SQL on Azure

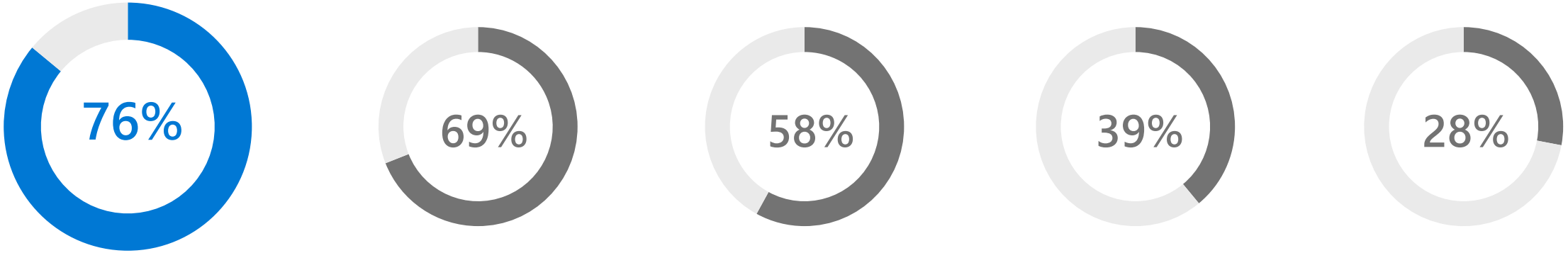
Webinar 1:

And the Cloud Adoption Framework

TJ Turner – Design Sales Engineer

76% of CEOs consider Digital Transformation their #1 priority

Trends that will transform business over the next five years



Technological advances

Demographic shifts

Shift in global economic power

Resource scarcity & climate change

Urbanization

Source: PWC CEO Survey

However, change is difficult. It has impact on people, culture, and brings a level of uncertainty.

It requires new and disruptive thinking

It requires a culture shift from within the organization

It requires leaders to take risks, and learn quickly

Harnessing data impactfully and efficiently can help any business transform confidently

Today, all businesses are data businesses

Data makes business possible

Data is crucial to businesses of all sizes

Securing data is mandatory

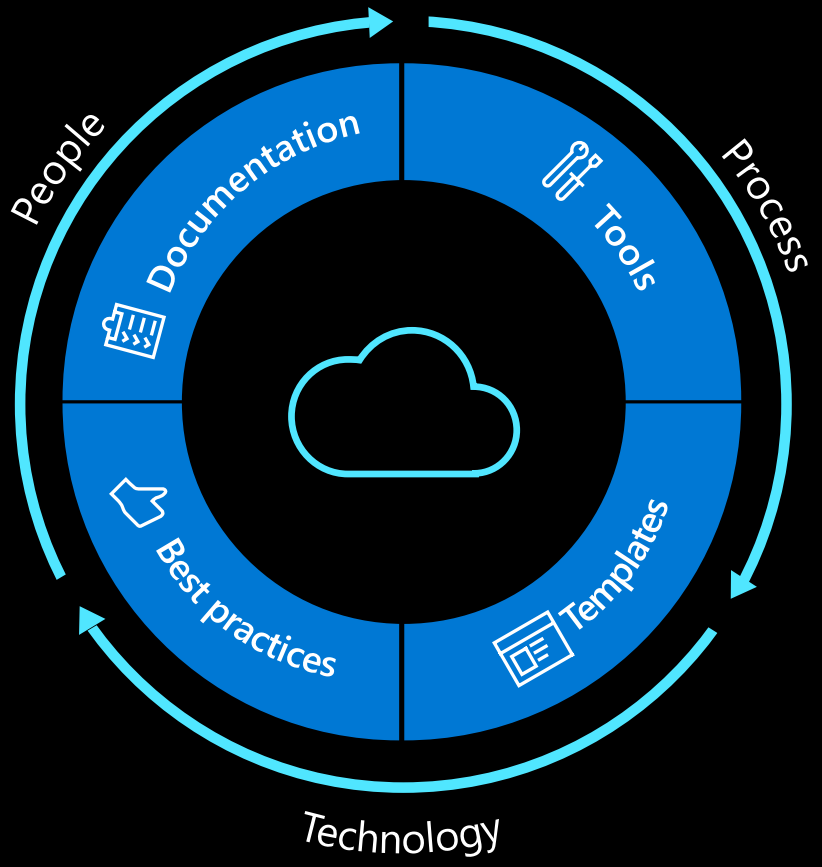
And all data businesses need to be analytic businesses

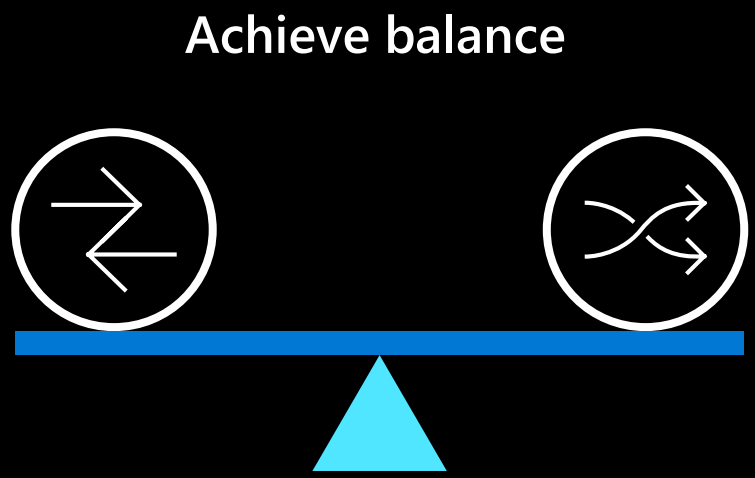
Businesses need to “know thyself”, and establish customer intimacy

