

# GFT Cloud Services Framework



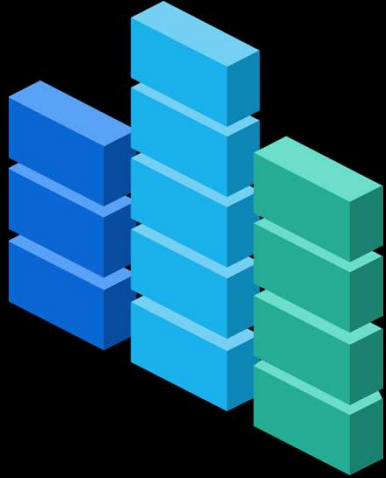
Migration Factory



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# Description



## What is the GFT Migration Factory?

Teams, processes and tools that help an organization plan, execute and support workload migrations. GFT Migration Factory is an end-to-end solution that makes cloud migration a reality.

## What is the offering and how does it address the client need?

Migrate applications to the cloud at scale: design, implement and run an efficient cloud migration factory. GFT's clients can profit from our experience of large scale cloud migrations for global complex clients. Accelerate or reignite a cloud migration and avoid the pitfalls on the way.

GFT assesses applications and infrastructure, and works out the best target state for our clients. GFT then designs the factory which will deliver the migration and make our clients' teams self sufficient with the new cloud based technologies.

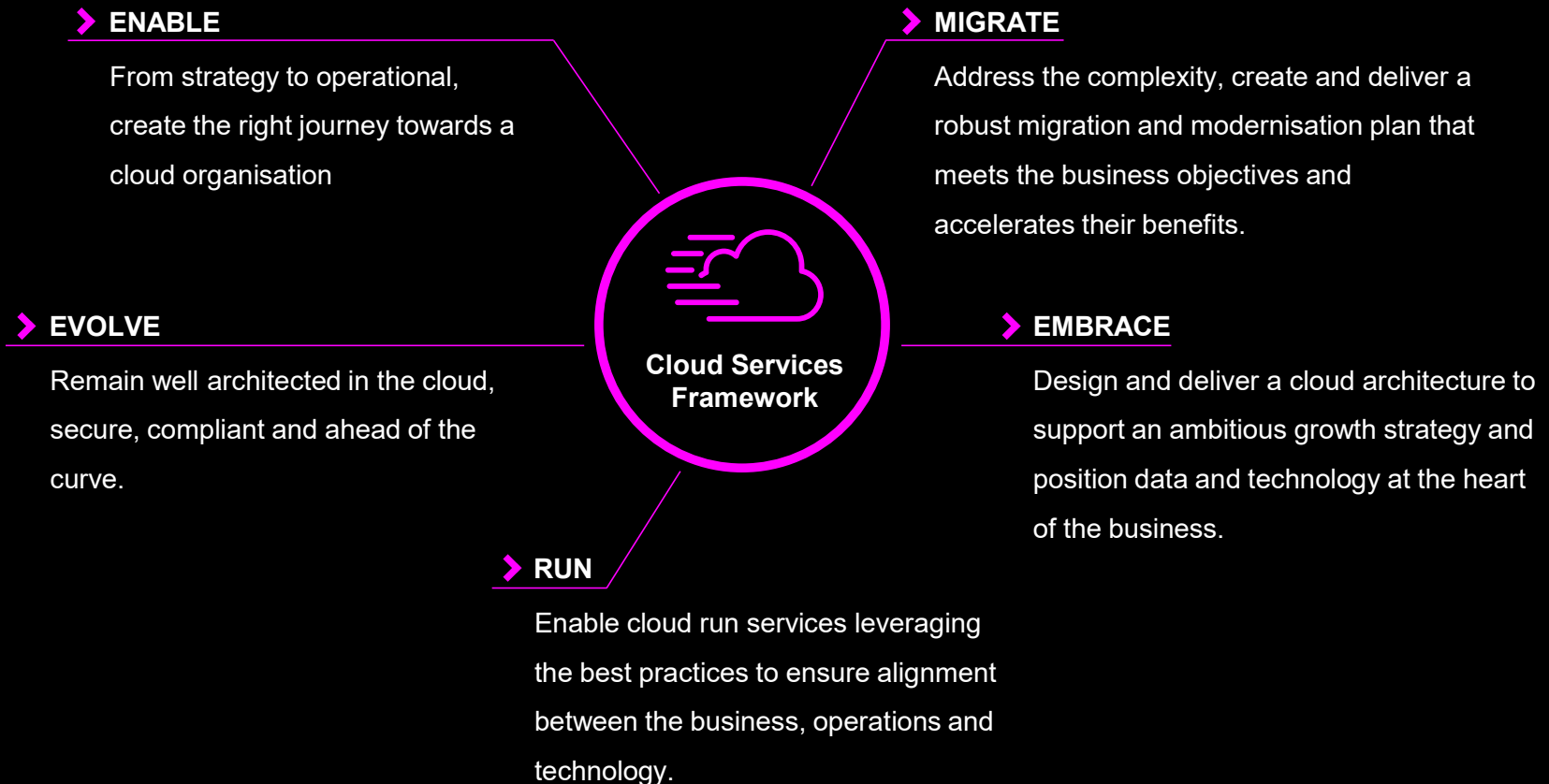
# Objectives

- Ensure a “complete enough” and “accurate enough” understanding of the current landscape applications, servers, data centres, infrastructure, departments, etc. to confidently execute a wholesale cloud migration.
- Determine how each application should be migrated based on the business case and business requirements.
- Plan the migration sequence.
- Design the “factory” which undertake the migration making best use of GFT, client and partner resources.
- Execute the migration with the right governance.
- Execute knowledge transfer to client teams to deliver a self sufficiency on the new tech stack.



