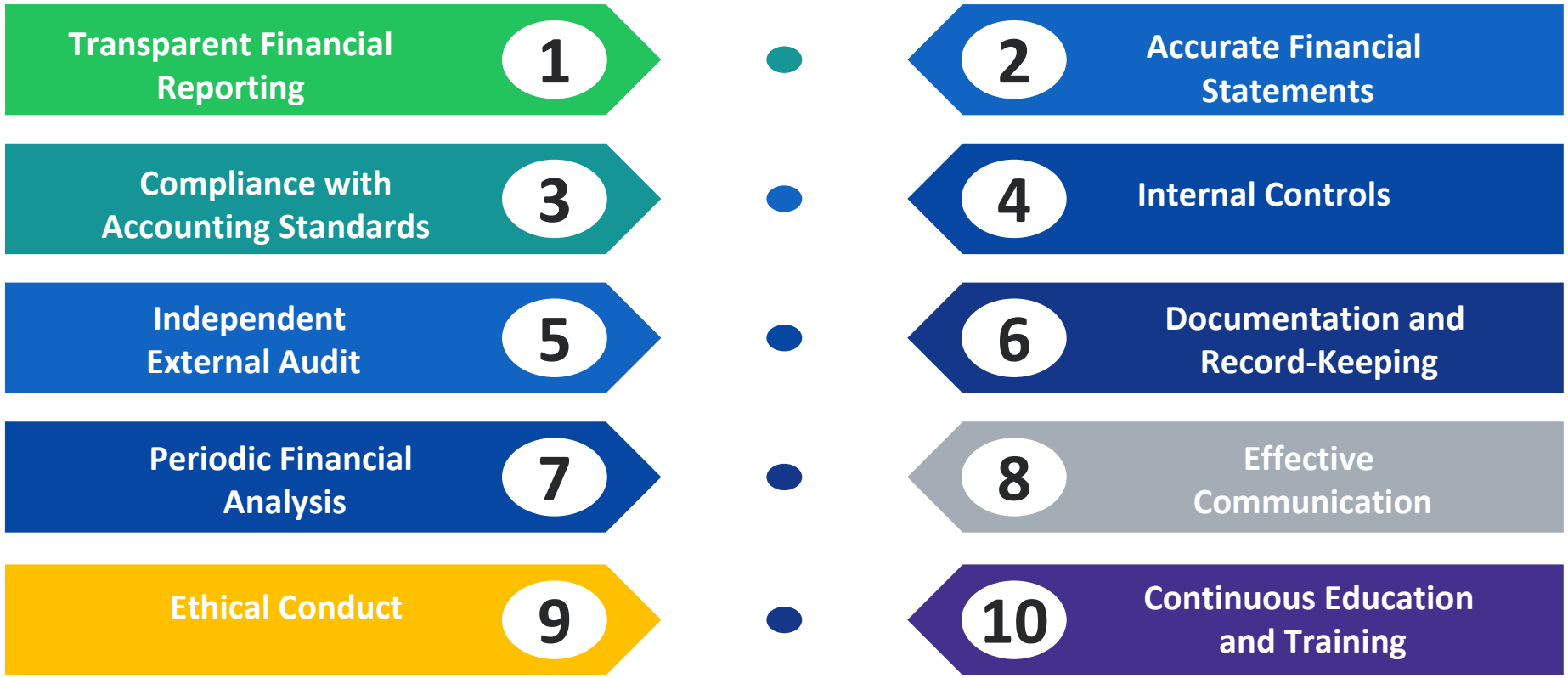
Amortisation

(Continued)

- ✓ It is recorded as a non-cash expense on the income statement and is also reflected in the balance sheet, where the carrying value of the asset is reduced by the amount of accumulated amortisation.
- ✓ The specific method of amortisation depends on the nature of the asset and the accounting standards followed by the company.
- ✓ Commonly used methods include straight-line amortisation, which allocates the cost evenly over the asset's useful life, and accelerated methods like the declining balance method, which allocates more of the expense in the early years.
- ✓ It plays a crucial role in financial reporting and analysis as it reflects the true economic cost of utilising an intangible asset over its useful life.
- ✓ It helps in providing a more accurate representation of the company's financial performance and helps in making informed decisions regarding asset acquisition, valuation, and financial planning.

Creating Goodwill and Auditability with Accounting

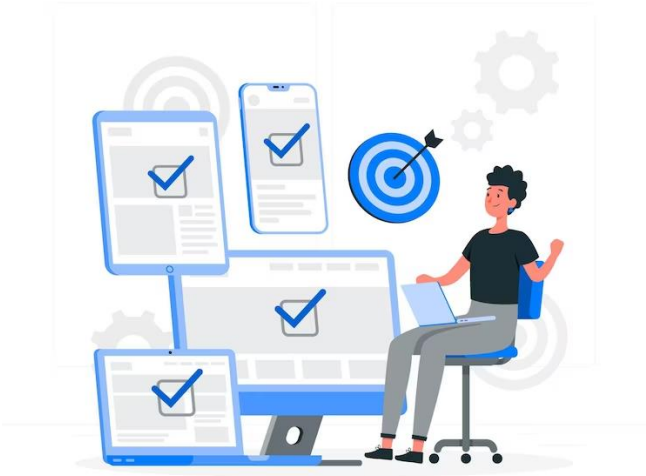
✓ These are the important aspects of accounting in financial operations. The following are some key points:



Creating Goodwill and Auditability with Accounting

1. *Transparent Financial Reporting*

- ✓ Implement transparent financial reporting practices to ensure that all financial transactions are accurately recorded and presented.
- ✓ Use standardised accounting principles and disclose any relevant information that could impact the financial statements.



2. *Accurate Financial Statements*

- ✓ Prepare accurate financial statements, including the balance sheet, income statement, and cash flow statement.
- ✓ The financial statements should reflect the true financial position of the organisation and provide a clear picture of its performance.

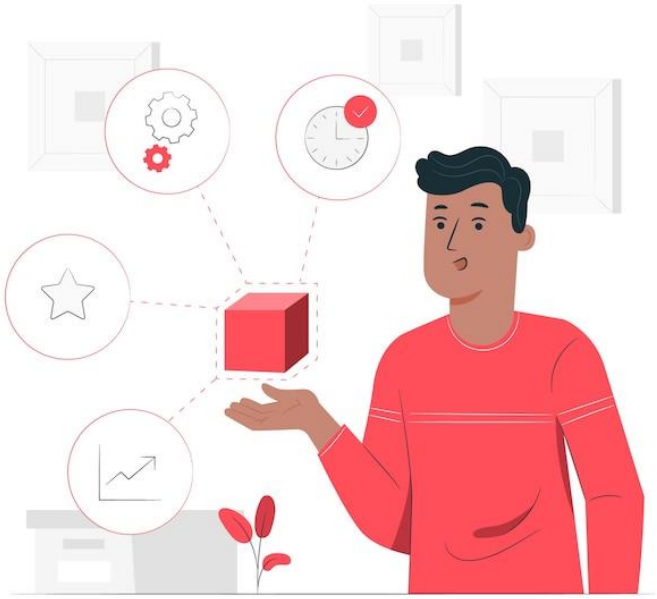
Creating Goodwill and Auditability with Accounting

3. *Compliance with Accounting Standards*

- ✓ Adhere to relevant accounting standards and regulations such as Generally Accepted Accounting Principles (GAAP) or International Financial Reporting Standards (IFRS).
- ✓ Compliance ensures consistency and comparability of financial information across different organisations.

4. *Internal Controls*

- ✓ Establish robust internal control systems to safeguard assets, prevent fraud, and ensure accurate financial reporting.
- ✓ This includes segregation of duties, regular reconciliations, and periodic internal audits.



Creating Goodwill and Auditability with Accounting

5. Independent External Audit

- ✓ Engage an independent external auditor to review and attest to the accuracy and fairness of the financial statements.
- ✓ The audit provides assurance to stakeholders that the financial information is reliable and free from material misstatements.

6. Documentation and Record-Keeping

- ✓ Maintain proper documentation and records of all financial transactions.
- ✓ This includes invoices, receipts, bank statements, and other supporting documents. Adequate documentation facilitates transparency, traceability, and auditability.

Creating Goodwill and Auditability with Accounting

7. *Periodic Financial Analysis*

- ✓ Conduct regular financial analysis to identify trends, anomalies, and potential areas of improvement.
- ✓ This helps in assessing the financial health of the organisation and making informed decisions.

8. *Effective Communication*

- ✓ Communicate financial information clearly and effectively to stakeholders, including investors, creditors, and regulators.
- ✓ Transparent and timely communication builds trust and confidence in the financial operations of organisation.

Creating Goodwill and Auditability with Accounting

9. Ethical Conduct

- ✓ Uphold high ethical standards in financial operations. Encourage ethical behavior among employees and discourage fraudulent practices.
- ✓ Ethical conduct enhances goodwill and ensures that financial transactions are conducted in a responsible and trustworthy manner.

10. Continuous Education and Training

- ✓ Keep accounting and finance professionals updated with the latest accounting standards, regulations, and best practices.
- ✓ Continuous education and training help maintain competence and ensure compliance with evolving financial reporting requirements.

Going Beyond Cloud with the TBM Taxonomy

- ✓ Technology Business Management (TBM) is a framework that helps organisations align their IT spend with business outcomes. This framework promotes transparency and accountability within the IT function, allowing for more informed decision-making and cost optimisation.

- ✓ It is an essential aspect of financial operations (FinOps) because it promotes understanding of how IT costs are impacting overall financial performance.