Workers are empowered with intelligent insights

Augmented intelligence sees patterns we cannot

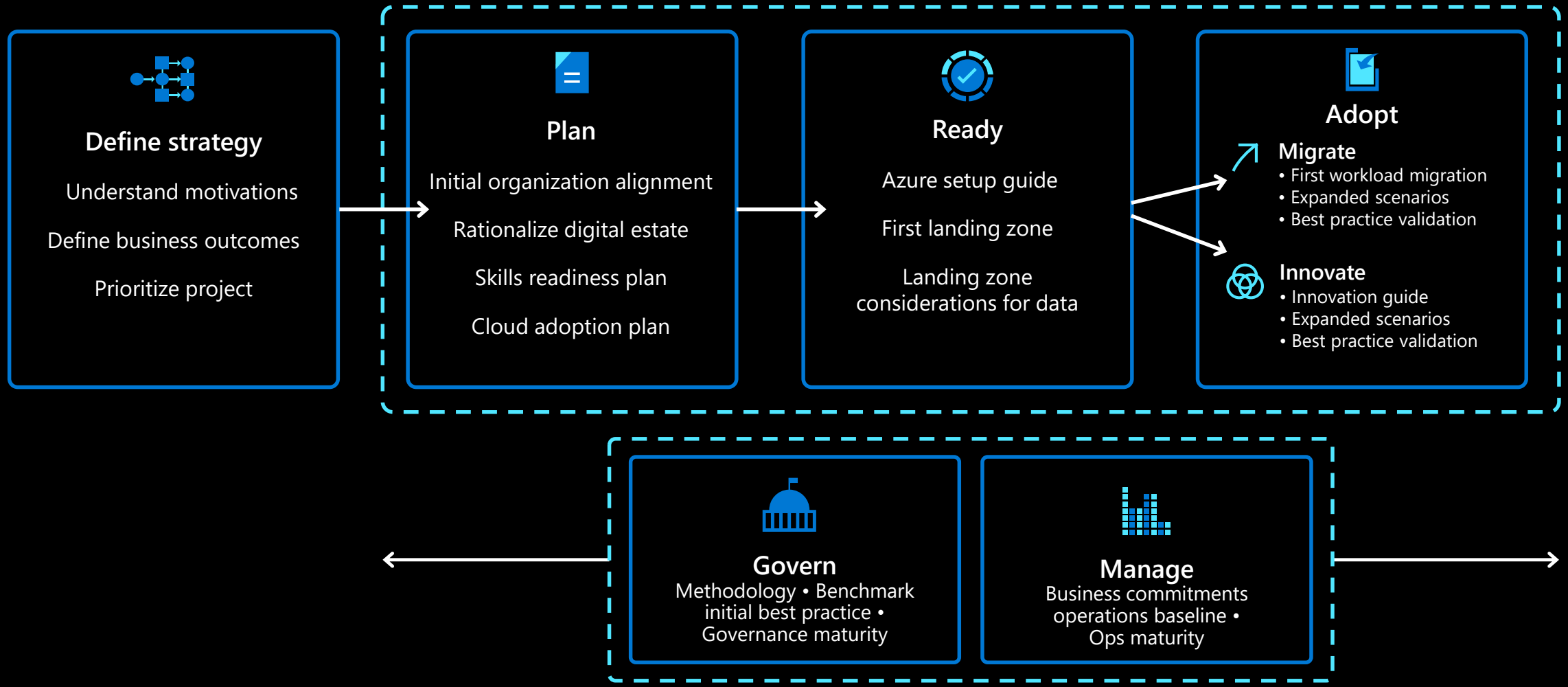
Microsoft Cloud Adoption Framework for Azure



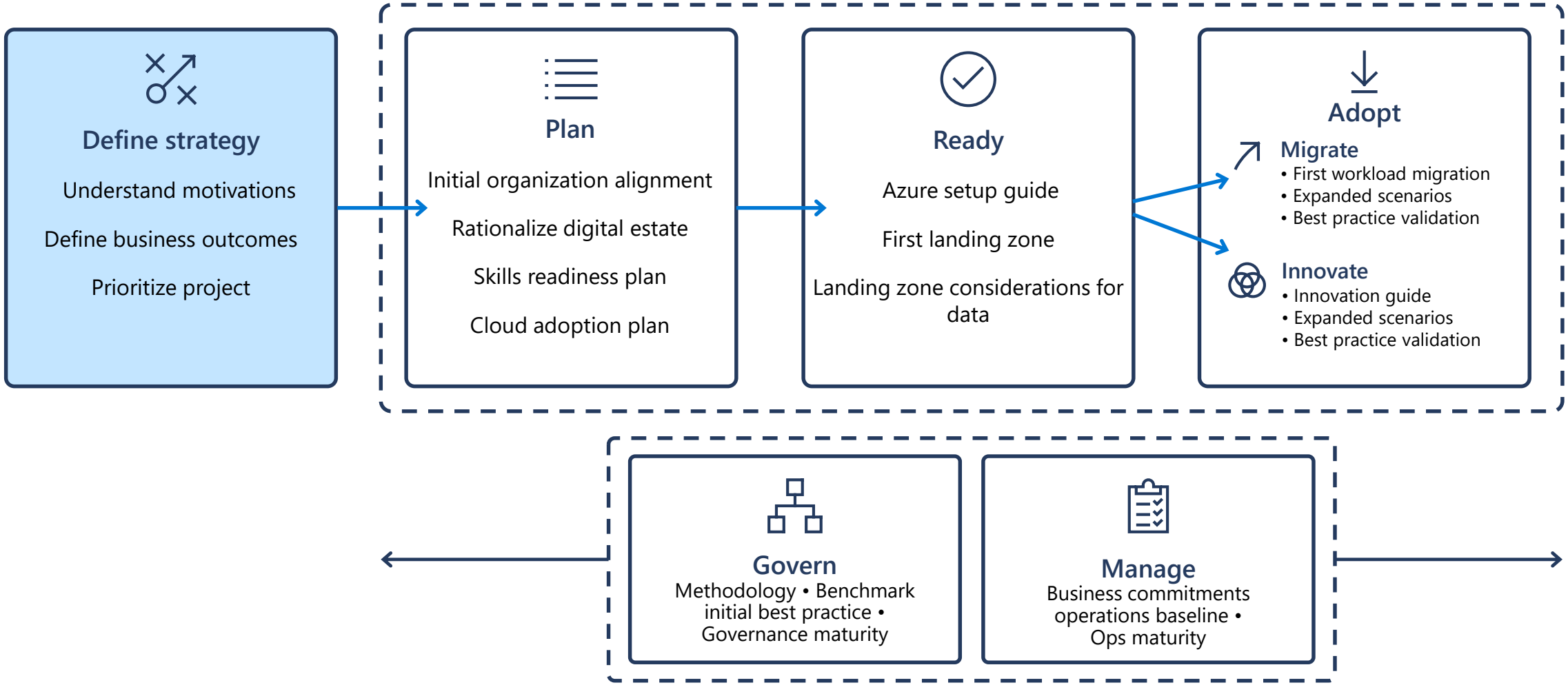


Align **business, people, and technology strategy** to achieve business goals with **actionable, efficient, and comprehensive** guidance to deliver fast results with control and stability.

Microsoft Cloud Adoption Framework for Azure

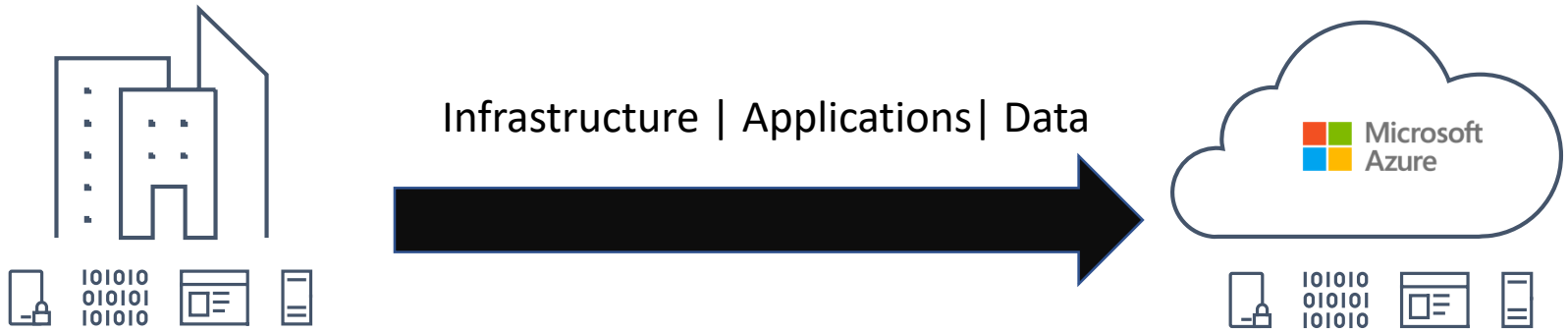


Microsoft Cloud Adoption Framework for Azure



Understand your motivations for cloud adoption

Business transformations that are supported by cloud adoption can be driven by various motivations. They are classified broadly into two main categories: **Migration** and **Innovation**.