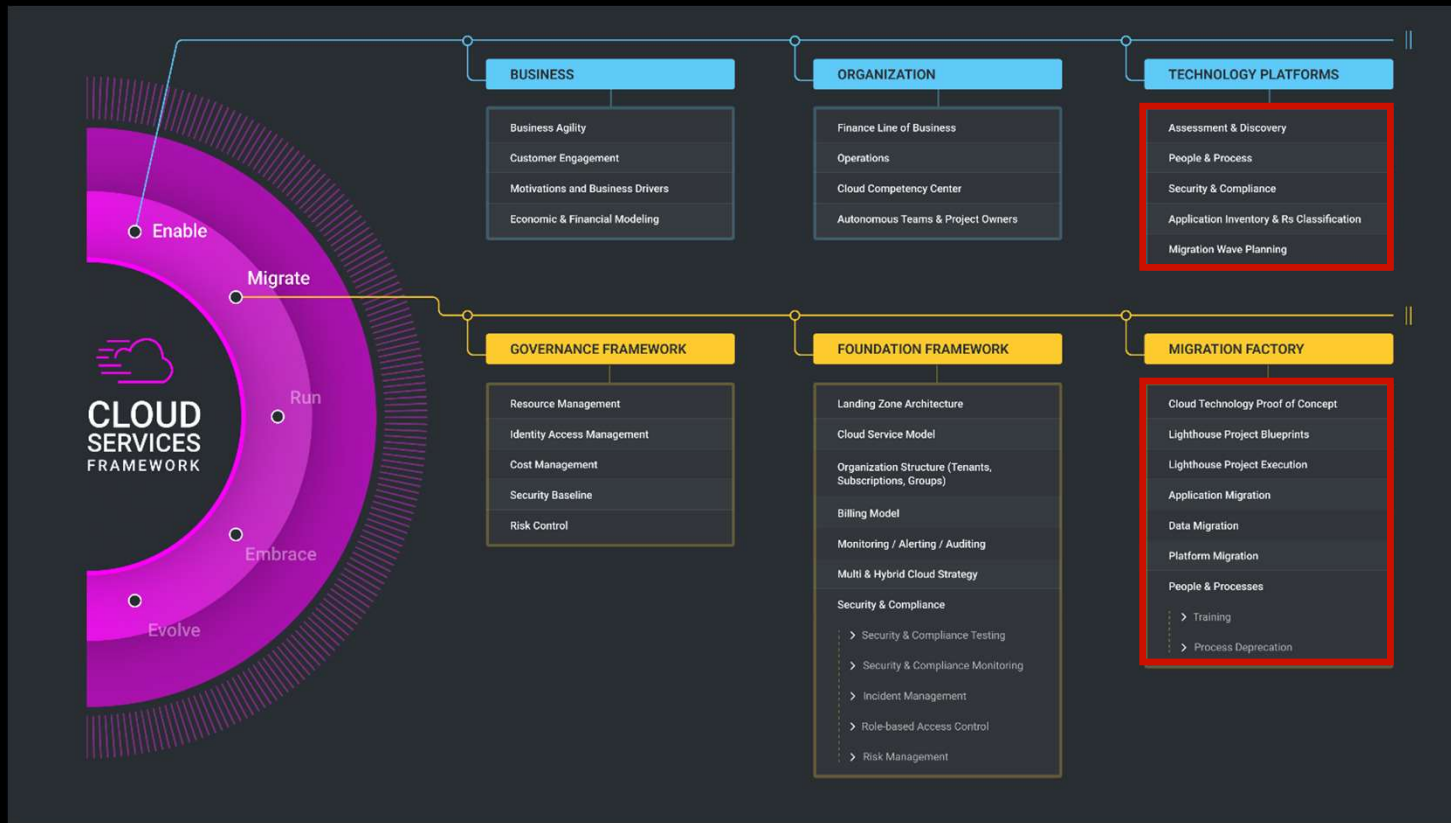
# Context 1: GFT Cloud Services Framework

The landing zone is a component of the GFT Cloud Services Framework.



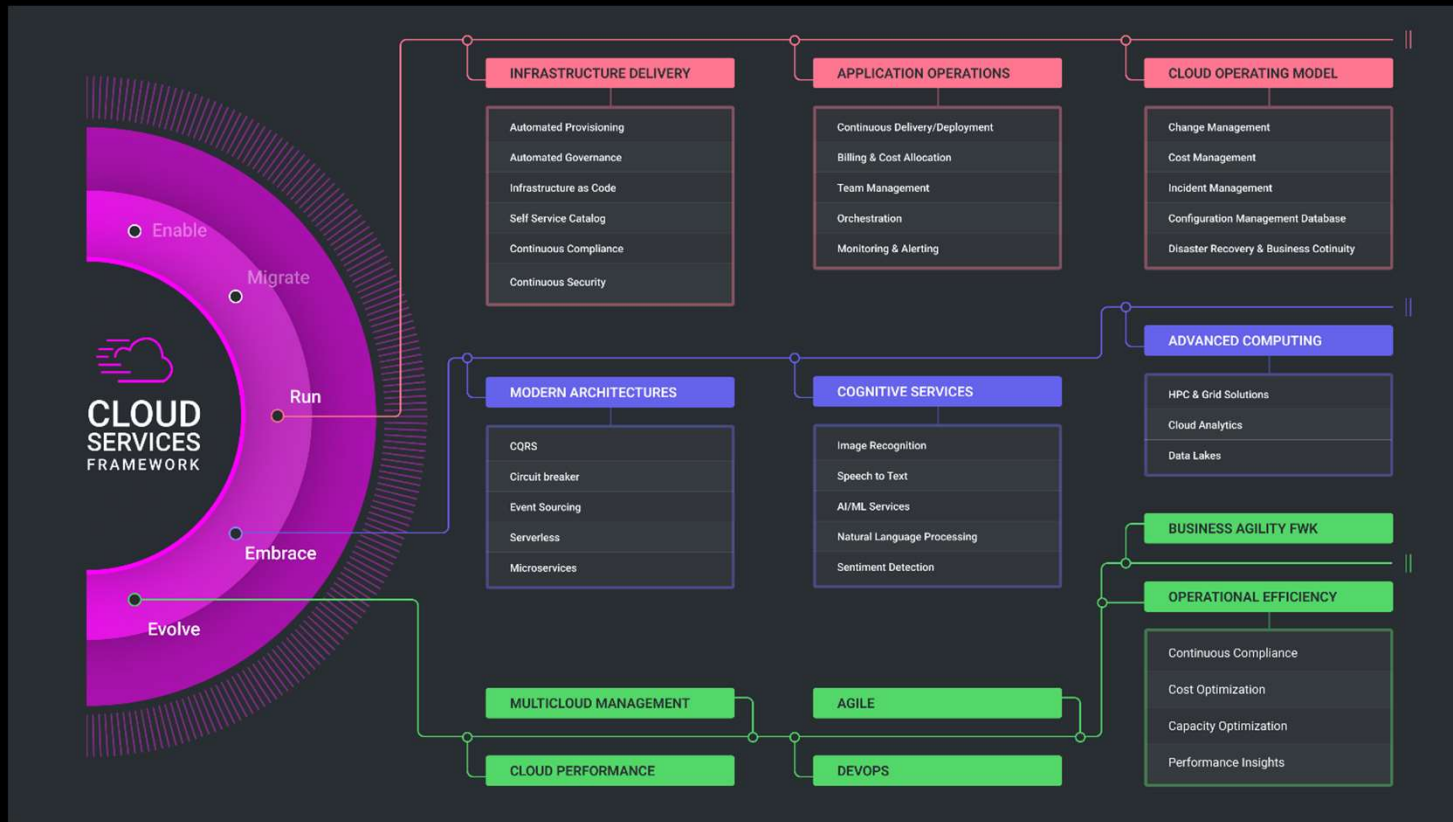
# Context 2: GFT Cloud Services Framework

Creating the landing zone has the following touchpoints with the overall GFT Cloud Services Framework.