- ✓ Applying TBM in the context of FinOps and going beyond cloud may involve the following:

Going Beyond Cloud with the TBM Taxonomy

1) Standardising Financial and Operational Metrics

- ✓ It provides a standardised taxonomy for understanding IT costs.
- ✓ This can help organisations gain more accurate insights into their IT spending.
- ✓ These insights can be applied not just to cloud costs, but to all IT costs, thereby helping organisations make more informed financial decisions.

2) Promoting Transparency

- ✓ TBM encourages organisations to be transparent about their IT costs, which can help stakeholders better understand how money is being spent.
- ✓ This transparency can be applied beyond cloud expenses to other IT costs, potentially helping to foster a culture of financial accountability.

Going Beyond Cloud with the TBM Taxonomy

3) Driving Cost Optimisation

- ✓ By providing a clear understanding of IT costs, TBM can help organisations identify opportunities for cost optimisation.
- ✓ This can involve reallocating resources, identifying inefficiencies, and optimising processes – again, not just in the cloud, but across all IT operations.

4) Facilitating Better Decision-Making

- ✓ With a clear understanding of IT costs, organisations are better equipped to make strategic decisions.
- ✓ This can be particularly beneficial in a FinOps context, where the aim is to balance speed, cost, and quality.

Going Beyond Cloud with the TBM Taxonomy

5) Enhancing Forecasting and Planning

- ✓ TBM can help improve the accuracy of IT cost forecasts and budget planning.
- ✓ This can support more effective financial planning and management, especially when combined with FinOps practices.

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Module 5:

Tags, Labels, and Accounts

- ✓ Cost Allocation Using Tag and Hierarchy-Based Approaches
- ✓ Using Tags for Billing
- ✓ Getting Started Early with Tagging
- ✓ Picking the Right Number of Tags
- ✓ Working Within Tag/Label Restrictions
- ✓ Maintaining Tag Hygiene
- ✓ Reporting on Tag Performance

Cost Allocation Using Tag and Hierarchy-Based Approaches

- ✓ Cost allocation is a crucial part of Financial Operations (FinOps), particularly in complex organisations and enterprises that use cloud services, where there are many layers of costs that need to be apportioned to different areas.
- ✓ It helps companies understand and control their costs more effectively, enabling better financial decision making.
- ✓ Below are the ways tag and hierarchy-based approaches are used in cost allocation:

Tag-Based Cost Allocation

Hierarchy-Based Cost Allocation

Combined Approach

Cost Allocation Using Tag and Hierarchy-Based Approaches

1. Tag-Based Cost Allocation

- ✓ Tags are labels that you can assign to resources in your cloud environment. They can help you organise your resources and allow you to filter and track costs associated with a particular project, department, environment (such as dev, test, prod), or any other cost center.

- ✓ For example, you could tag all resources used for a specific project with a unique identifier. When you run your cost reports, you can filter by this tag to see the total cost associated with that project.

- ✓ It is important to set a proper tagging strategy and enforce it across the organisation to ensure that all resources are correctly tagged, and no costs are misallocated.

2. Hierarchy-Based Cost Allocation

- ✓ Hierarchy-based cost allocation refers to the process of assigning costs based on the organisational structure or architecture of the system. This could be based on departments, teams, projects, or any other hierarchy that makes sense for your business.

Cost Allocation Using Tag and Hierarchy-Based Approaches

(Continued)

- ✓ For example, in a cloud environment, this could involve assigning costs based on the different AWS accounts or GCP projects under your organisation, or the different subscriptions under your Azure tenant.

- ✓ This approach is helpful when different teams or departments are responsible for their own budgets, and costs need to be split accurately. The key here is to design the hierarchy in a way that reflects the structure and needs of the organisation.

3. Combined Approach

- ✓ In many cases, the best approach might be a combination of both tag-based and hierarchy-based cost allocation.

- ✓ This can provide the granularity of tags, allowing you to track costs for specific resources or activities, combined with the broad overview provided by hierarchy-based allocation.

Cost Allocation Using Tag and Hierarchy-Based Approaches

(Continued)

- ✓ For instance, a combined approach could allow you to see the total costs for a department (hierarchy-based), but also allow you to break down these costs for specific projects or activities within the department (tag-based).

- The main goal of cost allocation is to provide visibility and accountability for costs, and to enable more informed decision-making.

- The exact approach you choose depends on your specific needs and circumstances, but a good cost allocation strategy should be flexible, scalable, and easy to understand and manage.

Using Tags for Billing

- ✓ Tagging is a powerful tool that enables businesses to categorise their cloud resources for better cost tracking and management. By using tagging strategies for billing, businesses can increase visibility into their costs, facilitate chargebacks, and improve budgeting and forecasting.

- ✓ Below are the ways of how you can use tags for billing:

1. **Resource Identification**: By tagging resources, you can associate specific workloads, projects, or business units with their respective cloud expenses. This can greatly aid in breaking down costs at a granular level.

2. **Chargeback and Showback**: Tags can help organisations to identify exactly which business units, departments, or projects are responsible for particular costs. This enables accurate chargebacks or showbacks, where you allocate costs back to the units that incurred them.

Using Tags for Billing

3. **Budgeting and Forecasting**: With proper tagging, businesses can track expenditure trends over time for each tag or group of tags. This data is invaluable when it comes to predicting future costs and setting budgets.

4. **Cost Optimisation**: By monitoring tags, you can identify resources that are under-utilised or not used at all, which is helpful in identifying cost-saving opportunities.

5. **Compliance**: Tags can be used to identify resources that need to comply with specific rules, policies, or regulations. For example, resources with a certain tag might need to comply with stricter security policies.

Getting Started Early with Tagging

✓ Getting started with tagging early is a great strategy for maintaining visibility and control over your cloud resources and costs. Here are some steps to help you get started:

1. ***Identify What to Tag:*** The first step is to identify what resources you want to tag. This could be any resources that incur costs, like compute instances, storage buckets, or database services, among others.

2. ***Define your Tagging Strategy:*** You need to decide what tags you will use. These could be based on project, environment (prod, dev, test), cost center, department, team, application, or any other criteria that makes sense for your business. Remember to ensure your tags make sense across your entire organisation, not just within a single department or for a single project.

3. ***Develop a Tagging Policy:*** Once you have defined your tags, write them down in a tagging policy that explains what each tag is for, when and how it should be used, and who is responsible for managing it. This policy should be clear and easily accessible to everyone in the organisation.

Getting Started Early with Tagging

4. ***Automate Tagging where possible:*** Manually applying tags can be time-consuming and error-prone. Most cloud providers offer tools to automate the tagging of resources. For example, AWS offers resource groups and tag editor, Azure provides policies and templates, and Google Cloud offers labeling.

5. ***Implement Tagging Enforcement:*** You should implement checks to ensure that resources are not created without the required tags. This could involve scripts that check for tags at creation, or tools provided by your cloud provider.

6. ***Monitor and Manage your tags:*** Once your tags are in place, you need to regularly review them to ensure they are being used correctly. This could involve spot checks, or you could use tools that monitor your tags and alert you to any issues.

7. ***Use tags in your Cost Management:*** Once your tags are implemented, you can start using them in your cost allocation and reporting. Most cloud providers offer cost reports that can be broken down by tags.

Picking the Right Number of Tags

- ✓ Choosing the right number of tags can seem tricky, but with a strategic approach, it is manageable. Your main goal should be to strike a balance between granularity (for accurate cost attribution and reporting) and simplicity (for ease of management and adherence).

- ✓ The following are the some key points to help you decide the right number of tags:

1. ***Understand Your Needs****:* Start by identifying what information is most important for your cost allocation and management. This could be based on departments, projects, applications, environments, or any other relevant criteria.

2. ***Consider Your Reporting Requirements****:* Think about what type of cost reports you will need to generate. Depending on your size and complexity of organisation, you may require detailed breakdowns by project, department, team, or even individual resources. Each of these aspects may require a separate tag.

3. ***Account for Other Use Cases:*** Beyond cost management, tags can be used for other purposes, like security, compliance, or automation. If you need to use tags for these purposes, factor that into your strategy.

Picking the Right Number of Tags

4. ***Check Provider Limits**:* Different cloud service providers have different limits on the number of tags you can assign to each resource. For example, AWS allows up to 50 tags per resource, Azure allows 15, and Google Cloud allows up to 64. So you will need to factor this into your strategy.

5. ***Balance Granularity and Simplicity**:* More tags allow for more granular cost analysis, but they can also increase complexity and make management more challenging. Try to find a balance that gives you the granularity you need without overwhelming your team.

6. ***Regularly Review Your Strategy:*** Your tagging needs may change over time as your organisation and its needs evolve. Regularly review your tagging strategy to make sure it's still serving your needs effectively.

Working Within Tag/Label Restrictions

- ✓ Working within tag or label restrictions is all about effectively managing your resources within the limitations set by your cloud service provider.
- ✓ These providers have specific rules and limitations on the number and types of tags you can use. The following are some strategies to effectively work within these restrictions:

1	**Prioritise Your Tags** Not all tags are equally important. Prioritise tags based on the information you need for cost allocation, reporting, operations, and governance. Start with high-priority tags, such as those identifying cost centers, environments, or applications.

Working Within Tag/Label Restrictions

2

Create Multidimensional Tags

In case the number of tags is not enough for your needs, consider using multidimensional tags. A multidimensional tag contains more than one piece of information. For instance, a tag named "Project-Environment" might contain values like "ProjectA-Prod" or "ProjectB-Dev."

3

Use Tagging Hierarchies

A hierarchical tagging strategy can help maximise the information content of your tags. For example, a tag hierarchy could be "Company>Department>Team>Project," and so on.

