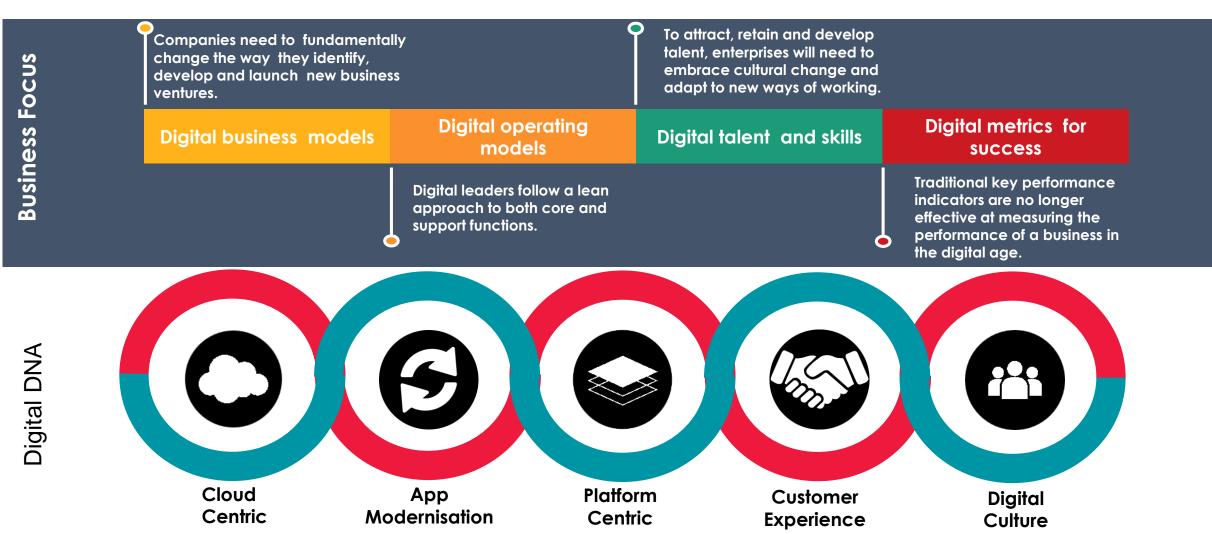




### Digital Enterprise: How to survive disruption and thrive in the digital age



- Disruption may not be bankrupting incumbents
- To succeed in the digital era, one needs to become digital enterprise
- To rethink every aspect of doing business, using technology and changing corporate culture



# What is Application Modernisation and Cloud Migration?



Both initiatives have similarities and can be inherently related to each other

	Application Modernisation	Cloud Migration					
Motivation	<b>Driver :</b> Mainly business demands from fast changing competitive landscape	<b>Driver :</b> Typically driven from technology standpoint to reduce reliance on on-premise hosting					
	<b>Focus:</b> This requires the business to look at how to take the legacy application create new business value	<b>Focus:</b> How to optimize workload to best make use of the cloud hosting environment and services					
	Outcome: Optimised application set with modern technologies and architecture that may end up in the cloud depending on the business demands	Outcome: The migrated applications to cloud may undergo some degree of modernisation to make it suitable for residing in the cloud					
Activities	<ol> <li>Strategise and Plan</li> <li>Analyse</li> <li>Design</li> <li>Build</li> <li>Operate</li> </ol>	<ol> <li>Assess and Discover</li> <li>Design</li> <li>Migrate</li> <li>Manage and Optimise</li> </ol>					

**OPERATE** 

### **Lessons learnt from NCS experiences**



The trends and lessons learnt from past projects has culminated into the following NCS developed frameworks and methodologies



- Organisations have to embrace digital economy by undergoing digitalization
- Changing business/ operating model for cost optimisation and new technology adoption



# Modernisation of Applications

- Create new business value from existing apps
- Optimise cost from app consolidation or app replacement
- Prevent technology obsolesce



# Migration to Cloud

- Lower total cost of hardware and software ownership
- Optimise workloads
- Secure data while be able to access anywhere