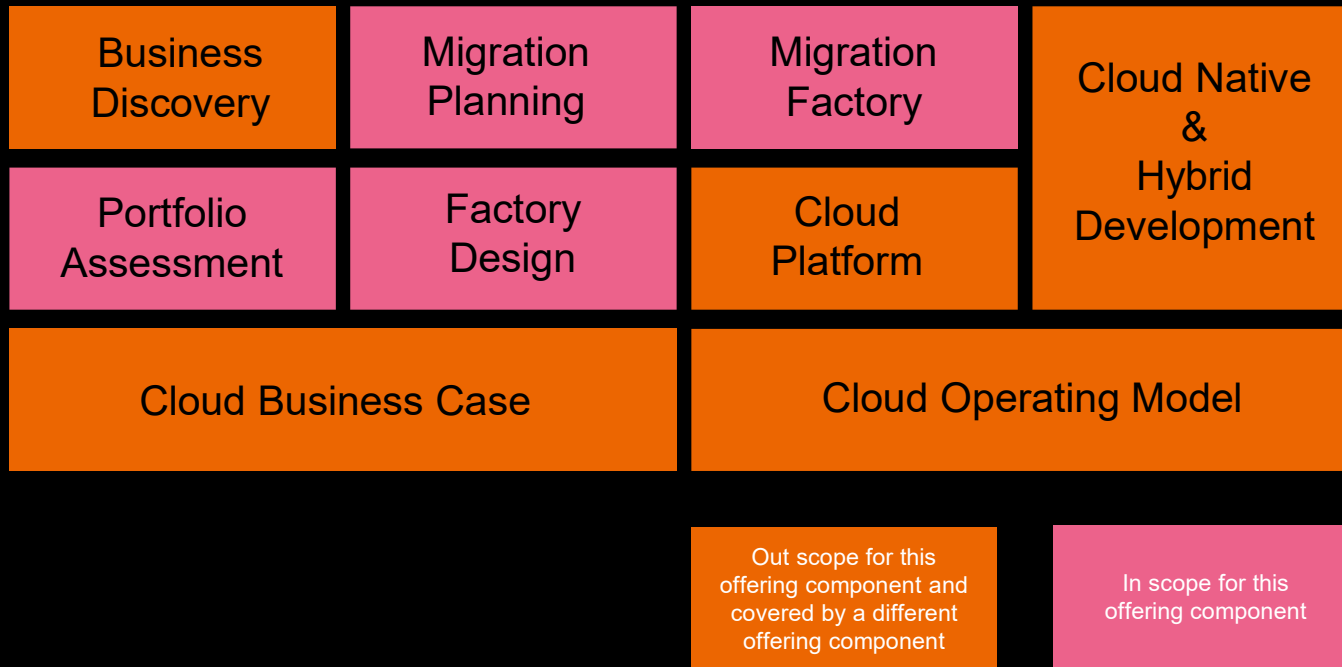
# Context 3: GFT Cloud Services Framework

Creating the landing zone has the following touchpoints with the overall GFT Cloud Services Framework.



# Scope

In this offering component, the portfolio is assessed, the factory is designed and the migration is executed as shown in the scope below.





# Deliverables 1: Portfolio Assessment

	Description	Format	Variables
<b>1. Discovery &amp; Inventory</b>	Inventory of applications, servers & infrastructure. This can be collected via automated tooling or via access to an existing CMDB.	Populated migration tooling / spreadsheet	# Applications # Servers # Data Centres
<b>2. Initial R Classification</b>	Initial view of R-Classification the portfolio of applications	Populated migration tooling / spreadsheet	# Applications # Servers #Risk # Data Centres
<b>3. Initial Cloud Migration Plan</b>	An initial time line for the migration. This is highly dependent on resourcing strategy and implications for the existing book of work.	Slide Presentation (plus supporting collateral)	# Applications # Departments

# Deliverables 2: Factory Design

	Description	Format	Variables
<b>1. Factory Model</b>	Design of the Factory: Centralised, Federated or Distributed.	Slide Presentation	# Applications # Departments
<b>2. Factory Plan</b>	Effort Estimates, Planning, Factory Shaping, Factory Sourcing approach	Slide Presentation	# Applications # Departments
<b>3. Team Shape</b>	Team Shapes and Resourcing by R Classification	Slide Presentation	# Applications # Departments
<b>4. Accelerated Mobilisation</b>	Migration Calendar by Phases (Prepare, Mobilise and Run)	Slide Presentation	# Applications # Departments

# Deliverables 3: Migration Planning

	Description	Format	Variables
<b>1. Initial Planning</b>	Each app is planned and validated according to runbooks and criteria defined in the migration design phase.	Slide Presentation	# Applications # Departments
<b>2. Apps Groupings &amp; Migration Pods</b>	Effort summarized by consolidated migration pods & non-migration workstreams	Slide Presentation	# Applications
<b>3. Migration Programme Team</b>	Possible split used to support the design phase	Slide Presentation	# Applications # Departments
<b>4. Centre for Enablement</b>	Operating model selection depends on your organization's existing working practices, cloud strategy and appetite to transform	Slide Presentation	# Applications
<b>5. Change Management Approach</b>	Our components of effective organizational change Changes impact	Slide Presentation	# Applications # Departments

# Deliverables 4: Migration Factory

	Description	Format	Variables
<b>1. Initiation Phase</b>	Kick Off, Project charter, Project repository,	Slide Presentation	# Applications # Complexity
<b>2. Planning Phase</b>	PI Plan, Pod Backlogs, Pod Sprint Schedule, Factory Risks, communications plan, Training plan, Transition plan	Slide presentation, Supporting reports	# Applications # Complexity # Risks
<b>3. Execution &amp; control</b>	Status reports, RAID logs, Risks and Issues log	Slide presentation	# Applications # Complexity # Risk
<b>4. Upskilling &amp; KT</b>	Knowledge & Capability Transfer, Training, Learning Platforms	Slide presentation	# Applications # Departments
<b>5. Project Closure</b>	Lessons learned, Closure Documentation	Slide Presentation Supporting Documentation	# Applications