Working Within Tag/Label Restrictions

4

Automate Tagging

Automate tagging as much as possible to reduce the chances of human error and to enforce consistency. This can be done using Infrastructure as Code (IaC) tools, or by using automation features provided by the cloud provider.

5

Regular Audits

Regularly audit your tags to ensure they are still relevant. You may find that some tags are no longer necessary, freeing up space for others.

Working Within Tag/Label Restrictions

6

Training and Enforcement

Train your team on the importance of tagging and your tagging strategy. This could be enforced through policies that require resources to be tagged upon creation.

7

Consistency is Key

Be consistent in your use of tags. For example, avoid using different tags to represent the same concept (e.g., "prod" and "production"). Consistency reduces confusion and makes your tags more effective.

Maintaining Tag Hygiene

- ✓ Maintaining tag hygiene is crucial for the successful implementation of FinOps. It ensures that your tagging strategy remains effective and continues to provide the visibility you need into your costs. The below-mentioned are some strategies for maintaining tag hygiene:

1. ***Regular Auditing:*** Regularly audit your tags to ensure that they are still being used correctly and are still relevant. This process can help you identify any resources that are missing tags, tags that are no longer being used, or tags that are being used inconsistently.

2. ***Automate Where Possible:*** Use automated tools to apply and manage your tags. This can help ensure consistency and can reduce the chance of human error. Many cloud providers offer tools to automate tagging, and there are third-party tools available as well.

3. ***Enforce Tagging Policies:*** Implement policies that enforce your tagging rules. This might involve requiring certain tags when resources are created, or running automated checks to identify resources that are not correctly tagged.

Maintaining Tag Hygiene

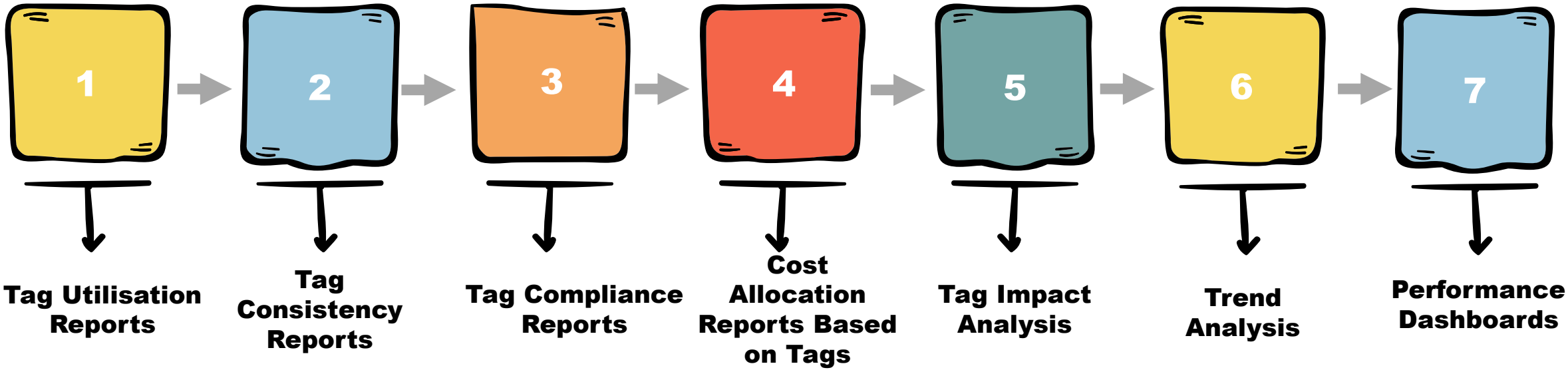
4. ***Provide Clear Guidelines:*** Make sure that everyone in your organisation understands your tagging strategy and why it is important. This should include clear guidelines on how to use each tag, what each tag represents, and who is responsible for managing and applying each tag.

5. ***Adopt a Standardised Approach:*** Using a standardised approach to tagging can help ensure consistency across all resources and teams. This might involve using consistent formats or naming conventions for your tags, or using a specific set of pre-defined tags.

6. ***Keep Tagging Strategy Updated:*** As your business and cloud environment evolve, so too should your tagging strategy. Regularly review and update your tags and tagging policies to ensure they are still effective and relevant.

Reporting on Tag Performance

- ✓ Tag performance reporting provides insights into how effectively your organisation is using tags for cost allocation and other purposes. Some strategies to help you report on tag performance are mentioned below:



Reporting on Tag Performance

1. ***Tag Utilisation Reports:*** Generate reports that provide a snapshot of how tags are being utilised across your resources. For instance, which tags are used most frequently? Which are not used at all? This can help identify areas of improvement in your tagging strategy.

2. ***Tag Consistency Reports:*** Create reports that measure consistency in tag usage. Inconsistencies in tag application (like "Dev" vs "Development") can lead to inaccurate cost allocations. Identify these inconsistencies to improve your tagging practices.

3. ***Tag Compliance Reports:*** For businesses that have mandatory tagging policies, it is important to generate compliance reports. These reports identify resources that are not properly tagged, which can then be corrected.

4. ***Cost Allocation Reports Based on Tags:*** Perhaps the most direct way to measure tag performance is by evaluating cost allocation reports based on tags. These reports can reveal how costs are distributed across different departments, projects, or any other attribute you've tagged.

Reporting on Tag Performance

5. ***Tag Impact Analysis:*** Use these reports to assess the impact of tags on various aspects of your cloud operations. For example, you can analyse whether tags have helped reduce costs, improved resource management, or boosted security and compliance.

6. ***Trend Analysis:*** Use historical data to analyse trends in tag usage and its impact on cost allocation and resource optimisation. This can help you understand how effective your tags have been over time.

7. ***Performance Dashboards:*** Dashboards can provide a visual representation of tag performance. You can set up dashboards to display key metrics like the number of resources with/without tags, tag utilisation by teams or departments, costs incurred by different tags, and more.

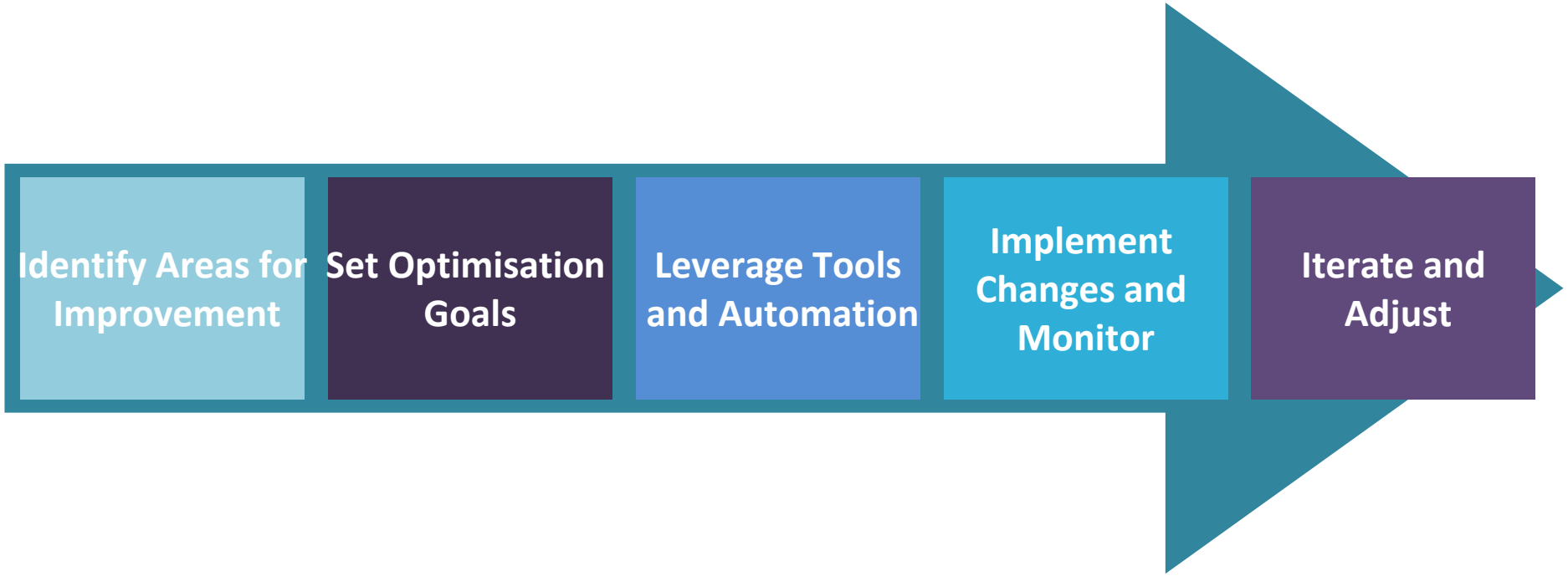
Module 6:

Optimise Phase

- ✓ Adjusting to Hit Goals
- ✓ Usage Optimisation
- ✓ Rate Optimisation
- ✓ Paying Less with Reserved Instances and Committed Use Discounts
- ✓ RI and CUD Strategies

Adjusting to Hit Goals

✓ Adjusting to hit goals during the optimisation phase typically involves several steps:



Adjusting to Hit Goals

1. Identify Areas for Improvement

- ✓ After you have established visibility and accountability, the next step is to identify areas where you can optimise costs.
- ✓ This might include eliminating wasted resources, right-sizing services, improving workload efficiency, or using reserved or spot instances.

2. Set Optimisation Goals

- ✓ After identifying the areas of potential improvement, you should set specific, measurable goals for each.
- ✓ These goals should be aligned with your business objectives, whether that's reducing overall cloud spending, improving efficiency, increasing the predictability of costs, etc.