# Adoption of DevOps

- Improve delivery and operations process
- Bridge the gap between the push for change and the need for stability
- Change of organizational structure and mindset

**Consolidation and Productise** 



Repeatable Processes



Reusable Templates



Trend Analysis

**Finalise** 

✓ NCS Application Modernisation Methodology

1

# **Key Steps in App Modernisation**



Any organisation undertaking the app modernisation journey should consider adopting the following steps for a systemic and iterative approach to ensure a successful implementation

	STRATEGISE		ANALYSE		DESIGN	МАР	BUILD		OPERATE	
Process	<ul> <li>Discover business and technical goals</li> <li>Assess current IT landscape</li> </ul>	APE	<ul> <li>Identify broad strokes approach for apps</li> <li>Rationalise and priortise apps</li> </ul>	TEGY	 Design architecture to meet business goals	CH AND ROAD	<ul> <li>Execute the design in iterations</li> <li>Codevelop to skill up and scale up</li> </ul>	NOI	 Intelligently optimize application     DevOps	NO.
Expertise	<ul> <li>Consultant</li> <li>Business Analyst</li> <li>Architect</li> <li>SME(DevOps, Security, Apps, Data and Infra)</li> </ul>	Siand IT LANDSO	<ul> <li>Consultant</li> <li>Business Analyst</li> <li>Architect</li> <li>SME(DevOps, Security, Apps, Data and Infra)</li> </ul>	RNISATION STRA	<ul> <li>Consultant</li> <li>Business Analyst</li> <li>Architect</li> <li>SME(DevOps, Security, Apps, Data and Infra)</li> </ul>	ERNISATION APPRO	<ul> <li>Developers</li> <li>Business Analyst</li> <li>Architect</li> <li>SME(DevOps, Security, Apps, Data and Infra)</li> </ul>	RNISED APPLICAT	Project Team     DevOps Team	KNISED APPLICAL
Eacilities	Education Labs	GOAL	Education Labs	MODER	Education Labs     Prototyping Labs	ECTURE, MOD	<ul><li>Education Labs</li><li>Prototyping Labs</li><li>Co-development Labs</li></ul>	MODE	Application     Maintenance Facilities	17
Jools -	<ul><li>Discovery Tools</li><li>Interviews</li><li>Workshops</li></ul>		Analysis Tools		 Design Tools     Design Patterns	ARCHITI	 DevOps Toolset     Automated Testing		DevOps Toolset     Automated Testing     Al Assisted AMS	

# **An Application Modernisation Framework - Strategise**



Understanding the motivations for modernisation and current IT landscape that will help to shape the

solution and approaches

STRATEGISE

**ANALYSE** 

**DESIGN** 

BUILD

**OPERATE** 

**INPUTS** 

**ACTIVITIES** 

**TOOLS** 

**RATIONALE** 

**OUTCOMES** 

Organisation Vision and Mission Identify and uncover the business and technical goals

Interviews, workshops

Uncover the motivations and mandates, policies that cannot be gathered by software tools

Well-defined prioritised goals and a complete as-is mapping of the IT landscape and business functions

Map out current IT Landscape

Software discovery tools

Create inventory of current application, infrastructure and dependencies to

### **CONSIDERATIONS**

Are the goals (both technical and business) clearly defined?

Is the initiative supported by management?
Organisation-wide?

Are the stakeholders clearly identified and committed?

Are the stakeholders empowered to make decisions?

Do the stakeholder possess complete knowledge about the systems and processes?

Are there any restrictions on for scanning tools to be employed?

Are the stakeholders aware of the current technologies and best practices?

Is the inventory on the IT systems complete and up to date?

# **An Application Modernisation Framework - Analyse**



Identify which apps to be modernized first is especially important when there are factors such as time, budget and business value to be considered

STRATEGISE

**ANALYSE** 

**DESIGN** 

**BUILD** 

**OPERATE** 

**INPUTS** 

and business

functions

Well-defined goals and a modernise complete as-is mapping of the IT landscape

**ACTIVITIES** 

1. Assess the current set of applications to identify how to

2. Prioritise which apps to undergo modernisation

**MECHANICS** 

Score all applications based on a common matrix and criteria

Based on the score. group apps into buckets

**RATIONALE** 

Measure all the applications on the same baseline for a fair assessment

Decide which apps to be roll out based on timeline, business value and budget

**OUTCOMES** 

Overall modernisation strategy with prioritisation

**CONSIDERATIONS** 

What metrics is used to score the applications?