## Approach & Time-line: Portfolio Assessment



- 10 or less applications
- Cloud Architect, Cloud Engineer & Business Analyst for 1 months
- Risk Level: Low / Medium



- FinTech cloud native development or small (< 50 apps) cloud migration
- Agile Lead, Cloud Architect, Cloud Engineer & Business Analyst for 2 months
- Risk Level: Medium



- Cloud migration for a global financial institution (< 300 apps)
- Agile Lead, Cloud Architect, Cloud Engineer, Data Engineer & Business Analyst for 3 months
- Risk Level: High

## Approach & Time-line: Factory Design



- 10 or less applications
- Agile Lead, Cloud Architect, Cloud Engineer & Business Analyst for 2 weeks
- Risk Level: Low / Medium



- FinTech cloud native development or small (< 50 apps) cloud migration
- Agile Lead, Cloud Architect, Cloud Engineer & Business Analyst for 1 month
- Risk Level: Medium



- Cloud migration for a global financial institution (< 300 apps)
- Agile Lead, Cloud Architect, Cloud Engineer & Business Analyst for 2 months
- Risk Level: High

## Approach & Time-line: Migration Planning



- 10 or less applications
- Cloud Architect, Cloud Engineer & Business Analyst for 1 months
- Risk Level: Low / Medium



- FinTech cloud native development or small (< 50 apps) cloud migration
- Agile Lead, Cloud Architect, Cloud Engineer & Business Analyst for 2 months
- Risk Level: Medium



- Cloud migration for a global financial institution (< 300 apps)
- Agile Lead, Cloud Architect, Cloud Engineer, Data Engineer & Business Analyst for 3 months
- Risk Level: High

## Approach & Time-line: Cloud Migration Factory



- 10 or less applications
- 1 Migration pod for 1 year
- Risk Level: Low / Medium



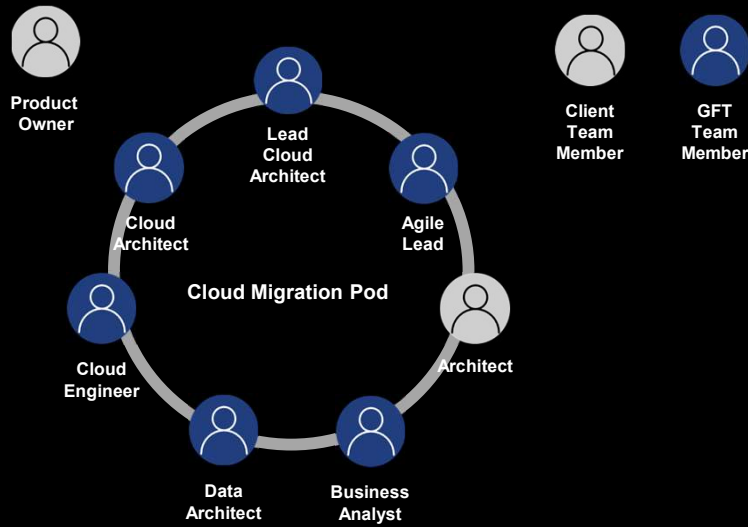
- FinTech cloud native development or small (< 50 apps) cloud migration
- 3 Migrations pods for 1 year
- Risk Level: Medium



- Cloud migration for a global financial institution (< 300 apps)
- 6 Migrations pods for 2 years
- Risk Level: High



# Typical team shape



## Key Skills



- Cloud Architecture
- Cloud Security
- Networking
- Infrastructure As Code
- Monitoring

# Tooling

## Validate and Manage

<b>Cloud Cost Calculator</b>	Azure
<b>Configuration Mapping</b>	best-fit cloud configuration for compute, storage, network, and pricing.
<b>Scenarios</b>	Run "what if" scenarios by changing target architectures.
<b>Application Discovery</b>	Automatically identify all apps & machines. Choose which are to be migrated. Data collected from virtualization environments, EAM tools, monitoring systems, CMDB.
<b>Application Dependency Mapping</b>	Mapping of all compute, storage, and network dependencies across on-premises and cloud environments.

## Migrate

<b>Application Centric Automation</b>	Orchestration of applications and associated processes.
<b>Blueprint Management</b>	Create, manage, deploy, validate and organize enterprise set of validated application blueprints and publish.
<b>Migration Strategy</b>	Define cloud providers, service models (IaaS/CaaS/PaaS/SaaS), regions.

## Validate and Manage

<b>Hybrid Cloud Connectivity Tests</b>	Validate migrated applications are operating in the cloud as they were in their historical on-premises or private cloud environment.
<b>Connectivity Gaps</b>	Identify gaps in application connectivity in the cloud, and run follow-up tests to ensure the connections are working as they should.
<b>Cost and Performance Overview</b>	Application, resource group, project cost.
<b>Right-Sizing</b>	Application and infrastructure dependency mapping.
<b>Reporting</b>	Set budgets for individual accounts or business units.
<b>Application Portfolio Management</b>	Right-size instances based on system-level data (Peak CPU, Memory, IOPS & Network usage).
<b>Application Lifecycle Management</b>	Reports across all available metrics.

# Cloud Migration Tools

	Inventory	Business Case	Discovery & Planning	Dependency Mapping	Workload & Data Migration	Validation
3rd Party Multi-cloud	<ul style="list-style-type: none"> <li>Flexera</li> <li>Cloudamize</li> <li>Deloitte</li> <li>ModelizeIT</li> <li>Corent</li> </ul>	<ul style="list-style-type: none"> <li>Cloudamize</li> <li>Apptio</li> <li>CloudChomp</li> <li>Turbonomic</li> </ul>	<ul style="list-style-type: none"> <li>Flexera</li> <li>Cloudamize</li> <li>Deloitte</li> <li>BMC</li> <li>ModelizeIT</li> <li>Corent</li> </ul>	<ul style="list-style-type: none"> <li>Flexera</li> <li>Dynatrace</li> <li>AppDynamics</li> <li>New Relic</li> <li>Datadog</li> <li>Deloitte</li> </ul>	<ul style="list-style-type: none"> <li>Deloitte</li> <li>CloudVelox</li> <li>Attunity</li> <li>NetApp</li> <li>BURST</li> </ul>	<ul style="list-style-type: none"> <li>New Relic</li> <li>AppDynamics</li> <li>Dynatrace</li> <li>Datadog</li> <li>NETSCOUT</li> </ul>
Azure Native	<ul style="list-style-type: none"> <li>Azure Migrate</li> <li>Microsoft defender for Cloud (Azure Security Center)</li> <li>Azure resource Graph</li> </ul>	<ul style="list-style-type: none"> <li>TCO Calculator</li> </ul>	<p>Azure Migrate Console</p> <p>Movere</p>	<ul style="list-style-type: none"> <li>Server Migration Assistant</li> <li>Data Migration Assistant</li> <li>WebApp Assessment</li> <li>MSSQL Server Migration Assistant</li> <li>Azure Database Migration Service</li> <li>Storage Migration Service</li> </ul>	<ul style="list-style-type: none"> <li>Azure Monitor</li> <li>Microsoft defender for Cloud (Azure Security Center)</li> <li>Cost Management</li> </ul>	