Adjusting to Hit Goals

3. Leverage Tools and Automation

- ✓ There are a variety of tools available that can help with optimisation. These include native tools from your cloud provider as well as third-party solutions.
- ✓ These tools can help you automate processes like identifying idle resources, right-sizing instances, and tracking spending against your budget.

4. Implement Changes and Monitor

- ✓ After you have set your goals and identified how you will achieve them, the next step is to implement changes.
- ✓ This might involve changing your cloud infrastructure, adjusting your usage, or implementing new policies or procedures.
- ✓ After changes are made, monitor the results to see if you are on track to meet your goals.

Adjusting to Hit Goals

5. Iterate and Adjust

- ✓ It is an ongoing process. As such, you will likely need to adjust your strategies and goals over time.
- ✓ Regularly review your progress and adjust your strategies as necessary.

Usage Optimisation

- ✓ It refers to managing and adapting cloud resources and their usage to increase efficiency and minimise waste.
- ✓ It involves right-sizing and optimising cloud workloads to ensure the best balance of performance and cost.
- ✓ The following are the ways that how can optimise usage in:

Usage Optimisation

1) Right-Sizing

- ✓ This is the process of matching the capacity of your cloud services to your current needs.
- ✓ Under-provisioning can lead to performance issues, while over-provisioning can lead to unnecessary costs.

2) Auto-Scaling

- ✓ It is a feature of cloud services that allows you to automatically adjust capacity to maintain steady, predictable performance at the lowest possible cost.
- ✓ It lets your applications scale up to handle peak loads and scale down when demand decreases to save costs.

Usage Optimisation

3) *Cost-Effective Resource Selection*

- ✓ Cloud providers offer a variety of resources that can be more cost-effective depending on the workload.
- ✓ For example, spot instances can be cheaper than on-demand instances, but they may not always be available. It is important to understand the trade-offs and choose the most cost-effective resource for each workload.

4) *Waste Elimination*

- ✓ Identify and eliminate wasted resources. This could be idle resources, unused instances or storage, over-provisioned capacity, etc.

5) *Performance Efficiency*

- ✓ Make sure your applications are running as efficiently as possible. Optimise code, leverage caching, use Content Delivery Networks (CDNs) and consider other efficiency-improving strategies.

Usage Optimisation

6) Leveraging Discounts and Savings Plans

- ✓ Cloud providers offer various pricing models like reserved instances or savings plans that allow you to commit to a certain usage level in exchange for a discount.
- ✓ If you have predictable workloads, these can offer substantial cost savings.

7) Using Cloud Provider Cost and Usage Tools

- ✓ Providers like AWS, Google Cloud, and Azure all have tools to help you track, analyse, and optimise your usage and spending.
- ✓ They can provide detailed insights and recommendations to help you optimise your usage.

8) Continuous Monitoring and Improvement

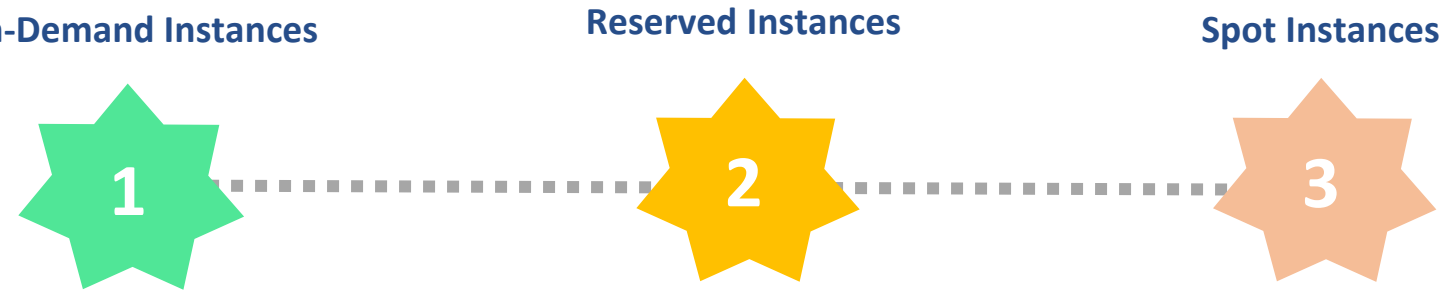
- ✓ FinOps is a continual cycle of measurement, analysis, and adjustment. Regularly review your usage and costs, and adjust your strategies as necessary.

Rate Optimisation

- ✓ It usually refers to strategically managing the costs of cloud services to ensure you are getting the best price for your needs.
- ✓ This is an important aspect of the FinOps "Optimisation" phase and typically includes strategies such as:

Rate Optimisation

1. *Selecting the Right Pricing Model*



2. *Leveraging Commitment Discounts*

- ✓ Many cloud providers offer discounts for committing to a certain level of usage.
- ✓ For instance, AWS offers Savings Plans, which provide a discount in exchange for a commitment to a consistent amount of usage (measured in $/hour) for 1 or 3 years.

Rate Optimisation

3. *Taking Advantage of Volume Discounts*

- ✓ Cloud providers often offer tiered pricing, so the more you use, the less you pay per unit.

4. *Negotiating Enterprise Agreements*

- ✓ Larger organisations can often negotiate an enterprise agreement with their cloud provider.
- ✓ These agreements can include significant discounts but usually require a substantial commitment.

5. *Using Cost Management Tools*

- ✓ Both native cloud provider tools and third-party solutions can provide insights into your spending and make recommendations for cost savings.
- ✓ These tools can often help identify underused resources that can be downsized or shut down, saving you money.

Rate Optimisation

6. Multi-Cloud Strategies

- ✓ In some cases, businesses might find it beneficial to use more than one cloud provider to optimise costs.
- ✓ For example, a particular service might be cheaper on one cloud platform compared to another.

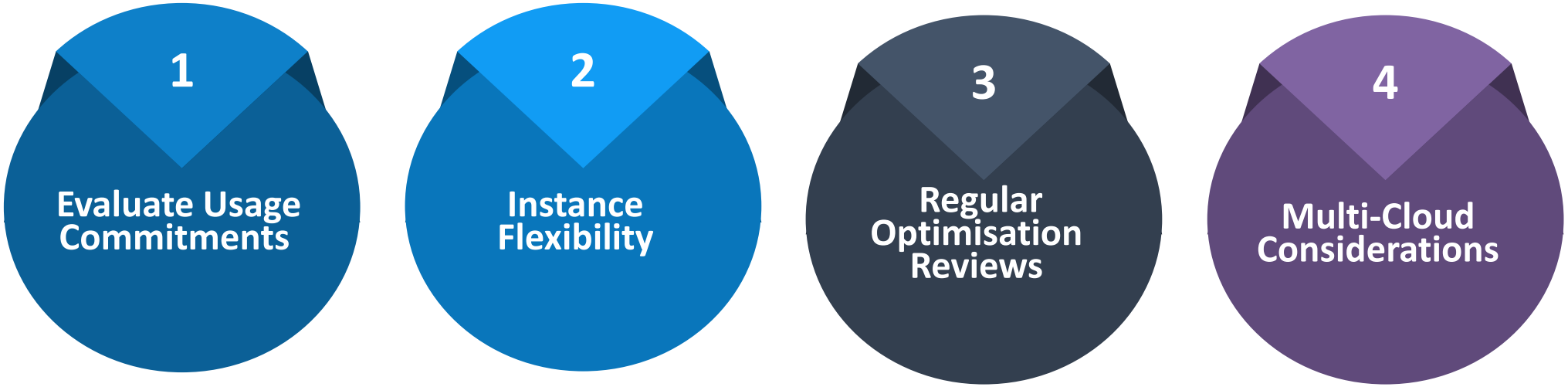
Paying Less with Reserved Instances and Committed Use Discounts

- ✓ It is a common goal in FinOps, as these strategies help optimise cloud costs.
- ✓ The following are some key considerations for leveraging RIs and CUDs to minimise expenses:

1. ***Reserved Instances (RIs)***

Paying Less with Reserved Instances and Committed Use Discounts

2. Committed Use Discounts (CUDs)



RI and CUD Strategies

- ✓ These are the strategies used in the optimisation phase to maximise cost savings and operational efficiency in cloud computing environments, particularly in relation to the usage of cloud resources.

1. Reserved Instances (RI)

- ✓ It allow users to reserve capacity in advance and receive a significant discount on the regular on-demand pricing for cloud resources such as virtual machines.
- ✓ By committing to use specific instance types and operating systems for a predetermined period (usually one or three years), users can benefit from lower hourly rates compared to on-demand instances.
- ✓ In the optimisation phase, RI strategy involves analysing historical usage patterns, workload requirements, and long-term usage projections to determine the appropriate reserved capacity.
- ✓ The goal is to identify instances that are consistently used and can benefit from the cost savings offered by reservations.

RI and CUD Strategies

(Continued)

- ✓ By utilising RIs effectively, organisations can optimise their cloud spend by reducing the overall cost of running workloads.

2. ***Convertible Reserved Instances (CUD)***

- ✓ It Instances are similar to RIs but offer more flexibility. With CUDs, users have the option to modify the instance attributes during the reservation term, such as changing the instance type or operating system.

- ✓ This flexibility allows for adapting to changing workload requirements without sacrificing the cost benefits of reserved capacity.

- ✓ CUD strategy in the optimisation phase involves assessing workloads that may experience variations in resource requirements over time.

RI and CUD Strategies

(Continued)

- ✓ By opting for convertible reservations, organisations can ensure cost savings while retaining the ability to modify instance attributes if workload demands evolve.

- ✓ This adaptability can be particularly useful in scenarios where workload patterns are unpredictable or subject to frequent changes.

Module 7:

Automating Cost Management

- ✓ What's the Goal of Automation?
- ✓ Automation Tools
- ✓ Safety and Security
- ✓ Usage Reduction

What's the Goal of Automation?