Are the business values for the applications clearly defined?

Are there any directions from the organisation that may override pragmatic approaches?

> ANALYSE STRATEGISE

**DESIGN** 

## **Application Modernisation Framework - Analyse**



Deciding what modernisation or migration strategies best suits your apps and organisation depends on factors that have been uncovered during the strategise stage

STRATEGISE

**DESIGN** 

**BUILD** 

OPERATE

#### Rehost

#### **Use Case**

VM migration, an almost one to one replication of OS, middleware etc. with very little to no code change

#### Considerations

- Timeline does not allow for other approaches
- Current application architecture still able to meet business demands

### Replatform

#### **Use Case**

Migration of applications while leveraging on cloud services instead of licensed middleware

#### Considerations

Make use of cloud services to reduce reliance on middleware i.e. application service, data services

#### Refactor

#### **Use Case**

 Changing the application from monolithic to a serverless architecture i.e. containerisation with microservices

#### Considerations

Application architecture does not meet business demand e.g. elastic demand, frequent functional changes

### Remain

#### **Use Case**

An application that is current enough still able to meet is functional requirements or if the application is too cost prohibitive to move

#### Considerations

- Current business needs are met
- Financially not viable to modernise the application
- Application too sensitive to change
- App is proprietary

### Replace

#### **Use Case:**

An application that can be replace by more cost effective solution such as a newer bespoke application or COTS or even a SaaS application

#### Considerations

- App can be replaced with COTS with similar or better functionality at lower cost
- Technical skillset is scarce in maintaining the app

#### Retire

#### **Use Case**

When the application usage has reached the end of its useful life and is decommisioned to free up resources