MIGRATION

- ✓ Cost savings
- ✓ Reduction in vendor or technical complexity
- ✓ Optimization of internal operations
- ✓ Increase business agility
- ✓ Prepare for new technical capabilities
- ✓ Scale to meet market or geographic demands

INNOVATION

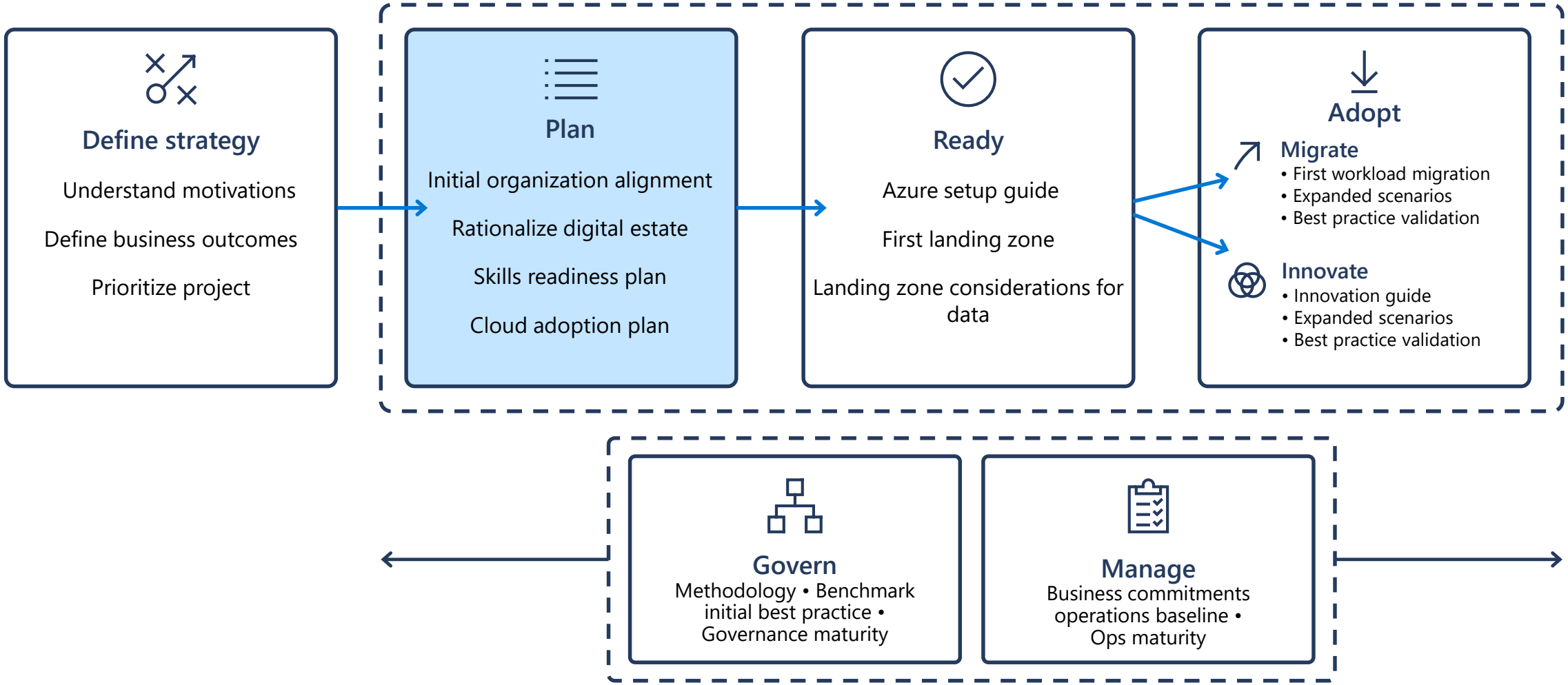
- ✓ Improve customer experiences or engagements
- ✓ Transform products or services
- ✓ Disrupt the market with new products or services
- ✓ Prepare or build new technical capabilities
- ✓ Scale to meet market or geographic demands

Define business outcomes

Engage different stakeholders and document desired outcomes across these categories

- **Fiscal** outcomes include increased revenue, savings in cost and drive profits
- **Agility** outcomes include time-to-market and provision time to respond to changes
- **Reach** outcomes include global access and data sovereignty
- **Customer engagement** outcomes include meeting customer expectations by reducing cycle times
- **Performance** outcomes include having highly available, global applications
- **Security & Compliance** regulations addressed and implemented

Microsoft Cloud Adoption Framework for Azure



Rationalize digital estate

Cloud rationalization is the process of evaluating assets to determine the best approach to hosting them in the cloud (public or hybrid).

Rehost

Moves a current state asset to the chosen cloud provider, with minimal change to overall architecture, aka lift and shift

Refactor

Modernize to platform-as-a-service, creating significant savings in application and data management and administration

Retire

Retiring assets can produce significant savings in annual operating costs and up-front migration efforts

- **High level rationalization** simplifies decision making to answer the key question about an asset – to rehost, refactor or retire? More detailed rationalization with 5R(s) happens in the 'Adopt' phase
- While cloud adoption team executes first workload migration, the cloud strategy team uses the **Incremental approach** or 'Power of 10' where they select the first 10 applications to migrate
- The output of a rationalization effort is a prioritized backlog of all assets that are affected by the chosen transformation.

Skills readiness plan

Cloud computing is a technology shift and a new set of skills are required to support cloud solutions.

1 Identify the gaps

- Emphasize new responsibilities and existing responsibilities to be retired
- Identify the area that aligns with each responsibility
- Check how closely a responsibility aligns with the area; crossover represents opportunity for better alignment
- Identify skills necessary to support each responsibility
- Identify the roles that will execute these skills

2 Look across teams

- The necessary skills are typically not confined to a single role or even a single department
- Skills will have relationships and dependencies that can span a single role or multiple roles
- These dependencies represent new processes that your organization implements to manage the workflow among roles

3 Establish new teams

- Evolve team structures as cloud adoption evolves
- Eventually central IT takes on the role to scale cloud adoption and reassesses existing tools and processes
- A cloud operations team needs to form to ensure stable operations
- A cloud center of excellence aligns teams around a cloud-first operating model

Use the RACI Charts to align responsibility and accountability across each team.