# Case Studies

## Enterprise cloud migration for a global asset manager

### Success story

Cloud migration & engineering  
Cloud landing zone  
Target operating model  
Complex legacy technology  
Multi jurisdiction & regulation  
Application re-architecture  
SDLC modernisation

#### THE CHALLENGE

- GFT's client is one of the largest global asset managers whose strategy is to shift from being a financial services firm supported by technology to becoming a technology firm which provides financial services.
- GFT is a strategic partner in the delivery of this vision due to its knowledge of the business, understanding of the legacy complexities and expertise in delivering modern technology solutions in highly regulated, highly complex, multi-jurisdictional environments.

#### THE ENGAGEMENT

- GFT created the business case for the programme which received board approval. This involved quantifying benefits, assessing the entire technology landscape: organisation structure; around five hundred applications; data centres and liaison with public cloud service providers.
- GFT evaluated a range of multicloud scenarios and determined the optimum balance of refactoring applications versus simply migrating them to the cloud "as-is" to maximise the return on investment and create the desired technology target state.
- GFT delivered the cloud platform covering identity and access management, security & compliance, networking, migration patterns, monitoring, DevOps and automation.
- GFT worked with line of business technology teams to create the overarching cloud migration plan for the five hundred applications and designed and implemented the migration factory to execute the migration.
- GFT has created the target operating model for the new, cloud enabled enterprise.

#### THE OUTCOME

- The three-year migration programme will generate an IRR of 24% and net savings of around £15m over five years. This return is based purely on quantifiable, tangible infrastructure savings. In addition to the infrastructure savings, the programme will help deliver the firm's strategy by enabling it to:
  - Gain access to new markets more easily
  - Reach new customers globally
  - Deliver services efficiently at scale
  - Develop and deploy new applications faster
  - Respond quickly to changing customer expectations
  - Adapt to new competition more quickly and efficiently
  - Drive business value from internal and external data
  - Innovate more quickly and easily

## Cloud engineering: landmark financial services cloud migration



Success story

Cloud migration & engineering

Cloud landing zone

Target operating model

Complex legacy technology

Multi jurisdiction & regulation

Application re-architecture

SDLC modernisation

### THE CHALLENGE

#### Cloud migration for one of the world's largest banks.

- The group has 7,000 applications and has massive legacy complexity;
- is present in 70 countries and therefore is vastly multijurisdictional;
- has 100+ PB of data.
- The bank has been one of GFT's customers for many years.
- There are huge benefits from cloud technologies, but big challenges to realise them.

### THE ENGAGEMENT

#### Working with the bank's global businesses and functions

- GFT worked across the bank's global business lines and functions: Global Banking and Markets, Securities Services, Group Risk, Group Finance and Central Infrastructure
- GFT's programme of work includes application portfolio analysis, migration planning & execution
- Successful delivery of lighthouse projects
- Industrialisation of the solution with the bank's global technology teams
- Developing the central cloud platform to drive and support adoption
- Development of cloud solutions to meet the demands of many different regulators in different jurisdictions
- Incorporation of encryption into cloud solutions for internal, restricted and highly restricted data

### THE BENEFIT

#### Delivering real business success for the bank

Successes in this major cloud transformation programme include:

- Reduction of the group Liquidity Coverage ratio calculation time from six hours to six minutes with a cloud native streaming solution.
- Extension of the architecture to stress testing, risk weighted assets and IFRS9.
- Migration planning and execution of lighthouse projects for the Securities Services business.
- Industrialisation of the cloud platform to support DevOps transformation globally.
- Cloud platforms delivered in Global Banking and Markets, Securities Services, Group

# Migration Planning Sample Deliverables

## Migration Factory Effort Parameters

The effort for each migration strategy is estimated based on industry benchmarked effort parameters per application complexity

#	Category	Type	Complexity	Dev	DevOps	Test Automation	Analysis	Cloud Infrastructure	Cloud Architecture	Rehost	Total
1	Rearchitect	In-house	-	48	48	48	24	12	12	-	192
2	Refactor	In-house	H	48	48	48	24	12	12	-	192
2	Refactor	In-house	M	24	24	24	12	6	6	-	96
2	Refactor	In-house	L	12	12	12	12	2	2	-	53
3a	Replatform [DB re-platform, FE L&S]	In-house	H	12	12	12	12	6	6	-	60
3a	Replatform [DB re-platform, FE L&S]	In-house	M	8	8	8	8	2	2	-	38
3a	Replatform [DB re-platform, FE L&S]	In-house	L	2	2	2	2	2	2	-	14
3a	Replatform [DB re-platform, FE L&S]	COTS	H	12	12	12	12	6	6	-	60
3a	Replatform [DB re-platform, FE L&S]	COTS	M	8	8	8	8	2	2	-	38
3a	Replatform [DB re-platform, FE L&S]	COTS	L	6	6	6	6	2	2	-	29
3b	Replatform [DB replatform, FE replatform]	In-house	H	24	24	24	24	12	12	-	120
3b	Replatform [DB replatform, FE replatform]	In-house	M	12	12	12	12	6	6	-	60
3b	Replatform [DB replatform, FE replatform]	In-house	L	6	6	6	6	2	2	-	29
4	Repurchase	COTS	-	0	12	12	36	6	6	-	72
5a	Rehost [terraform]	In-house	H	-	-	-	-	-	-	24	24
5a	Rehost [terraform]	In-house	M	-	-	-	-	-	-	18	18
5a	Rehost [terraform]	In-house	L	-	-	-	-	-	-	12	12
5b	Rehost [automated]	COTS	H	-	-	-	-	-	-	12	12
5b	Rehost [automated]	COTS	M	-	-	-	-	-	-	8	8
5b	Rehost [automated]	COTS	L	-	-	-	-	-	-	6	6