#### Considerations

Current App is no longer financially viable to maintain and no business demand

STRATEGISE

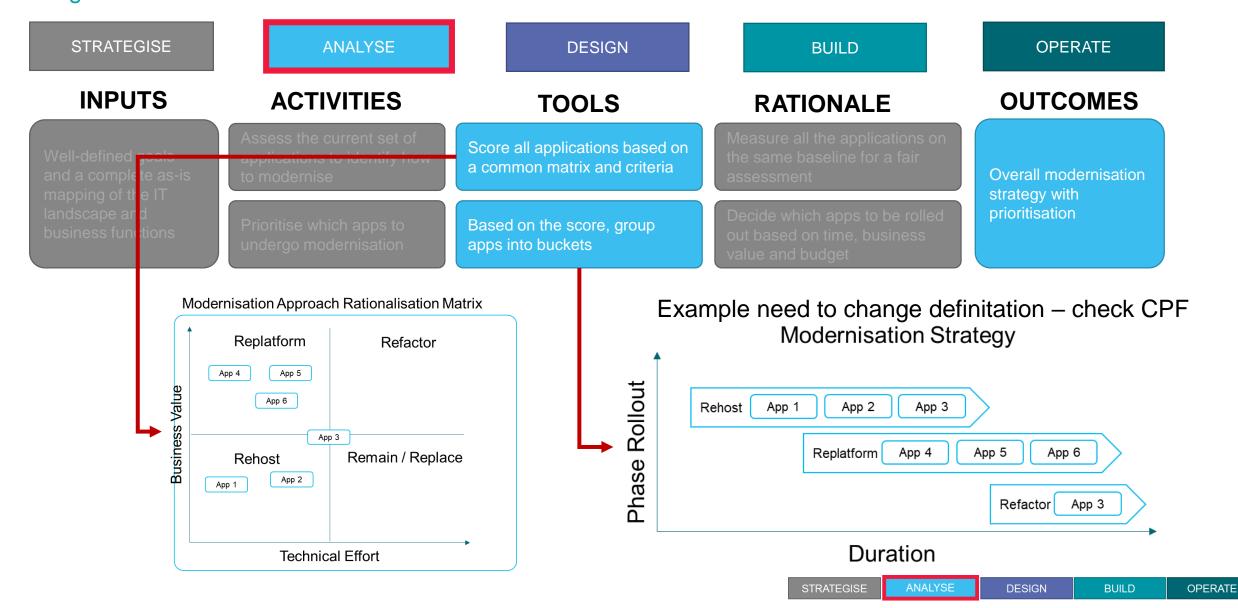
**DESIGN** 

**BUILD** 

## **An Application Modernisation Framework - Analyse**



Identify which apps to be modernized first is especially important when there are factors such as time, budget and business value to be considered



# **NCS Application Modernisation Framework - Design**



After identifying the various migration strategies, there is a need to identify the suitable design solutions to best fit the targeted applications and the targeted hosted environment

STRATEGISE **ANALYSE DESIGN BUILD OPERATE ACTIVITIES INPUTS TOOLS RATIONALE OUTCOMES Application** e.g. Application Design Design patterns based on **Architecture Design Patterns** past implementations ensure high success Overall Infrastructure e.g. Infrastructure Architecture modernisation **Architecture Design** Reference Architecture Modernisation Approach and strategy with Roadmap **Data Architecture** prioritisation Reference architecture e.g. Data Design Patterns Design design to ensure compliance to regulations e.g. Security Design Security Design **Patterns EXAMPLE OF CONSIDERATIONS** 

Can the application be hosted in the cloud

Is there a need to segregate data and processing in different zone?

Has the customer right classified the data?

What data protection laws to the customer need to comply to?

Does the customer have a preference for the hosting service provider?

Does the customer require service unique to a provider

Does the change in the application require the need for a DevOps toolset?

ANALYSE

Is the customer commercial or government?

## NCS Application Modernisation Framework – Design



Application Architecture Design – Consideration for on-premise / cloud and application design

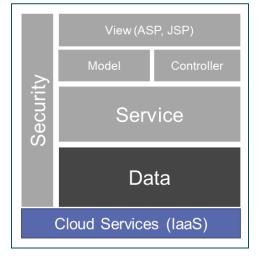
### Factors to drive Cloud / On-Premise Decision

Deployment Cost Control Security Compliance

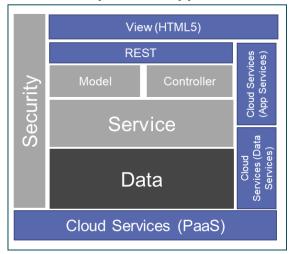
### **Example of Cloud Services / Capabilities**

- Compute
- Database
- Storage
- Security
- Disaster Recovery
- Management Tools
- · loT
- DevOps
- Analytics
- Networking and Content Delivery Network (CDN)
- Intelligence
- Hybrid Cloud Capabilities
- Compliance and governance