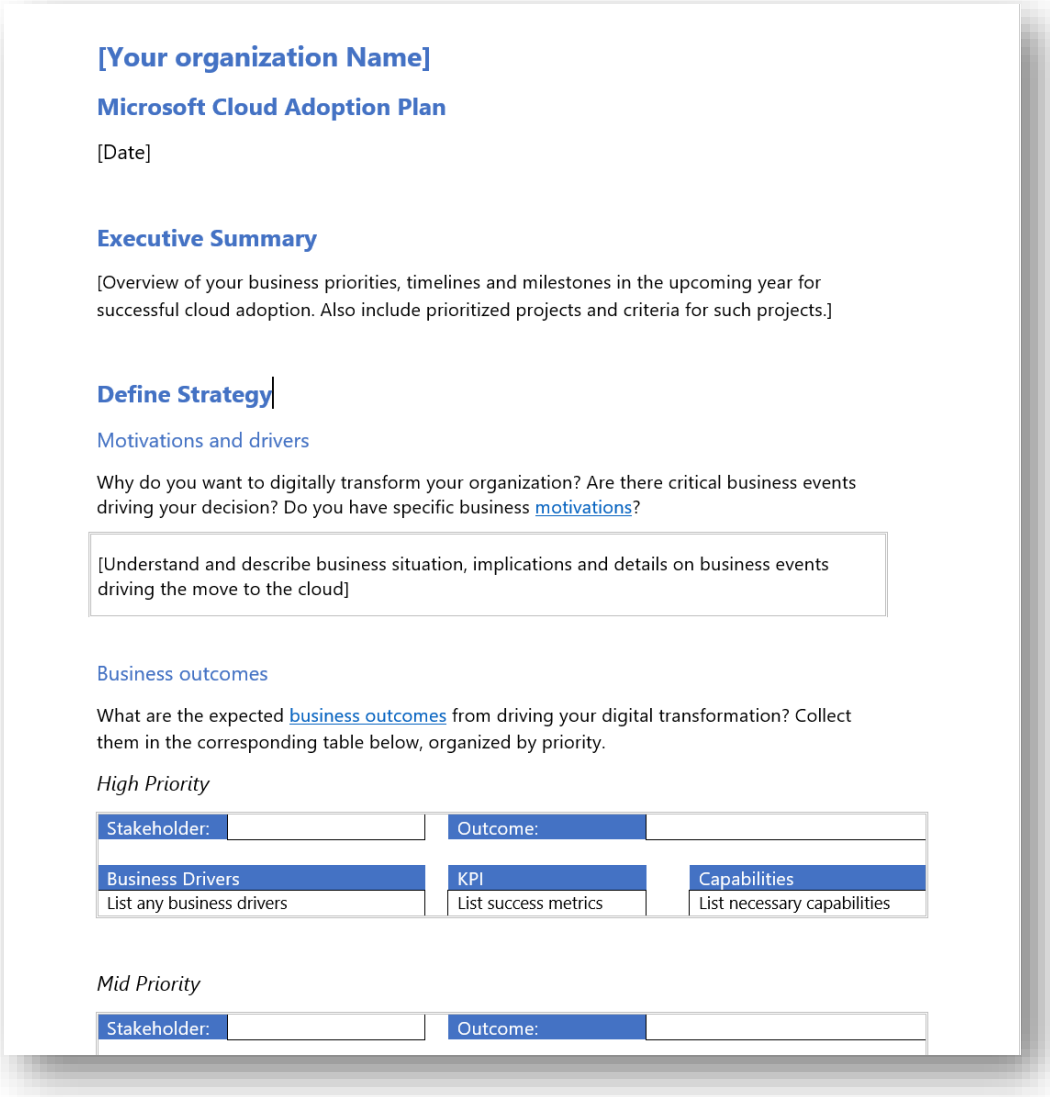
Cloud Adoption Plan

Translate strategy and effort into an actionable cloud adoption plan.

- **Prerequisites**: Confirm you have both strategic (motivations, outcomes, business justification) and tactical inputs (digital estate rationalization, skills readiness, org alignment).
- **Define and prioritize workloads**: Prioritize your first 10 workloads to establish an initial adoption backlog. [Workloads are set of IT assets that enable a business process].
- **Align assets:** Identify which assets (proposed or existing) are required to support the prioritized workloads.
- **Review rationalization:** Review rationalization decisions to refine adoption-path decisions: Migrate or Innovate.
- **Define iterations and releases:** Iterations are the time blocks allocated to do work. Releases are the definition of the work to be done before triggering a change to production processes.
- **Estimate timelines**: Establish rough timelines for release planning purposes, based on initial estimates.

Cloud adoption plan template

- Cloud teams leverage the cloud adoption plan to guide technical efforts, in alignment with the business outcomes.
- Download the template and get started with creating your plan.
- The template helps you document the work accomplished in the 'Define Strategy' and 'Plan' phases of the cloud journey.



[Your organization Name]

Microsoft Cloud Adoption Plan

[Date]

Executive Summary

[Overview of your business priorities, timelines and milestones in the upcoming year for successful cloud adoption. Also include prioritized projects and criteria for such projects.]

Define Strategy

Motivations and drivers

Why do you want to digitally transform your organization? Are there critical business events driving your decision? Do you have specific business motivations?

[Understand and describe business situation, implications and details on business events driving the move to the cloud]

Business outcomes

What are the expected business outcomes from driving your digital transformation? Collect them in the corresponding table below, organized by priority.

High Priority

Stakeholder:		Outcome:	

Business Drivers	KPI	Capabilities
List any business drivers	List success metrics	List necessary capabilities

Mid Priority

Stakeholder:		Outcome:	

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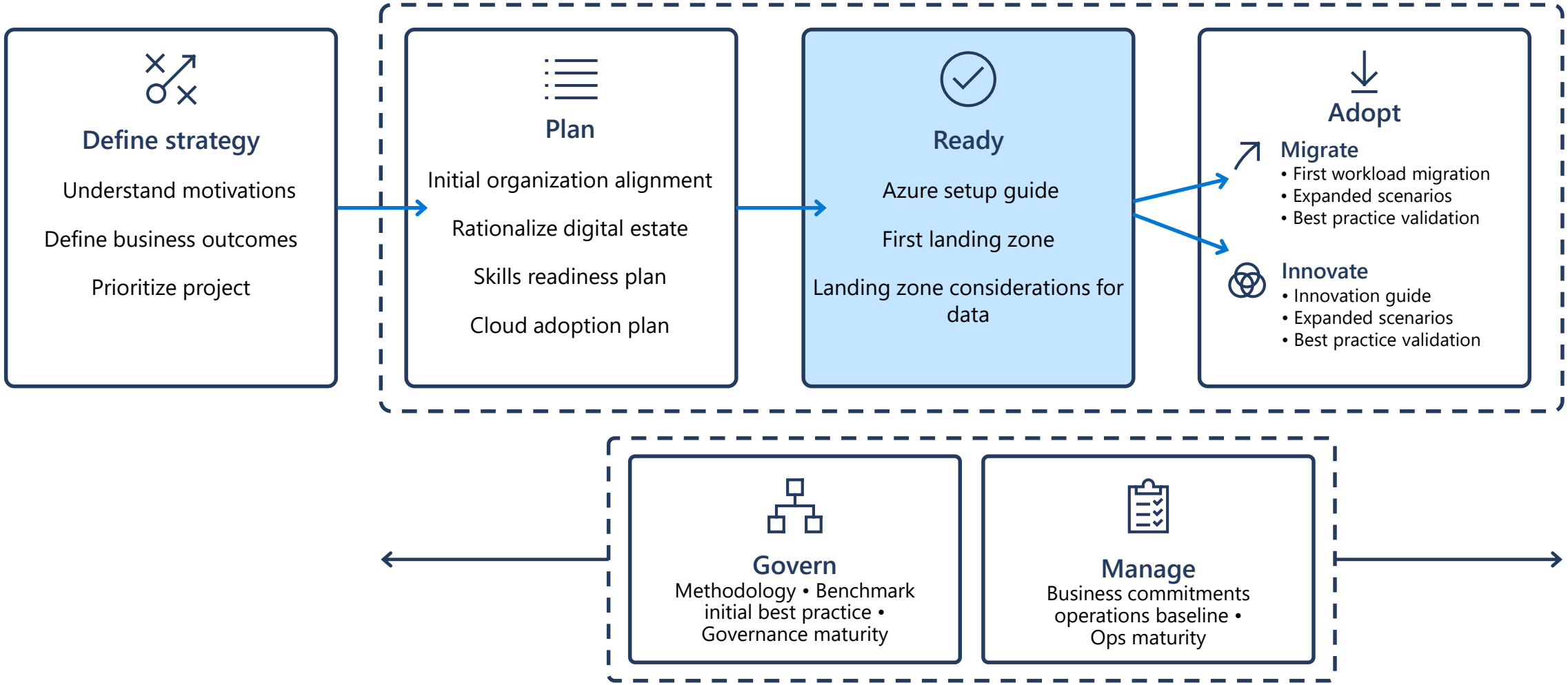
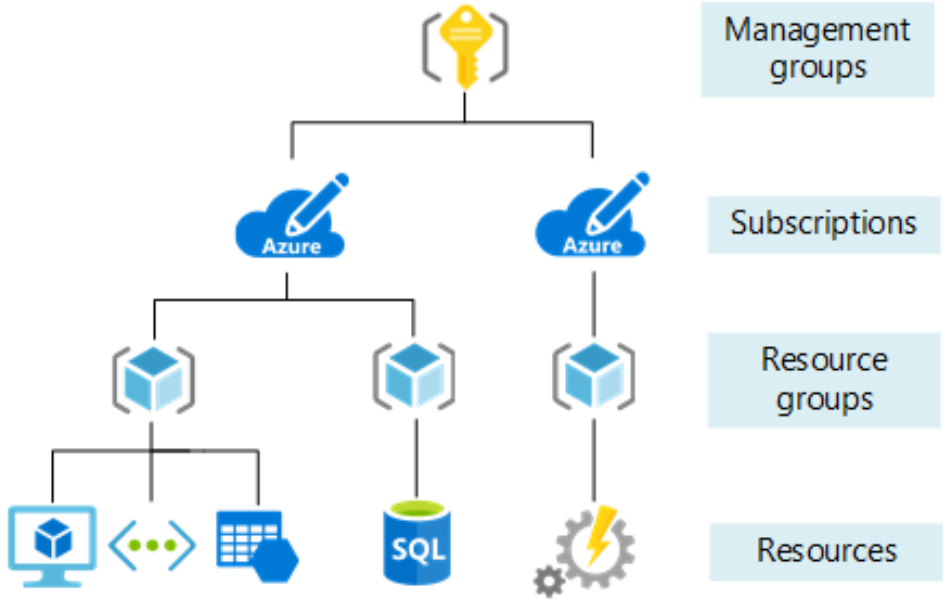