# Application Groupings & Consolidated Migration Pods

## INITIAL MIGRATION PLANNING

Business Units	Application Count
AMT - Americas AMT	9
AMT - APAC	63
AMT - EMEA	69
AMT - Front Office Technology	59
AMT - Global Data Solutions	22
AMT - Other	65
Asia Pacific Technology - All ex. APAC AMT	33
Corporate Technology	75
Digital Strategy and Innovation	9
IPS	12
Other	30
Wealth Technology	21
<b>Total</b>	<b>468</b>



## EFFORT SUMMARY BY CONSOLIDATED MIGRATION PODS & NON-MIGRATION WORKSTREAMS

#	Proposed Consolidated Migration Pods	Effort (Man-days)	Non-Migration Workstreams	Effort (man-days)
1	Rehosting	2,142	Programme Leadership & Governance*	2,061
2	AMT Front Office & Global Data Solutions	3,297	Landing Zone	886
3	AMT Americas, EMEA, America & Other #1	2,647	GFT C4E Support	1,392
4	AMT Americas, EMEA, America & Other #2	2,647	Design Authority	506
5	Corporate Technology	3,490	TOM & Change Management	253
6	AMT APAC	2,599		
7	IPS, Digital Innovation & Other	1,637		
8	Asia	1,420		
9	Wealth Technology	1,035		
<b>Total</b>		<b>20,915</b>	<b>Non-migration Total</b>	<b>5,100</b>

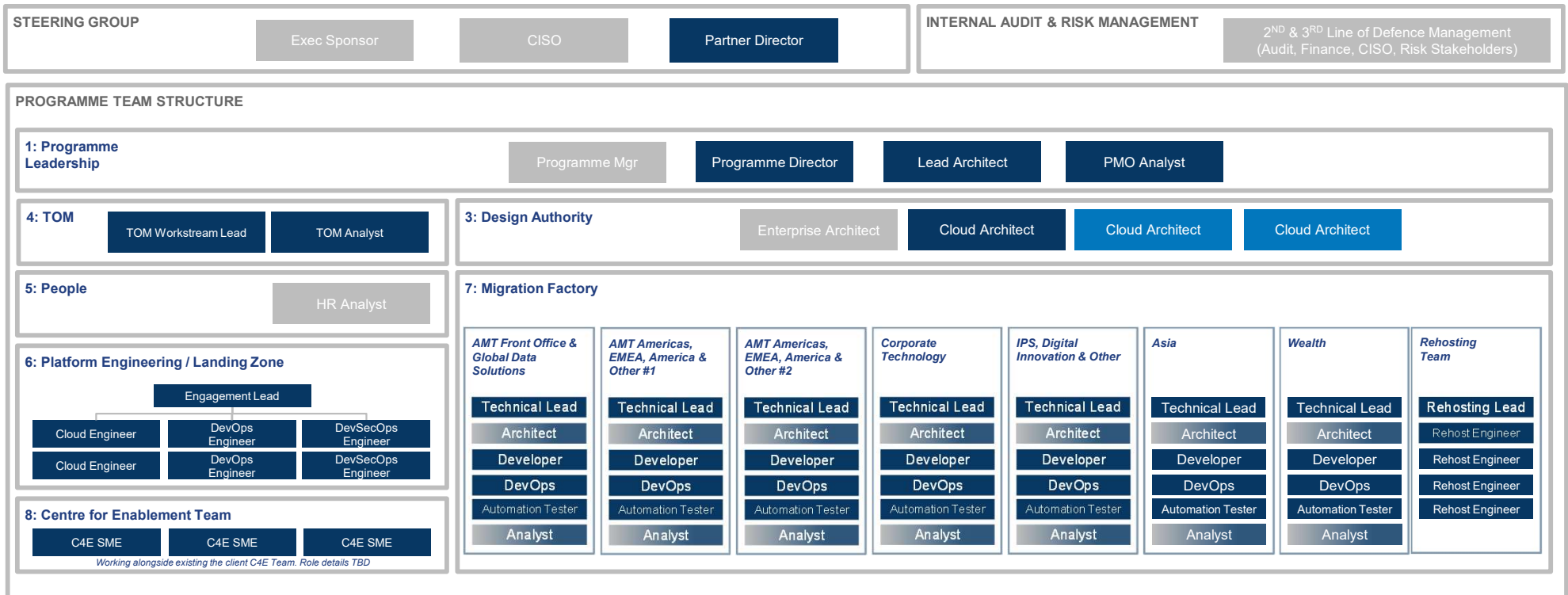
<b>TOTAL MIGRATION EFFORT</b>	<b>26,015 Man Days</b>
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- Based on effort required to migrate R classification strategy in the recommended 80:20 scenario
- As per previous slide, effort estimated based on the complexity of the application and the R category into which it falls
- A separate re-hosting pod stood up to run all automated re-hosting of applications, and terraforming infrastructure for re-hosting with the support pf application teams