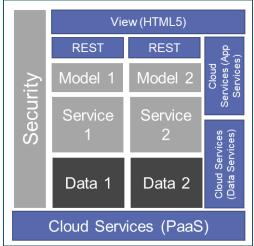
### **Cloud Hosted Application**



### **Cloud Optimized Application**



### **Cloud Native Application**

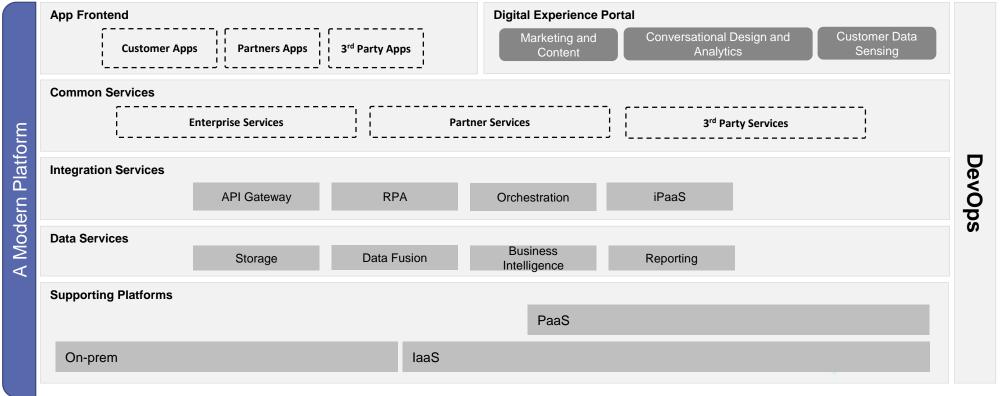


# NCS Application Modernisation Framework – Design



Application Architecture Design – To ensure that the application architecture can continue to support changes in the customer's organisation, an example of a platform-centric architecture could be proposed in the design

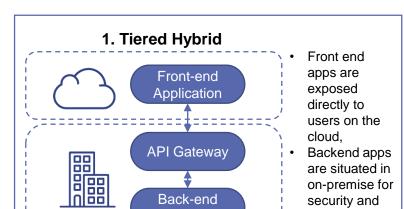




## NCS Application Modernisation Framework – Design

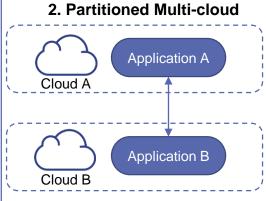


Infrastructure Architecture Design – Picking the right Multi-cloud / Hybrid Cloud Design Patterns to suit business and technical requirements

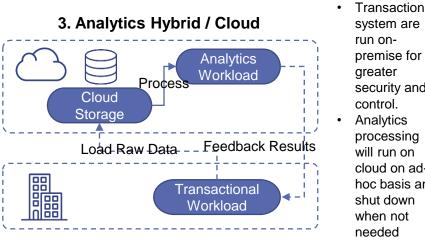


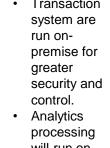
Application

control

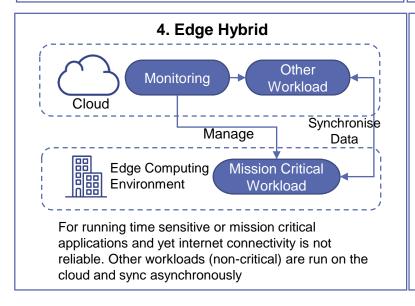


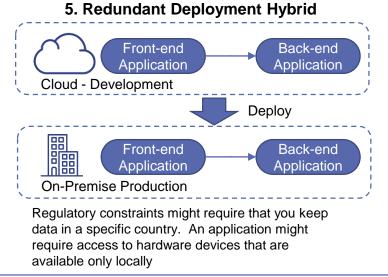
- Avoid committing to a single vendor.
  - Optimised workload deployment deploying workloads
- Choose the best services that each provider has to offer