Azure setup guide

https://aka.ms/adopt/setupguide

Step-by-step guidance to help admins plan, set up, and secure Azure for your organization

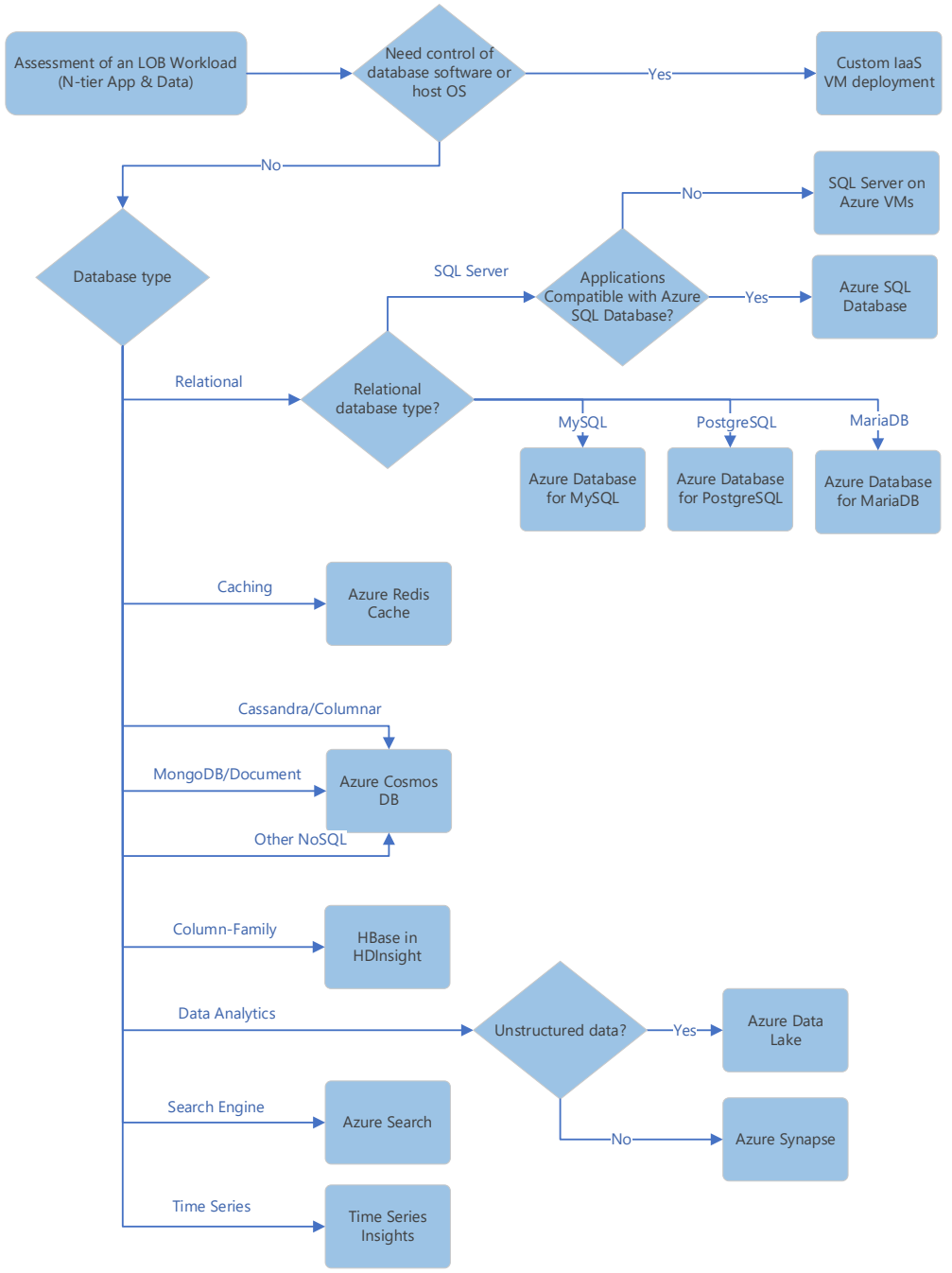
- ✓ **Organize resources:** Set up a management hierarchy to consistently apply access control, policy, and compliance to groups of resources and use tagging to track related resources.
- ✓ **Manage access:** Use role-based access control to make sure that users have only the permissions they really need.
- ✓ **Manage costs and billing:** Identify your subscription type, understand how billing works, and see how you can control costs.
- ✓ **Plan for governance, security, and compliance:** Enforce and automate policies and security settings that help you follow applicable legal requirements.
- ✓ **Use monitoring and reporting:** Get visibility across resources to help find and fix problems, optimize performance, or get insight to customer behavior.
- ✓ **Stay current with Azure:** Track product updates so you can take a proactive approach to change management.