- ✓ The goal of automation is to reduce manual effort, increase efficiency, eliminate human error, and provide timely insights for decision making. It helps to enhance the management and optimisation of cloud financials and resources by streamlining operations and processes.

- ✓ The following are the specific goals of automation:

1. **Efficiency**: Automation can significantly reduce the time and effort required to manage cloud resources and costs. It allows teams to focus more on strategic tasks by reducing their burden of routine, manual tasks.

2. **Accuracy**: Manual processes are prone to errors. Automation ensures that processes like tagging resources, generating reports, and adjusting resources based on demand are carried out accurately and consistently.

What's the Goal of Automation?

3. **Cost Savings**: Automated right-sizing, scheduling, and auto-scaling can help to optimise resource usage and reduce unnecessary costs. It ensures that you only pay for what you actually need.

4. **Real-time Insights**: Automated monitoring and reporting can provide real-time insights into resource usage and costs. This enables quicker decision making and faster response to changes.

5. **Compliance and Governance**: Automation can help enforce compliance and governance policies more effectively. For instance, it can automatically apply correct tags to resources or alert when non-compliant resources are detected.

What's the Goal of Automation?

6. **Scalability**: As your cloud infrastructure grows, manually managing costs and resources becomes increasingly difficult. Automation allows your FinOps practices to scale with your infrastructure.

7. **Improved Collaboration**: Automation can help break down silos between different teams in the organisation. For example, automated reports and alerts can improve communication and cooperation between finance, operations, and development teams.

✓ The ultimate goal of automation in FinOps is to help businesses better manage and control their cloud costs, operate more efficiently, and make more informed, timely decisions.

Automation Tools

- ✓ Automation tools enable organisations to streamline financial operations, optimise cloud costs, and improve overall efficiency. These tools automate various tasks and processes involved in managing cloud resources, monitoring costs, and enhancing financial visibility.

- ✓ The following are the commonly used automation tools:

1. **Cloud Management Platforms (CMPs):** CMPs like CloudHealth by VMware, Cloudability, and RightScale provide centralised platforms for managing and optimising cloud costs. They offer features such as cost tracking, resource tagging, budgeting, cost allocation, and optimisation recommendations.

2. **Infrastructure as Code (IaC) Tools**: Tools like AWS CloudFormation, Azure Resource Manager, and Terraform enable you to define and provision cloud infrastructure as code. They automate the creation, configuration, and management of cloud resources, ensuring consistency and reproducibility.

Automation Tools

3. **Serverless Frameworks**: Frameworks like AWS Serverless Application Model (SAM) and Azure Functions automate the deployment and scaling of serverless applications. They simplify the development, deployment, and management of serverless functions.

4. **Container Orchestration Platforms**: Tools like Kubernetes, Docker Swarm, and Amazon Elastic Kubernetes Service (EKS) automate the management and scaling of containerised applications. They provide capabilities for automated deployment, scaling, and load balancing of containers.

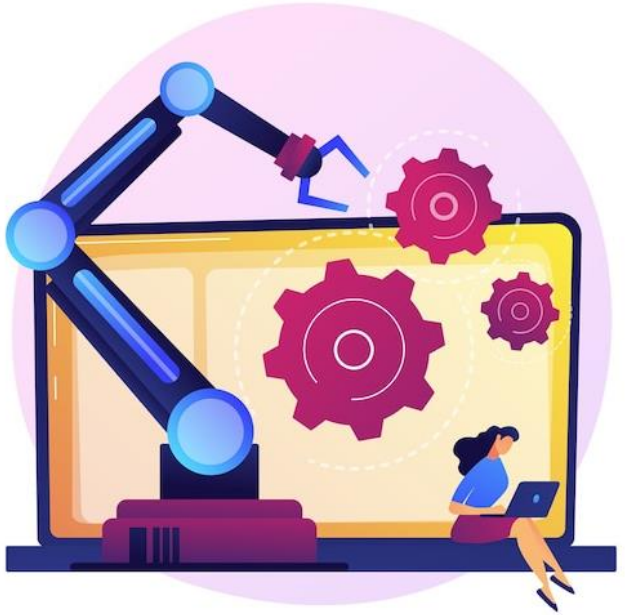
5. **Continuous Integration/Continuous Deployment (CI/CD) Tools**: CI/CD tools such as Jenkins, GitLab CI/CD, and CircleCI automate the software development lifecycle. They enable automated build, test, and deployment pipelines, ensuring efficient and rapid application delivery.

6. **Monitoring and Alerting Tools**: Tools like Datadog, New Relic, and Splunk provide automated monitoring and alerting for cloud resources. They track resource usage, performance metrics, and cost trends, enabling proactive monitoring and issue resolution.

Automation Tools

7. **Cost Optimisation Platforms:** Platforms like AWS Cost Explorer, Azure Cost Management, and Google Cloud Cost Management offer automated cost reporting, analysis, and optimisation recommendations. They help identify cost-saving opportunities, provide cost breakdowns by tags, and enable effective cost control.

8. **Workflow Automation Tools:** Tools like AWS Step Functions, Azure Logic Apps, and Zapier enable the automation of workflows and business processes. They automate the execution of tasks, data integration, and coordination across various systems and applications.



Safety and Security

✓ Safety and security are paramount considerations to protect financial data, prevent unauthorised access, and ensure compliance with regulations. Here are some key aspects of safety and security:

Data Protection: Safeguarding financial data is critical. Implement strong data encryption, both in transit and at rest, to protect sensitive information from unauthorised access. Use secure protocols and encryption algorithms approved by industry standards.

Access Control and Authentication: Ensure strong access controls by implementing robust authentication mechanisms such as multi-factor authentication (MFA) and strong password policies. Grant access to financial data and resources on a need-to-know basis and regularly review and update access privileges.

Security Monitoring and Threat Detection: Employ comprehensive security monitoring and logging systems to detect and respond to potential threats. Implement intrusion detection and prevention systems (IDPS) to identify and block suspicious activities. Regularly review logs and conduct security audits to detect any anomalies or breaches.

Safety and Security

(Continued)

Compliance and Governance: Adhere to relevant compliance regulations, such as PCI DSS, GDPR, HIPAA, and others, depending on your industry and location. Implement internal controls, policies, and procedures to ensure compliance with financial and data protection regulations.

Network and Infrastructure Security: Secure your network infrastructure by implementing firewalls, intrusion prevention systems (IPS), and secure VPN connections. Regularly update and patch systems to address vulnerabilities and minimise the risk of security breaches.

Secure Cloud Environment: If using cloud services, employ best practices for securing cloud resources. Leverage cloud provider security features like identity and access management (IAM), security groups, and network encryption. Regularly review and monitor cloud configurations to ensure they align with security requirements.

Safety and Security

(Continued)

Vendor Management: If using third-party vendors or service providers, conduct thorough due diligence to ensure they have proper security measures in place. Establish and maintain robust vendor management practices, including regular security assessments and audits.

Employee Awareness and Training: Foster a culture of security awareness among employees. Provide regular training on security best practices, data protection, and recognising potential threats like phishing attacks. Encourage reporting of security incidents or suspicious activities.

Disaster Recovery and Business Continuity: Establish and regularly test disaster recovery and business continuity plans. Have backup mechanisms in place to protect financial data and ensure continuity of critical operations in the event of disruptions or disasters.

Usage Reduction

- ✓ Usage reduction is an important aspect that focuses on optimising resource utilisation to minimise costs. By identifying and eliminating unnecessary or inefficient resource usage, organisations can achieve significant cost savings.

- ✓ Some strategies for usage reduction are as follows:

1. **Right-Sizing Resources**: Analyse resource usage patterns and identify overprovisioned or underutilised resources. Right-size instances, storage, and other resources to match actual workload requirements. Downsizing or decommissioning unused or idle resources helps reduce costs.

2. **Optimising Workloads**: Review application architectures and workloads to identify opportunities for optimisation. Consider implementing techniques like containerisation, serverless computing, and auto-scaling to dynamically adjust resources based on demand. This ensures efficient resource utilisation and cost optimisation.

Usage Reduction

3. **Automated Scaling and Scheduling**: Utilise automation to scale resources based on demand or schedule them to be active only during specific periods of utilisation. Automated scaling ensures resources are available when needed, while scheduling allows for cost-effective utilisation during non-peak hours.

4. **Resource Tagging and Allocation**: Implement robust tagging strategies to track resource ownership and usage. By tagging resources with relevant information (e.g., department, project, environment), it becomes easier to allocate costs accurately and identify areas for optimisation.

5. **Monitoring and Alerting**: Utilise monitoring tools to track resource utilisation, performance, and costs in real-time. Set up alerts to be notified of anomalies, spikes in usage, or cost overruns. This helps in identifying areas where usage can be optimised or where inefficient resource consumption is occurring.

6. **Identifying and Eliminating Waste**: Regularly analyse resource usage data to identify waste. This could include orphaned resources, unattached storage volumes, unused IP addresses, or redundant services. Eliminating waste reduces unnecessary costs and improves overall efficiency.

Usage Reduction

7. **Optimising Data Storage**: Review data storage practices and optimise data retention and backup policies. Identify and remove redundant or outdated data, implement data lifecycle management, and leverage cost-effective storage options like object storage or cold storage for infrequently accessed data.

8. **Usage Policies and Governance**: Establish policies and governance frameworks that encourage responsible resource usage. This includes guidelines for provisioning resources, setting usage limits, and enforcing accountability for resource owners.