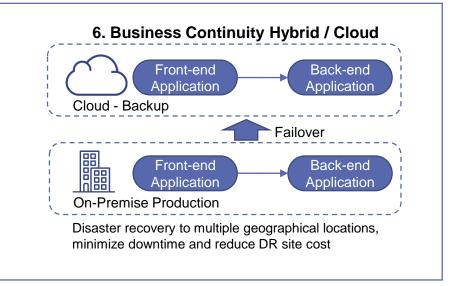




will run on cloud on adhoc basis and shut down when not



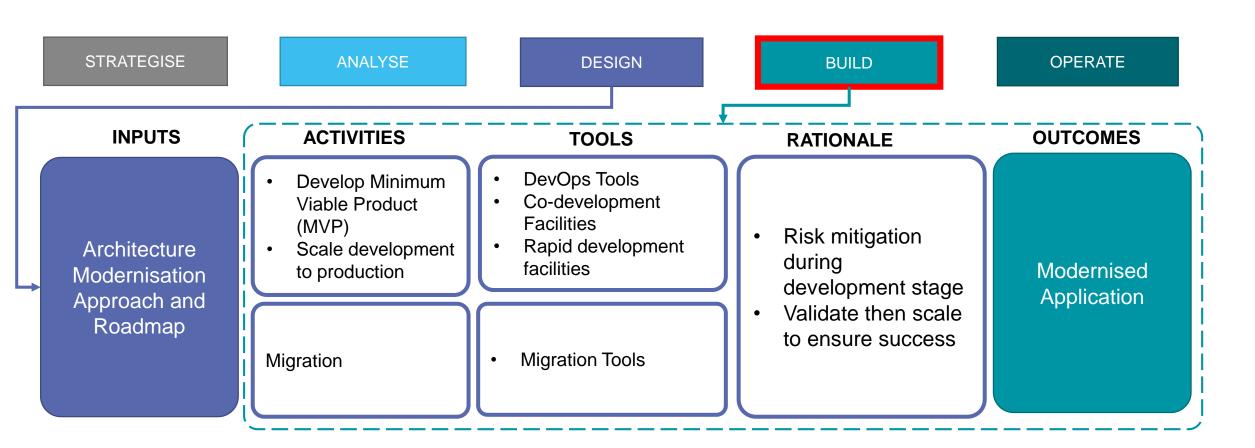




## NCS Application Modernisation Framework - Build



Understanding the motivations for modernisation and current IT landscape that will help to shape the solution and approaches



### **NCS Application Modernisation Framework - Build**



Develop and Test – it is important to start small when facing a large modernisation effort, like picking a most viable product to use it as a benchmark for the modernisation effort, then test to validate before bring it to production scale.

### **Develop and Test**



Agile / Scrum – ensures that delivery process allows for failure and recovery in the early stages and iterative delivery of solution



**Develop MVP** 



Scale

Minimum Viable Product – build the application that has to balance of the business value and technical hurdle

**Scale to Production -** experience from the MVP with co-development expertise from partners to scale development to production level

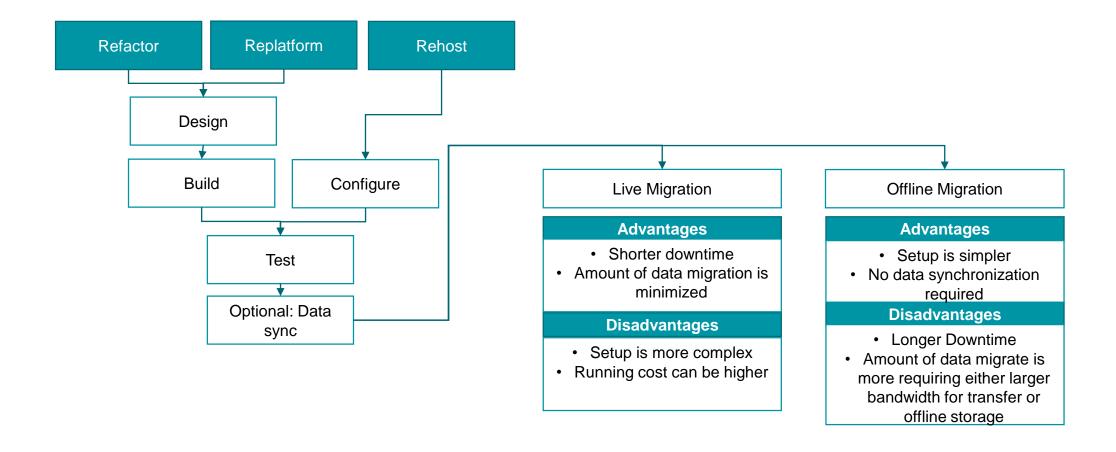


**DevOps Toolset -** Having a toolset to govern the process from requirements to production roll out is important to ensure quality and standards are met