Identify data service requirements

- Assess each of the applications and services that make up your workloads to determine their data storage and access requirements.
- Create policies for your landing zone to control allowed resource types

For each application or service you'll deploy to your landing zone environment, use this decision tree as a starting point to help you determine the appropriate data store services to use:



For more help: [Asset: Database Migration Patterns and Target Platform Recommendation](#) (Microsoft internal link)

Common database scenarios

The table below lists a few common use scenario requirements and the recommended database services for handling them.

Scenario	Data service
I need a globally distributed, multi-model database with support for NoSQL choices.	Azure Cosmos DB
I need a fully managed relational database that provisions quickly, scales on the fly, and includes built-in intelligence and security.	Azure SQL Database
I need a fully managed, scalable MySQL relational database that has high availability and security built in at no extra cost.	Azure Database for MySQL
I need a fully managed, scalable PostgreSQL relational database that has high availability and security built in at no extra cost.	Azure Database for PostgreSQL
I plan to host enterprise SQL Server apps in the cloud and have full control over the server OS.	SQL Server on Virtual Machines
I need a fully managed elastic data warehouse that has security at every level of scale at no extra cost.	Azure Synapse Analytics
I need data lake storage resources that are capable of supporting Hadoop clusters or HDFS data.	Azure Data Lake
I need high throughput and consistent, low-latency access for my data to support fast, scalable applications.	Azure Cache for Redis
I need a fully managed, scalable MariaDB relational database that has high availability and security built in at no extra cost.	Azure Database for MariaDB

Azure SQL

A unified SQL portfolio built on the industry-leading SQL Server engine

Azure SQL Virtual Machine

Best for lift and shift and/or workloads requiring OS-level access

IaaS

Learn More

Azure SQL managed databases

Azure SQL Managed Instance

Best for modernizing existing apps

Azure SQL Database

Best for building new apps in the cloud

PaaS

Learn More

Azure is the cloud that knows SQL Server best

Which deployment option do I select?

IF you need (a specific version of SQL Server, or specific Operating System, …),

THEN use **Azure SQL Virtual Machines**,

ELSE IF you need (Inst. level capabilities, such as SQL Agent, Service Broker, Linked Server, CLR, VNET, …),

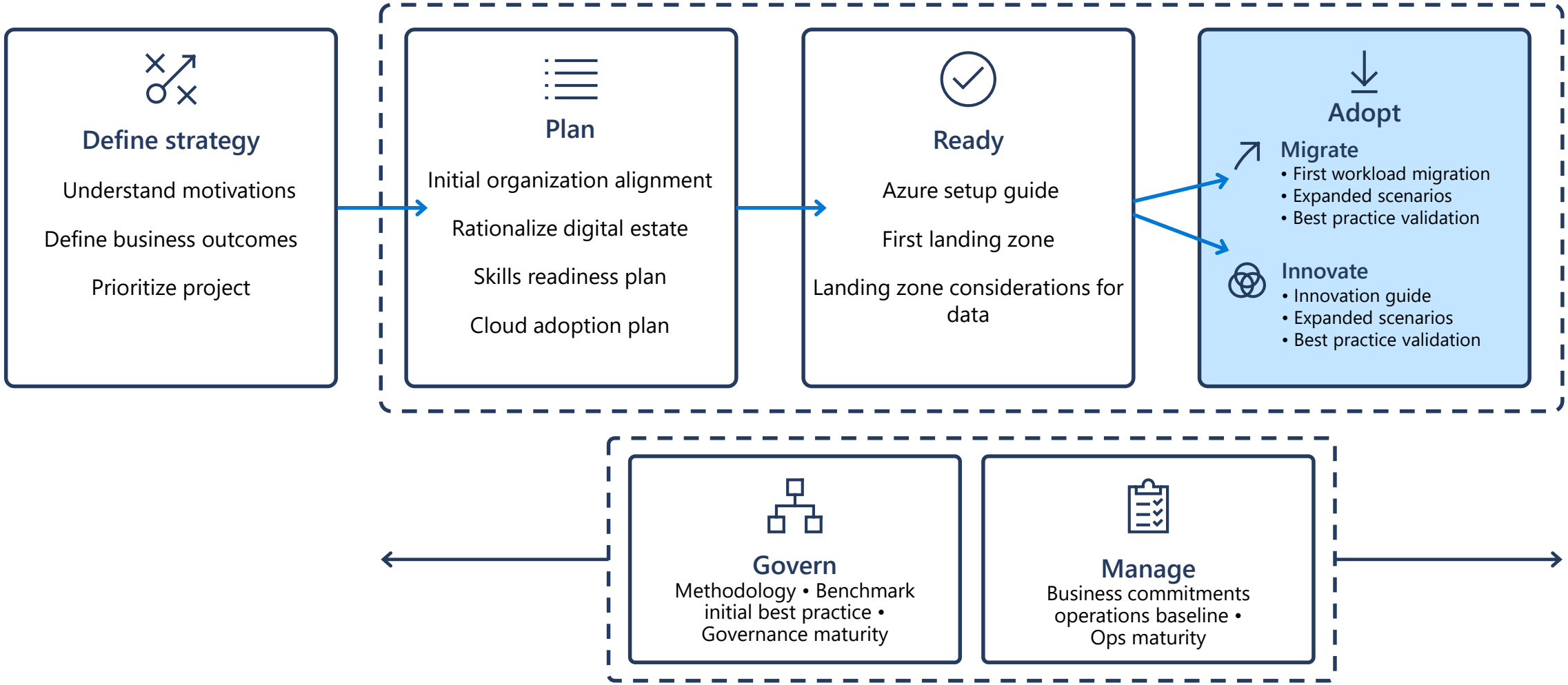
THEN use **Azure SQL Managed Instance**,

ELSE use **Azure SQL Database**.

Business motivations for choosing databases, managed instances, or SQL virtual machines

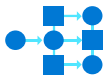
- Cost - Both PaaS and IaaS option include base price that cover underlying infrastructure and licensing. However, with IaaS option you need to invest additional time and resources to manage your database, while in PaaS you are getting these administration features included in the price. IaaS option enables you to shut down your resources while you are not using them to decrease the cost, while PaaS version is always running unless if you drop and re-create your resources when they are needed (unless you have chosen the Serverless deployment option for SQL DB).
- Administration - PaaS options reduce the amount of time that you need to invest to administer the database. However, it also limits the range of custom administration tasks and scripts that you can perform or run. For example, the CLR is not supported with single or pooled databases but is supported for a managed instance. Also, no deployment options in PaaS support the use of trace flags.
- Service-Level Agreement - Both IaaS and PaaS provide high, industry standard SLA. PaaS option guarantees 99.99% SLA, while IaaS guarantees 99.95% SLA for infrastructure, meaning that you need to implement additional mechanisms to ensure availability of your databases. You can implement High-availability solution at 99.99% by creating an additional SQL Server in VM and configure AlwaysOn Availability groups.
- Time to move to Azure - SQL Server in Azure VM is the exact match of your environment, so migration from on-premises to Azure SQL VM is not different than moving the databases from one on-premises server to another. Managed instance also enables extremely easy migration; however, there might be some changes that you need to apply before you migrate to a managed instance.