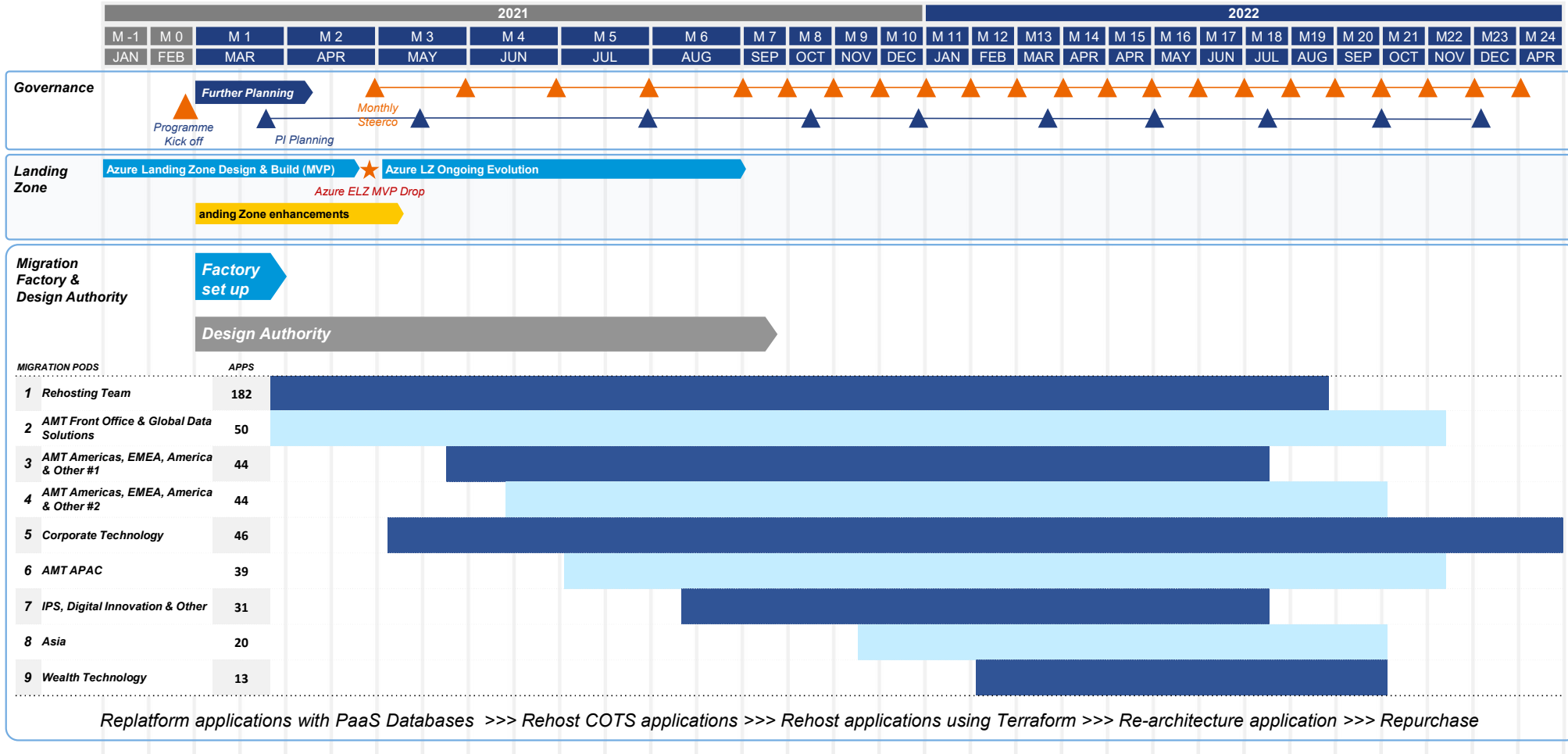
\* Includes the client' programme leadership (see next slide for team structure)