9. **Continuous Optimisation**: Usage reduction is an ongoing process. Regularly monitor and analyse usage patterns, assess new technologies and services, and adapt your optimisation strategies accordingly. Continuously optimise resource utilisation to ensure cost savings are sustained over time.

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Module 8:

FinOps for the Container World

- ✓ Move to Container Orchestration
- ✓ Container FinOps Lifecycle

Move to Container Orchestration

- ✓ It can bring several benefits, including improved scalability, resource utilisation, and operational efficiency.
- ✓ Container orchestration platforms such as Kubernetes provide a robust framework for managing and automating the deployment, scaling, and management of containerised applications.

Move to Container Orchestration

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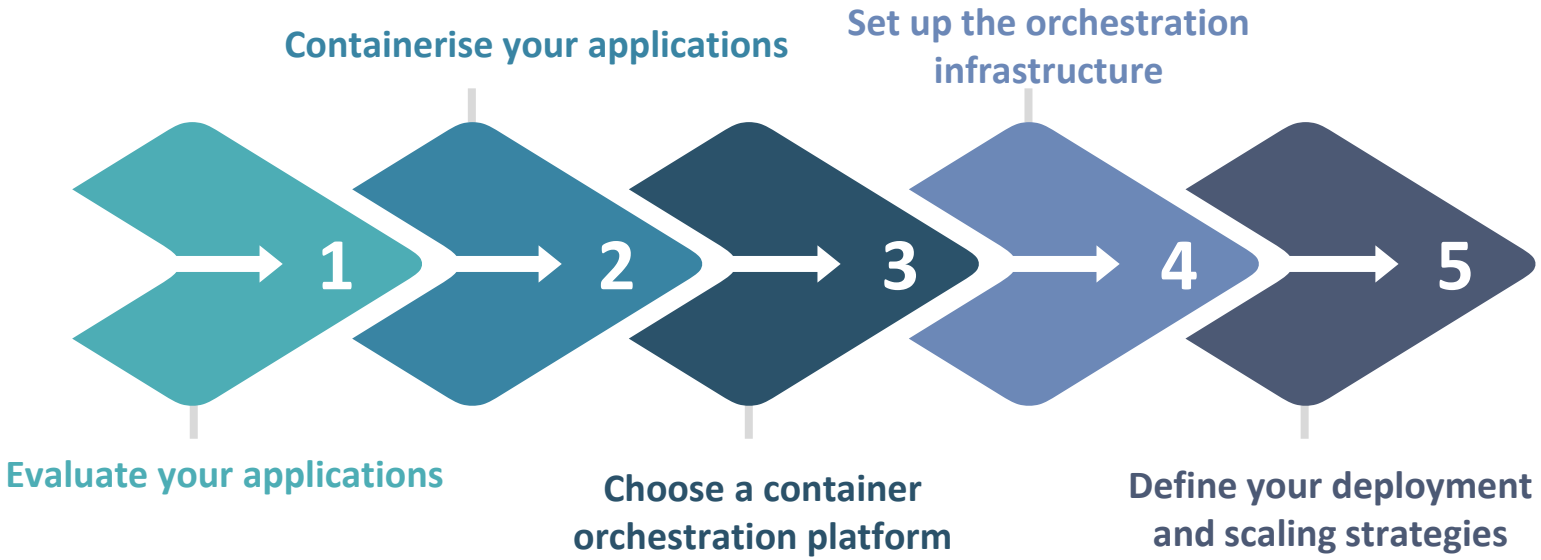
✓ The following are some steps to consider when moving to container orchestration in:



Move to Container Orchestration

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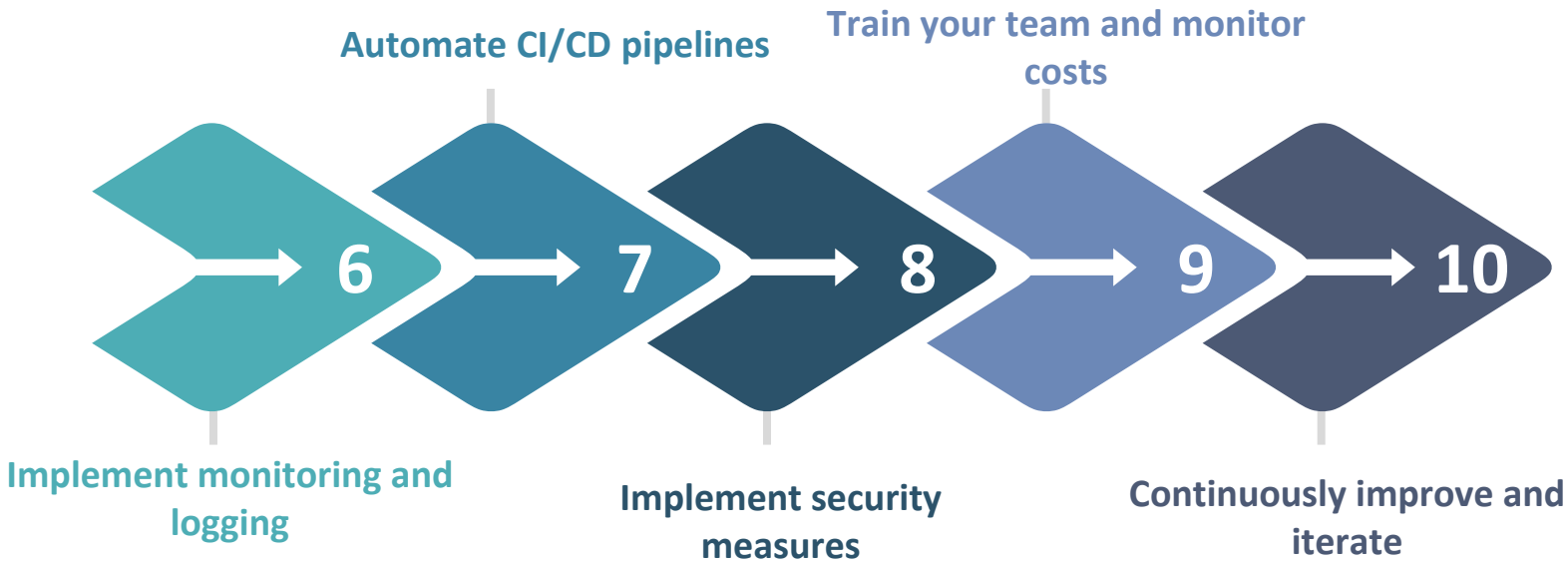


Container FinOps Lifecycle

- ✓ It refers to the practice of managing and optimising the costs associated with running containers in a cloud environment.
- ✓ It involves applying financial discipline and strategies to containerised workloads to achieve cost efficiency and maximise the value delivered by container-based applications.

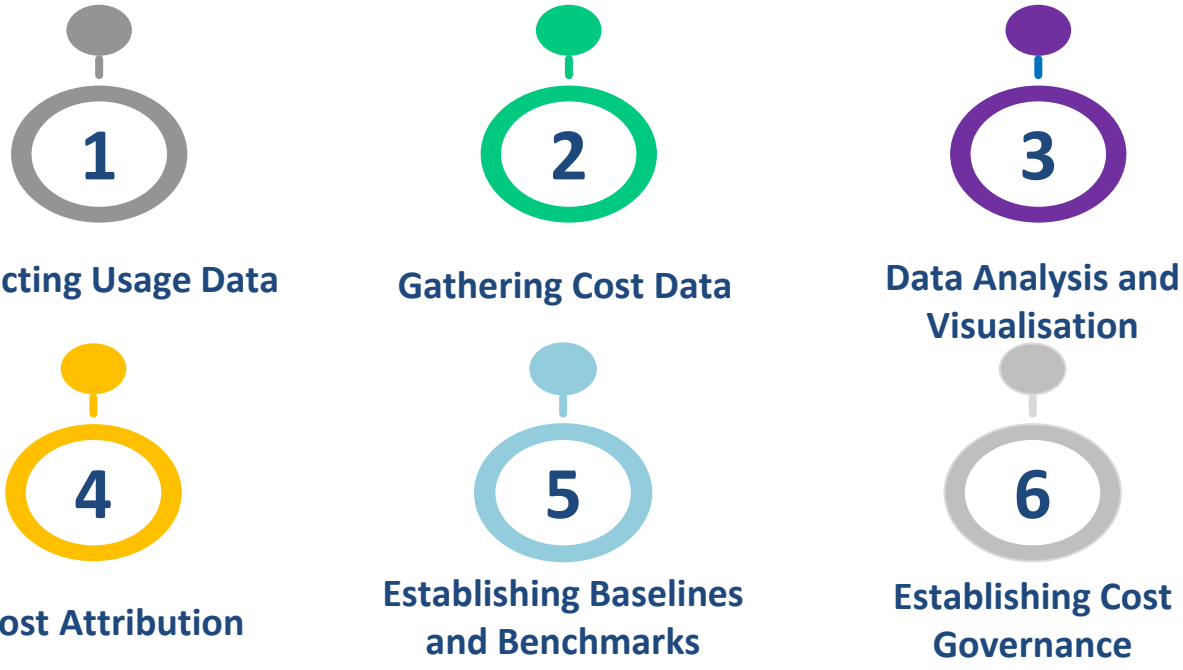
Container Inform Phase

- ✓ This phase focuses on gathering and analysing information related to containerised workloads and their associated costs.
- ✓ This phase is essential for gaining visibility into container usage and costs, which serves as a foundation for effective cost management and optimisation.

Container FinOps Lifecycle

(Continued)

✓ The following are the key activities involved in the Container Inform phase:



Container FinOps Lifecycle

1. *Collecting Usage Data*

- ✓ Implement monitoring tools or services to capture container usage metrics, such as CPU utilisation, memory consumption, network traffic, and storage usage.
- ✓ Gather data on container resource utilisation and performance characteristics.
- ✓ Capture metadata about containers, such as labels, annotations, and deployment details, to provide context for analysis.