Microsoft Cloud Adoption Framework for Azure



Aka.ms/CAF/migrate

Migration planning and execution



Define strategy

Executive sponsorship

Stakeholder alignment

Partner engaged

Plan

Discovery and assessment

TCO/ Business case

Migration plan

Ready

Technical skilling

Landing zone

Adopt

Migration execution

Migration waves

Govern

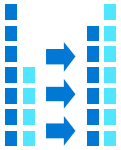
Manage

Assess migration readiness: aka.ms/smarttool

Migration process

Assess

- Assess every asset associated with the workload being migrated to determine its suitability for migration and which approach(5Rs) to consider.
- Use the cloud adoption framework's migration tools decision guide to analyze candidate workloads



Migrate

- Use a combination of native and third-party tools to migrate your workloads. These tools could include Azure Migrate or Azure Database Migration Service, among others.

Optimize

- Optimize your environment and perform transformations. For example, you may have performed a "rehost" migration, you can revisit the configuration & perform some "refactoring" to modernize
- Resize a VM, SQL database or storage account
- Perform cost analysis & review

Secure & Manage

- Review and consider security and management Azure services

5Rs of rationalization

	Rehost	Refactor	Rearchitect	Rebuild	Replace
What	Is known as a *lift and shift* migration, a rehost effort moves a current state asset to the chosen cloud provider, with minimal change to overall architecture.	Refactoring code to enable an application to deliver on new business opportunities and fit a PaaS-based model.	Aging applications that aren't compatible with cloud providers might need to be rearchitected before transformation. Some applications might be more cost effective as cloud native solutions.	In some scenarios, the delta that must be overcome to carry an application forward can be too large to justify further investment. In this case, a new code base is created to align with a cloud-native approach.	Sometimes software as a service (SaaS) applications can provide all the necessary functionality for the hosted application.
Common drivers might include:	• Reducing capital expense • Freeing up datacenter space • Achieving rapid return on investment in the cloud	• Faster and shorter updates • Code portability • Greater cloud efficiency (resources, speed, cost, managed operations)	• Application scale and agility • Easier adoption of new cloud capabilities • Mix of technology stacks	• Accelerate innovation • Build apps faster • Reduce operational cost	• Standardizing around industry-best practices • Accelerating adoption of business process-driven approaches • Reallocating development investments into applications that create competitive differentiation or advantages

Expanded process for database migrations

Assess

- Data asset discovery and inventory
- Assess application dependencies
- Choose a deployment option in Azure
- For heterogeneous database environments; convert the source schema to work in the target environment

Migrate

- Replicate on-prem functionality using cloud native technology
- Migrate the source schema, and then migrate the source data to the target.
- Cut over from the source to the target environment (for minimal-downtime migrations)

Optimize

- Perform functional & performance tests
- Validate synchronization of data
- Remediate applications to point to target source
- Test any migrated applications
- Optimize the application and data structure to tune costs

Secure and manage

- Prepare the migrated assets for on-going operations
- Apply Azure data security and encryption best practices

Migration tooling options

Assess

Azure Migrate

Data Migration Assistant (DMA)

SQL Server Migration Assistant (SSMA)

Database Experimentation Advisor

Migrate

Azure Site Recovery (ASR)

Azure Database Migration Service

Azure Data Box

Optimize

Azure Cost Management

Azure Advisor

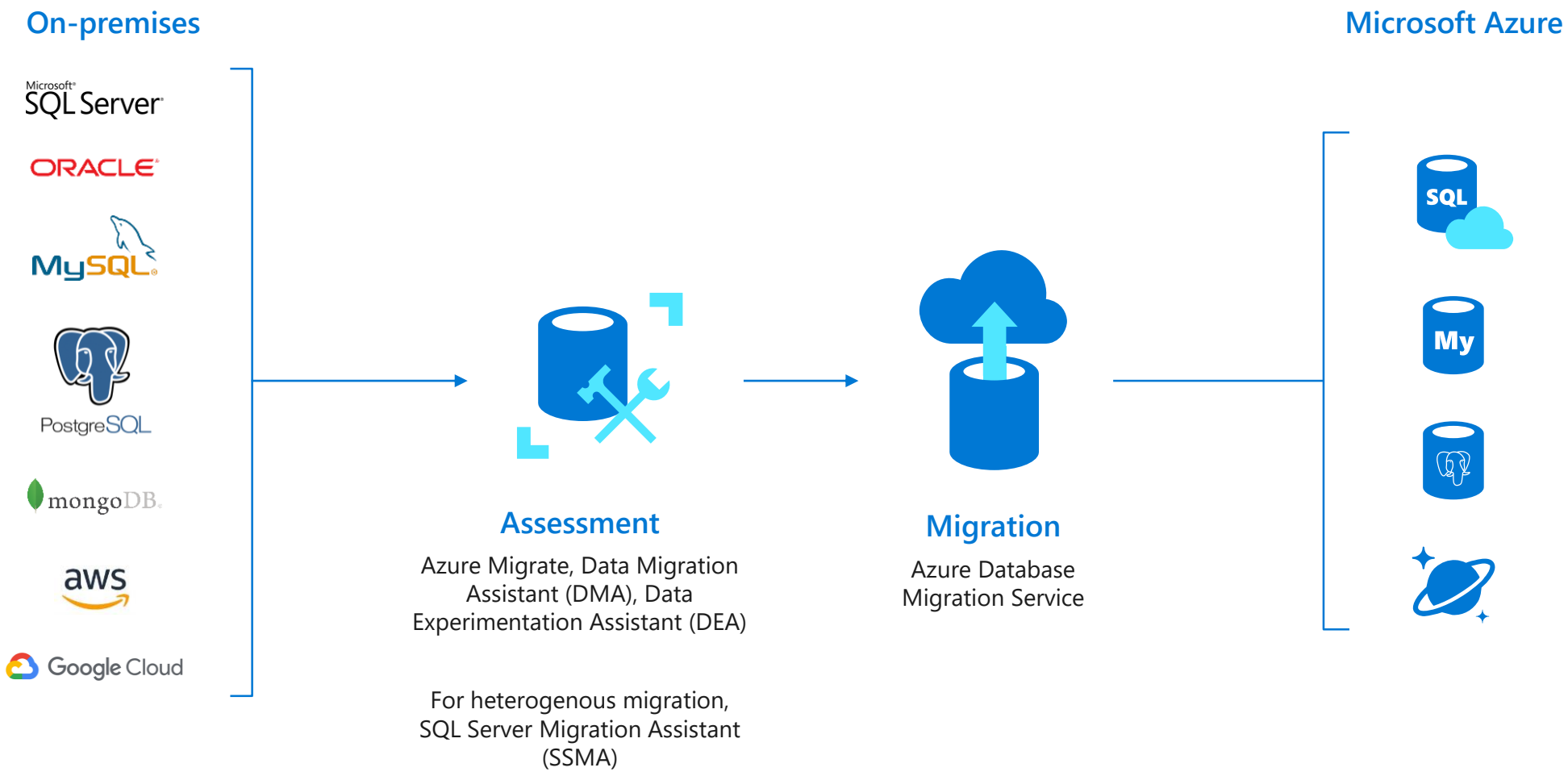
Secure & Manage

Azure Security & Management (e.g., Blueprints, Security Center, Backup, Monitor)

ISV solutions (as needed)

MOVERE
Cloudamize
CloudAtlas®
BitTitan
CHEF
STRATOZONE®
turbonomic
Zerto
Corent
intigua
stiim
ATTUNITY
DATOMETRY
MORPHIS
Ispirer
Informatica
QuerySurge