### **NCS Application Modernisation Framework - Build**



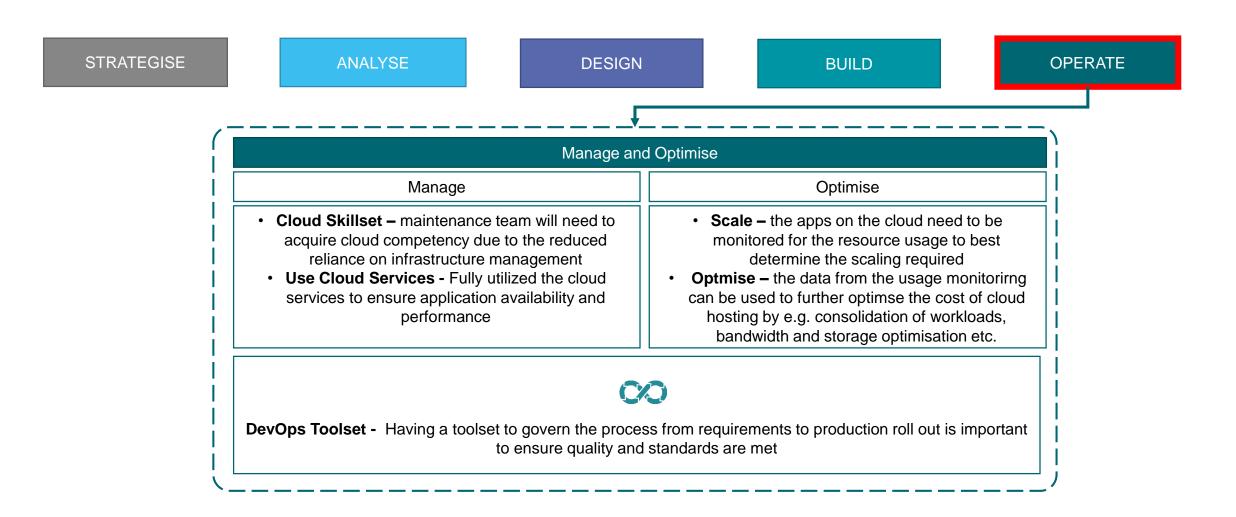
Migration – when the application is finally ready to move the migration to the cloud will depend on factors like downtime, capacity of data to be migrated, data synchronization requirements etc.



# **NCS Application Modernisation Framework - Operate**



Understanding the motivations for modernisation and current IT landscape that will help to shape the solution and approaches





### **NCS Application Modernisation Service Portfolio**



Continuous innovation

and maintain relevance

To drive your organization's transformation initiatives, NCS will embark on a Digital Journey with you leveraging NCS's end-to-end digital services

Share industry trends

& insights

leadership

· Provide thought

Facility to train

discoveryCreate awareness of

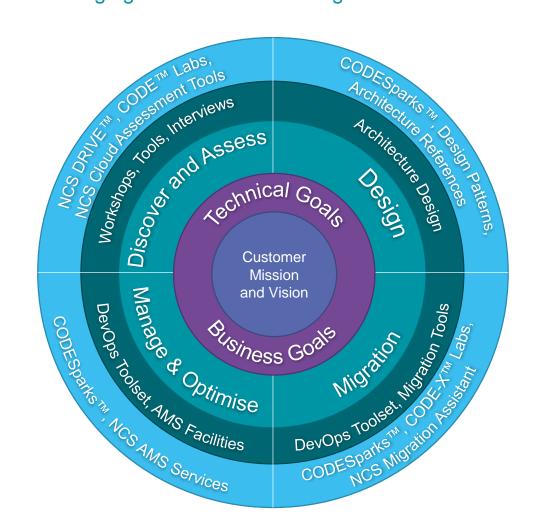
technologies

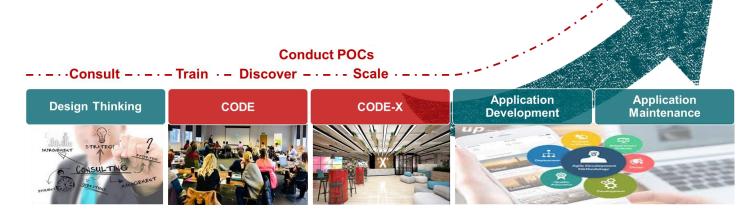
customers in digital

technologies and enable

how business models

are disrupted by digital





· Digital Lab facility

co-developmentCloud-based POC

for co-innovation &

Adopt agile practices

· Scale for production

deployment

Sandbox environments on AWS & MS Azure

· Transform and scale up

enterprise applications



# Visit our booth to find out more