2. *Gathering Cost Data*

- ✓ Retrieve cost data from cloud service providers or container orchestration platforms, which may include costs for compute resources (e.g., virtual machines, containers), storage, networking, and other associated services.
- ✓ Consolidate cost data across multiple sources, if applicable, to obtain a comprehensive view of container-related expenses.

Container FinOps Lifecycle

3. *Data Analysis and Visualisation*

- ✓ Process and analyse the collected usage and cost data to identify patterns, trends, and cost drivers.
- ✓ Generate reports, dashboards, or visualisations that present the information in a clear and understandable manner.
- ✓ Explore cost breakdowns by different dimensions, such as projects, teams, applications, or environments, to gain insights into cost allocation and usage patterns.

4. *Cost Attribution*

- ✓ Attribute container costs to the appropriate projects, teams, or departments based on the collected metadata and organisational context.
- ✓ Establish cost allocation mechanisms and methodologies to distribute container costs accurately and fairly.

Container FinOps Lifecycle

5. Establishing Baselines and Benchmarks

- ✓ It is for container usage and costs.
- ✓ Compare current performance and costs against historical data or industry benchmarks to identify areas for improvement and potential cost-saving opportunities.

6. Establishing Cost Governance

- ✓ Define policies and guidelines for managing container costs, such as resource allocation limits, tagging conventions, or cost optimisation best practices.
- ✓ Establish governance processes and workflows to enforce cost management policies and ensure compliance across the container environment.

Container FinOps Lifecycle

Container Optimise Phase

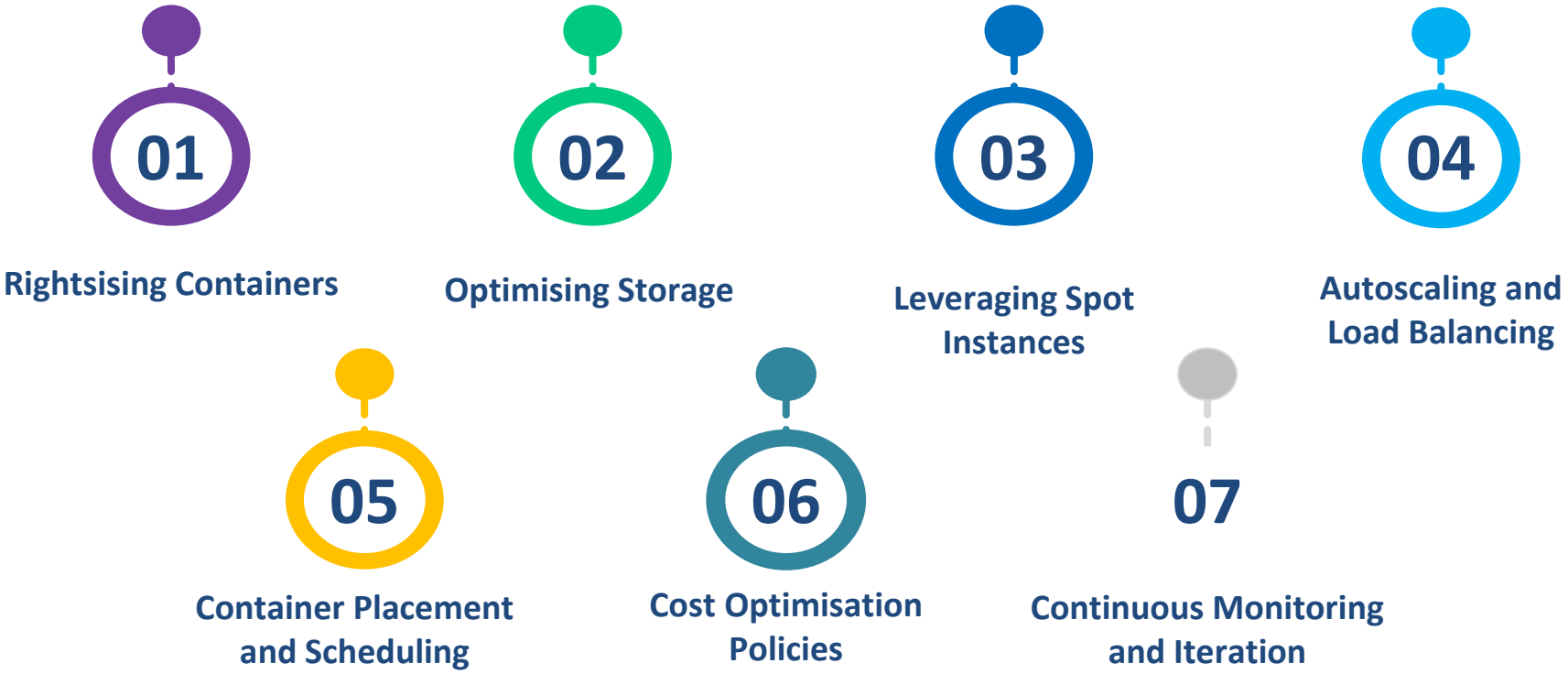
- ✓ It focuses on implementing strategies and actions to optimise container costs and resource utilisation based on the insights gathered during the Container Inform phase.

- ✓ This phase aims to improve cost efficiency, eliminate wasteful spending, and maximise the value delivered by containerised workloads.

Container FinOps Lifecycle

(Continued)

✓ The following are the key activities involved in the Container Optimise phase:



Container FinOps Lifecycle

1. *Rightsising Containers*

- ✓ Analyse container resource usage and identify instances where containers are overprovisioned or underutilised.
- ✓ Rightsise containers by adjusting CPU and memory allocations to match the actual workload requirements.
- ✓ Use historical usage data and performance metrics to determine the appropriate resource allocation for each container.

2. *Optimising Storage*

- ✓ Evaluate storage usage patterns and identify opportunities to optimise storage costs.
- ✓ Identify and eliminate unused or orphaned storage volumes associated with containers.
- ✓ Implement data lifecycle management policies to migrate infrequently accessed data to lower-cost storage tiers or archive services.

Container FinOps Lifecycle

3. *Leveraging Spot Instances*

- ✓ Explore the use of spot instances or preemptible VMs provided by cloud service providers.
- ✓ Identify non-critical workloads or tasks that can leverage spot instances to take advantage of significantly lower compute costs.
- ✓ Implement automated processes to spin up spot instances when available and terminate them when the spot market price exceeds a predefined threshold.

4. *Autoscaling and Load Balancing*

- ✓ Implement autoscaling mechanisms to dynamically adjust the number of container instances based on workload demands.
- ✓ Set up horisontal pod autoscaling (HPA) or cluster autoscaling to add or remove container instances based on CPU or memory utilisation thresholds.

Container FinOps Lifecycle

(Continued)

- ✓ Utilise load balancers to distribute traffic efficiently across containers and ensure optimal resource utilisation.

5. Container Placement and Scheduling

- ✓ Optimise container placement and scheduling strategies to maximise resource utilisation.
- ✓ Consider factors such as affinity rules, anti-affinity rules, and resource requirements when assigning containers to nodes in a cluster.
- ✓ Leverage advanced scheduling techniques, such as pod affinity and pod anti-affinity, to improve workload distribution and balance resource utilisation.

Container FinOps Lifecycle

6. Cost Optimisation Policies

- ✓ Establish policies and guidelines to drive cost optimisation behaviors among development and operations teams.
- ✓ Define budget limits or cost thresholds for individual projects or environments to ensure cost-conscious decision-making.
- ✓ Implement mechanisms to enforce policies, such as automated alerts or budget tracking tools, to notify stakeholders when cost limits are approaching or exceeded.

7. Continuous Monitoring and Iteration

- ✓ Continuously monitor container usage and cost metrics to identify new cost-saving opportunities or performance bottlenecks.
- ✓ Regularly review and refine optimisation strategies based on changing workload patterns, business requirements, or evolving cloud service offerings.

Container FinOps Lifecycle

Container Operate Phase

- ✓ It focuses on ongoing operations and management of containerised workloads while ensuring cost efficiency and financial governance.
- ✓ This phase involves activities that enable smooth day-to-day operations, cost control, and adherence to established cost management practices.
- ✓ The following are the key activities involved in the Container Operate phase:

Container FinOps Lifecycle

1. ***Resource Monitoring and Alerting***

- ✓ Continuously monitor container resource usage, performance metrics, and cost data.
- ✓ Implement automated alerting mechanisms to notify stakeholders when resource utilisation or costs exceed predefined thresholds or exhibit unusual patterns.
- ✓ Set up proactive monitoring to identify potential issues or bottlenecks that may impact performance or costs.

2. ***Cost Tracking and Reporting***

- ✓ Maintain accurate and up-to-date records of container costs, including compute, storage, networking, and any other associated services.
- ✓ Generate regular reports or dashboards that provide visibility into container costs, budget utilisation, and cost allocation to relevant teams or projects.

Container FinOps Lifecycle

(Continued)

- ✓ Share cost reports with stakeholders to promote transparency, accountability, and cost awareness across the organisation.

3. Financial Governance

- ✓ Enforce financial policies and controls to ensure compliance with budgetary constraints and cost management guidelines.
- ✓ Establish approval processes for new container deployments, resource requests, or changes that may impact costs.
- ✓ Implement mechanisms for tracking and reconciling container costs with financial records and billing statements.

4. Capacity Planning and Forecasting

- ✓ Analyse historical usage and cost data to identify trends and patterns for capacity planning purposes.