Tools and services for your migration journey



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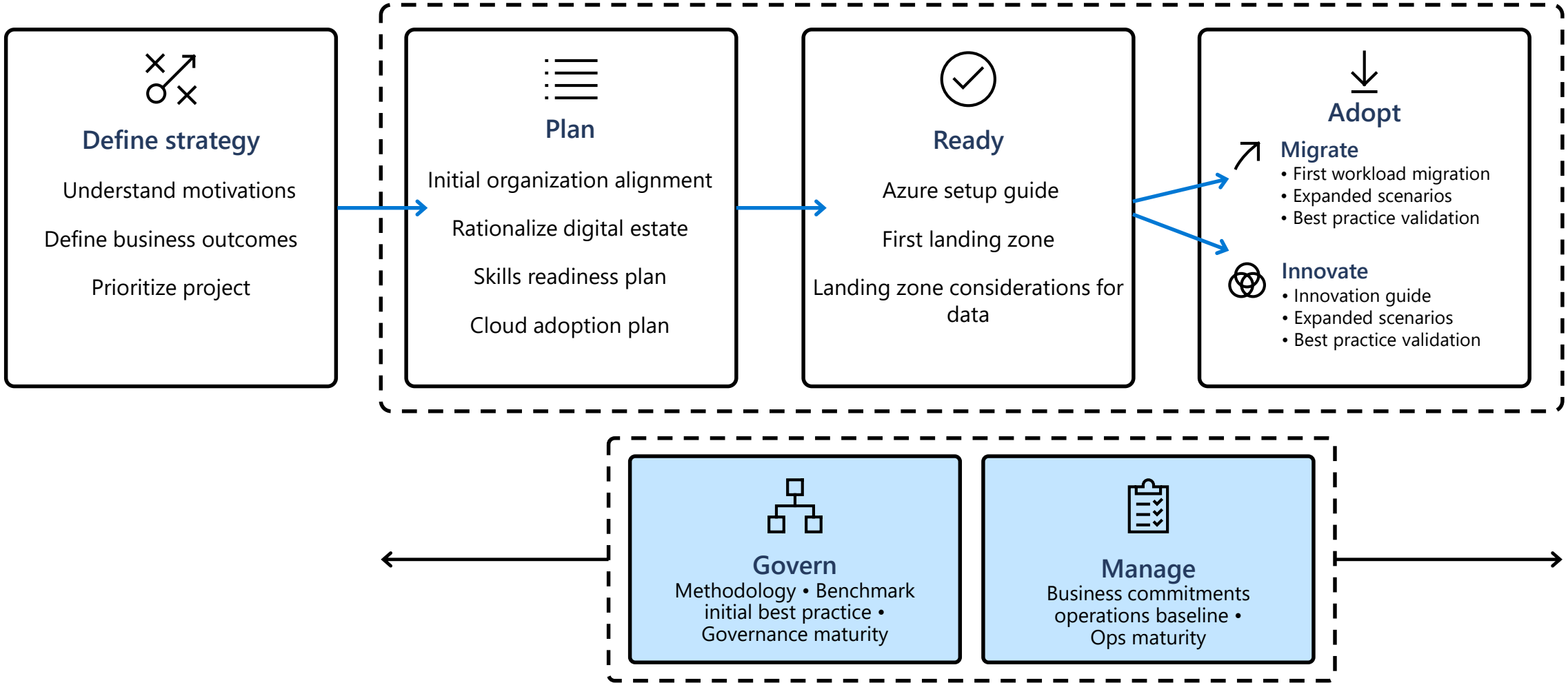
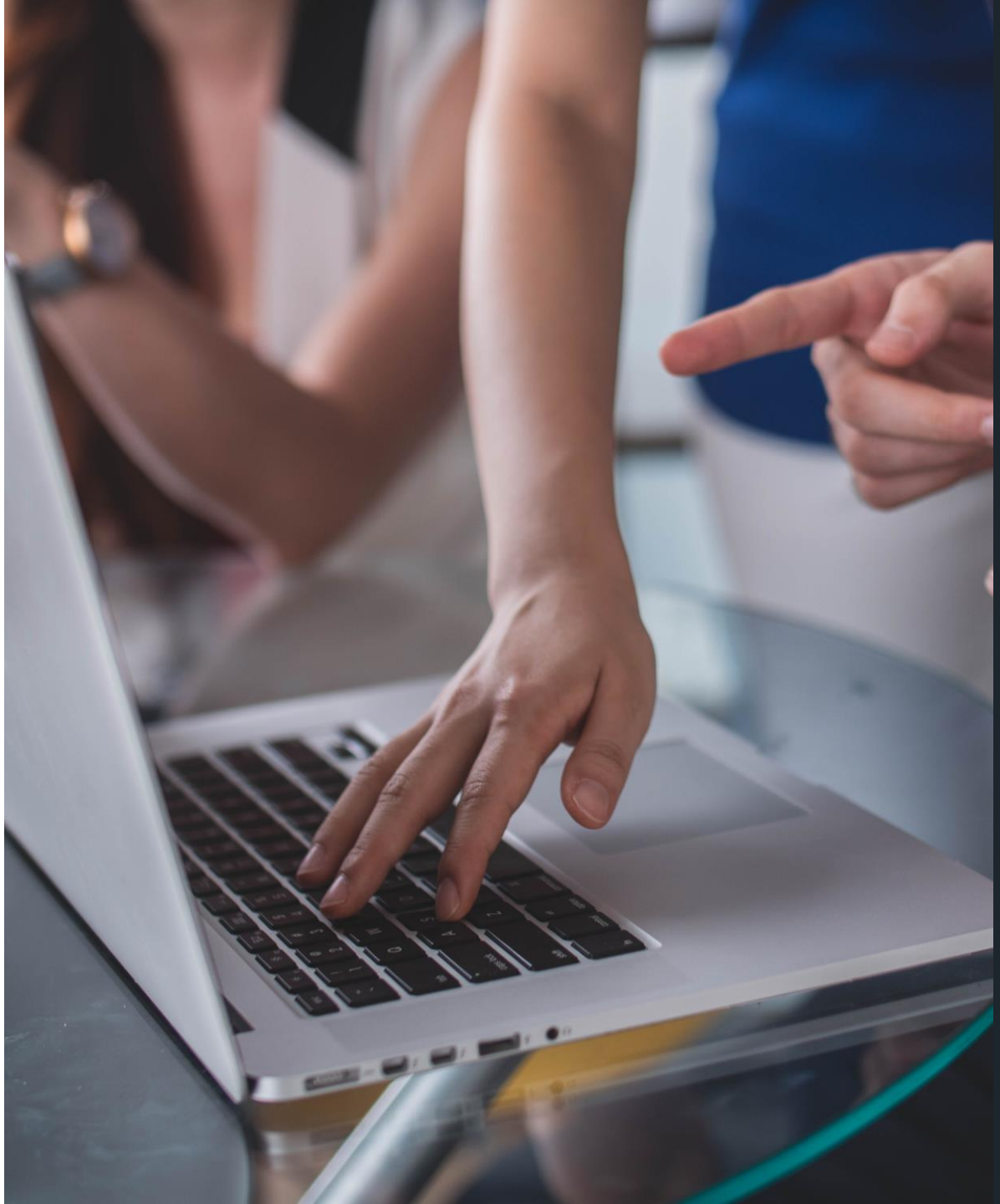


Growth Opportunity

And extending your offering

- Leveraging the Cloud Adoption Framework
- Coma thinking philosophy
- Becoming a strategic partner



Thank You

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