Container FinOps Lifecycle

(Continued)

- ✓ Forecast future resource requirements based on expected workload growth, seasonal fluctuations, or anticipated business demands.
- ✓ Collaborate with stakeholders to align capacity plans with budgetary constraints and make informed decisions regarding resource provisioning.

5. Incident Management and Troubleshooting

- ✓ Establish incident management processes to address issues related to containerised workloads promptly.
- ✓ Respond to performance or cost-related incidents by identifying root causes, implementing remediation measures, and minimising financial impact.
- ✓ Collaborate with development and operations teams to troubleshoot performance issues, optimise resource utilisation, and mitigate cost inefficiencies.

Container FinOps Lifecycle

6. *Cost Optimisation Reviews*

- ✓ Conduct regular reviews of container costs, performance, and resource utilisation to identify optimisation opportunities.
- ✓ Engage stakeholders in cost optimisation discussions, leveraging insights from usage patterns, performance metrics, and cost data.
- ✓ Collaborate with development teams to explore architectural optimisations, identify potential cost-saving initiatives, and prioritise optimisation efforts.

7. *Continuous Training and Education*

- ✓ Provide ongoing training and educational resources to stakeholders involved in container operations.
- ✓ Keep teams updated on best practices, cost management techniques, and new features or capabilities offered by container orchestration platforms or cloud service providers.

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Module 9:

Managing to Unit Economics: FinOps Nirvana

- ✓ Metrics as the Foundation of Unit Economics
- ✓ Coming Back to the Iron Triangle
- ✓ Activity-Based Costing
- ✓ What's Missing from the Equation?

Metrics as the Foundation of Unit Economics

- ✓ Metrics serve as the foundation of unit economics by providing quantifiable measurements and insights into the financial performance of individual units or services. These metrics help organisations evaluate the efficiency, profitability, and overall value of their operations at a granular level.

- ✓ The following are key metrics that form the foundation of unit economics:

1. **Cost per Unit**: This metric calculates the cost incurred to produce or deliver a single unit of output, such as cost per transaction, cost per customer, or cost per product unit. It helps organisations understand the cost efficiency of their operations and identify opportunities for cost optimisation.

2. **Revenue per Unit**: Revenue per unit measures the income generated per unit of output, such as revenue per customer, revenue per user, or revenue per product sold. It provides insights into the revenue generation capability of each unit and helps assess the profitability of different offerings.

3. **Gross Margin**: Gross margin is the difference between revenue and the direct costs associated with producing or delivering a unit. It indicates the profitability of each unit before considering other indirect costs. A higher gross margin suggests better cost management and efficiency.

Metrics as the Foundation of Unit Economics

4. **Contribution Margin**: Contribution margin measures the profitability of each unit after deducting both direct and variable costs. It reflects the amount of revenue that contributes to covering fixed costs and generating profit. Maximising contribution margins is crucial for financial sustainability and growth.

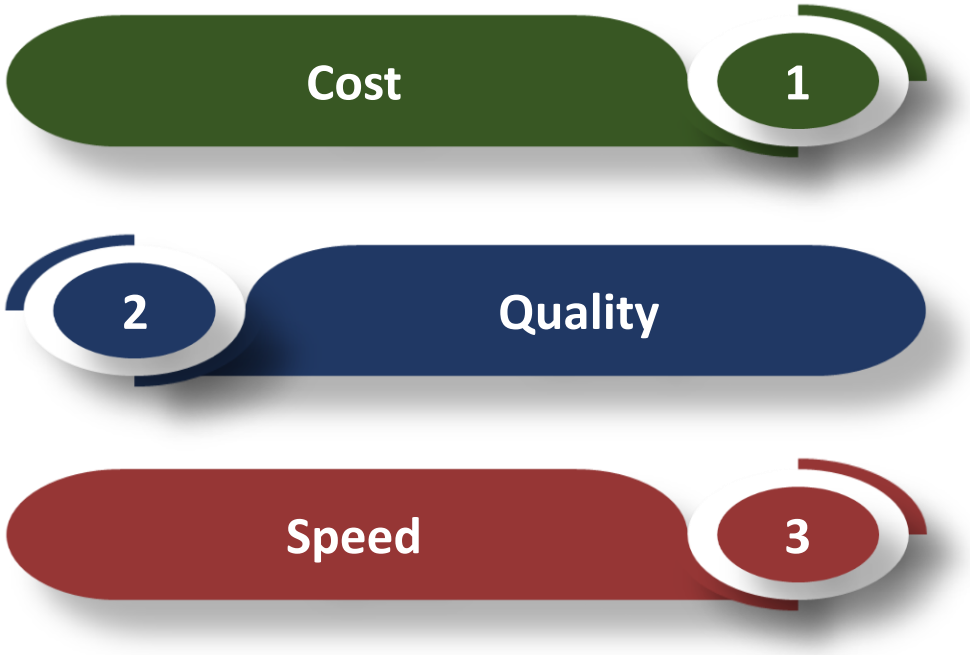
5. **Customer Lifetime Value (CLV):** CLV estimates the net profit generated by a customer throughout their entire relationship with a business. It assesses the long-term value of customers and helps in making strategic decisions related to customer acquisition, retention, and pricing.

6. **Break-Even Point**: The break-even point is the level of sales or usage at which total revenue equals total costs, resulting in neither profit nor loss. Understanding the break-even point helps organisations determine the minimum level of utilisation or sales needed to cover costs and achieve profitability.

7. **Return on Investment (ROI):** ROI measures the return achieved from an investment relative to its cost. It assesses the financial viability of investments in cloud resources or initiatives. ROI helps evaluate the value generated from cloud investments and justifies their financial impact.

Coming Back to the Iron Triangle

- ✓ The *Iron Triangle* refers to the three key components that organisations need to balance and manage effectively: *Cost*, *Quality*, and *Speed*. Similar to the Project Management Triangle, the Iron Triangle represents the interdependencies and trade-offs between these three factors:



Coming Back to the Iron Triangle

1. ***Cost***

✓ Cost represents the financial aspect of FinOps and involves optimising and controlling expenses associated with cloud resources and operations. The goal is to maximise cost efficiency, reduce wasteful spending, and achieve financial savings while delivering value to the business.

2. ***Quality***

✓ Quality refers to ensuring the reliability, performance, and security of cloud services and operations. It involves maintaining high availability, scalability, and data integrity, while meeting compliance and security requirements. Quality also encompasses user experience and customer satisfaction, ensuring that cloud services meet or exceed expectations.

3. ***Speed***

✓ Speed focuses on the agility and time-to-market. It involves the ability to rapidly provision and scale cloud resources, deploy applications, and respond to changing business needs. Speed is crucial in enabling organisations to innovate, seize market opportunities, and deliver value quickly.

Activity-Based Costing

- ✓ Activity-Based Costing (ABC) is a costing methodology used to allocate costs to specific activities or processes based on their consumption of resources. ABC provides a more accurate and detailed view of cost allocation compared to traditional costing methods, which often rely on arbitrary cost distribution.

- ✓ The working of ABC is as follows:

1. Identify Activities
2. Determine Cost Drivers
3. Assign Costs to Cost Pools
4. Allocate Costs
5. Allocate Costs to Activities
6. Analyse and Report

Activity-Based Costing

1. **Identify Activities**: Identify the key activities or processes that consume resources within your cloud environment. Examples could include data storage, data transfer, compute instances, or network usage.

2. **Determine Cost Drivers**: Determine the factors that drive the consumption of resources for each activity. For example, the number of requests processed, the volume of data transferred, or the duration of compute usage.

3. **Assign Costs to Cost Pools**: Identify the cost pools, which are categories of costs associated with specific activities. This could be storage costs, network costs, or compute costs.

Activity-Based Costing

4. **Allocate Costs**: Calculate the cost driver rate for each activity by dividing the total cost of the cost pool by the total volume or usage of the cost driver. For example, if the storage cost pool is $10,000 and the total volume of data stored is 1,000 GB, the cost driver rate would be $10 per GB.

5. **Allocate Costs to Activities**: Allocate costs to each activity based on the consumption of the cost driver. For instance, if an activity consumes 100 GB of data storage, the cost allocated to that activity would be $1,000 ($10 per GB * 100 GB).

6. **Analyse and Report**: Analyse the activity-based cost allocation data to gain insights into the cost breakdown of different activities or resources. Generate reports to understand the cost drivers, identify areas of high costs, and make informed decisions for cost optimisation.

What's Missing from the Equation?

✓ While encompasses various aspects of financial operations in managing cloud costs, there are a few elements that may be missing from the equation:

Governance and Compliance

- While cost optimisation is a significant focus, it is important to consider governance and compliance aspects as well.
- This includes ensuring adherence to regulatory requirements, security standards, data privacy, and internal policies.
- Implementing controls and processes to address governance and compliance helps mitigate risks and avoid potential penalties or breaches.

What's Missing from the Equation?

(Continued)

Forecasting and Budgeting

- Planning and forecasting are essential components of financial management. This involves projecting future cloud costs, setting budgets, and tracking actual spending against budgeted amounts.
- Forecasting and budgeting enable proactive financial planning and resource allocation.

What's Missing from the Equation?

(Continued)

Business Process Optimisation

- Optimising cloud costs should go hand in hand with optimising business processes.
- FinOps can benefit from integrating with business process management initiatives to identify inefficiencies, streamline workflows, and leverage cloud services to improve operational efficiency and effectiveness.

What's Missing from the Equation?

(Continued)

Risk Management

- Mitigating risks related to financial operations is another crucial aspect missing from the equation.
- Organisations should assess and address risks associated with cost overruns, service interruptions, vendor lock-in, data breaches, and compliance issues.
- A comprehensive risk management framework helps ensure business continuity and resilience.

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