# Migration Programme Team Structure

Possible split used to support the business case analysis phase

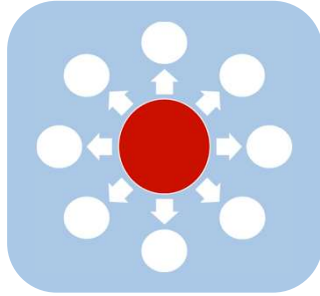


# Migration Roadmap & Key Milestones

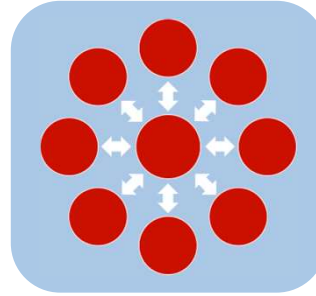


# Factory Design Sample Deliverables

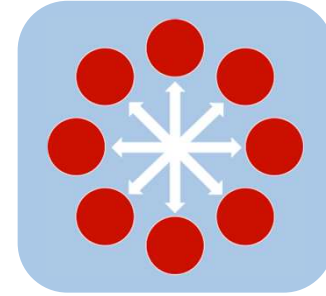
# Factory Models



Centralised



Federated

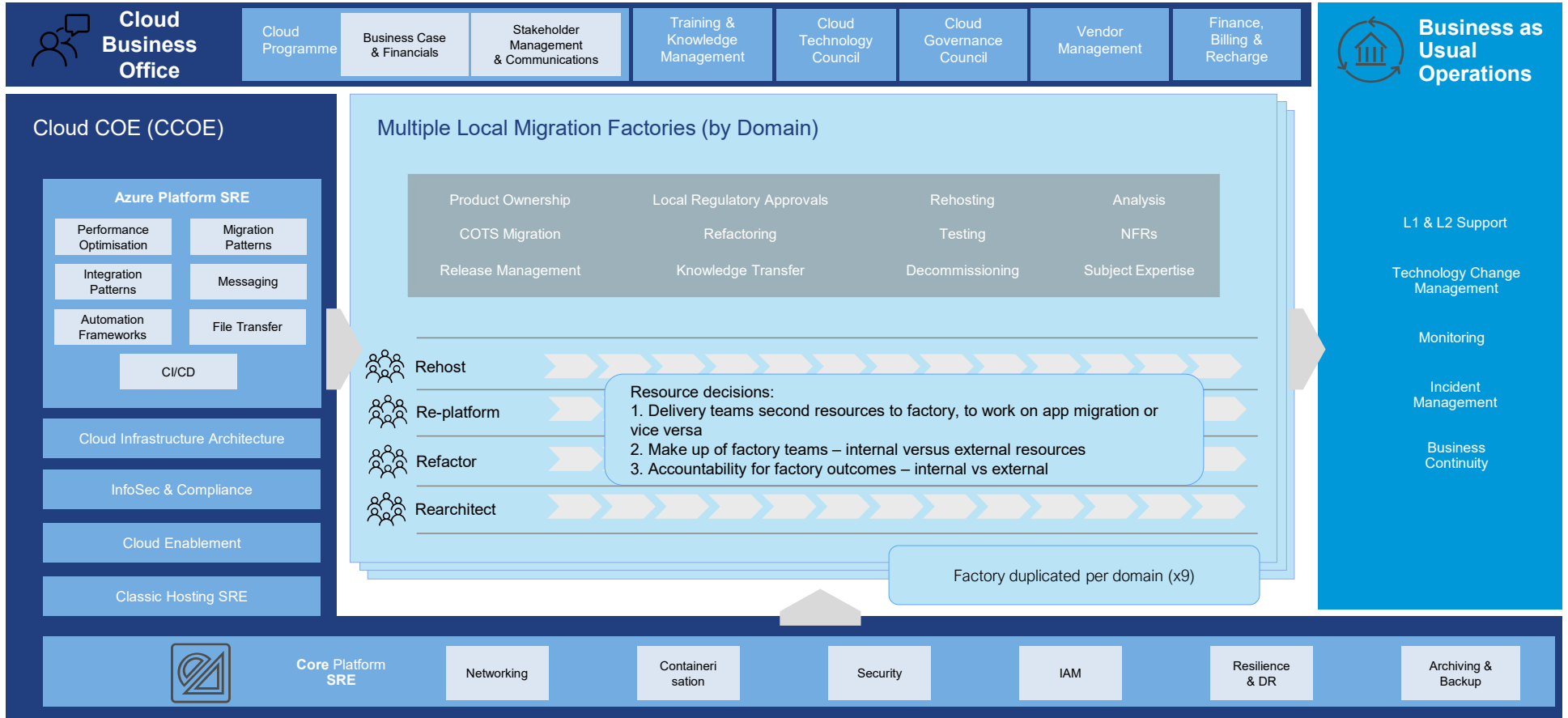


Distributed

<b>Domain Autonomy:</b>	Low-None	Medium-High	High
<b>Centralised functions:</b>	All	E.g.: Re-usable components & frameworks, standards, ways of working, quality	None
<b>Benefits:</b>	High standardisation & control.	Self-determination, collaboration, common approaches/common issues, local approaches/local issues.	Work at own pace, local resourcing and planning
<b>Detriments:</b>	Complex interdependencies & supply/demand challenges, "one size fits all", perceived inflexibility, weak relationships	Interdependency management, federated governance	Low standardisation, duplication of work, local approaches to common issues

Cloud enablement frameworks underpin the factory in all models

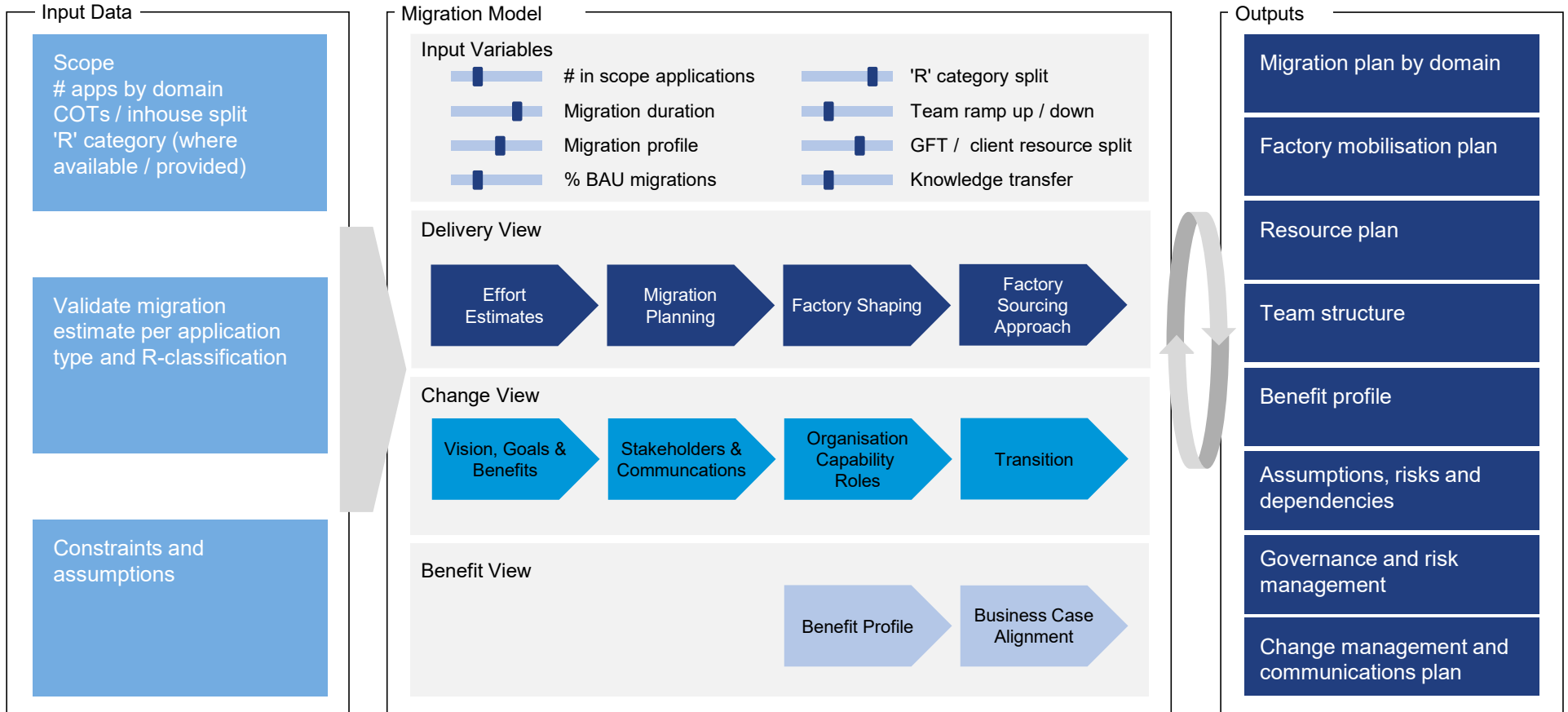
# Cloud Migration Factory – Federated Model



Identity & Access Management	Security, Governance & Compliance	Network Topology & Connectivity	Applications, Workloads & Data		Monitoring & Management	DevOps & Automation	Migration Tooling
Azure Active Directory	Subscriptions	IP Address Management	Resource Groups	API Management	Application Monitoring	Git Repositories	Azure Migrate Hub
Azure AD Connect	Management Groups	Virtual WAN & Virtual Networks	Storage Accounts	Application Gateways	Infrastructure Monitoring	Infrastructure-Code Blueprints	App Migration Assessments
Privileged Access Management	Policy Management	Network Security Groups	App Service Environments	Ingress Controllers	Database Monitoring	DevOps Pipeline Templates	Database Migration Assessments
3rd Party Access Management	Encryption Key Management	DDoS Protection	Kubernetes Clusters	Network Load Balancers	Log Aggregation & Storage	Build Agents	Database Migration Service
Multifactor Authentication	App Certificate Management	Network Perimeter Firewalls	Container Registries	SQL / NoSQL Databases	Log Analytics	Automation Runbooks	Database Synchronization
Service Principals	Endpoint Security Management	Web Application Firewalls	Secrets Key Vault	Data Lake Storage	Alerting	Event Grids	File Synchronization
Managed Identities	SIEM & SOAR	Web Proxy	Artifact Repositories	Data Factory Pipelines	Visualization & Reporting	Action Groups	Onboarding Service
Custom Role Definitions	Technology Guardrails	Connectivity to On-Premise	Machine Image Catalogue	File Shares	Configuration Management	End-to-End Testing	Migration Plans
Role Based Access Control	Architectural Design Patterns	Private & Public DNS	Configuration Registry	Service Bus & Event Hubs	Cost Management	Performance Testing	Testing Plans

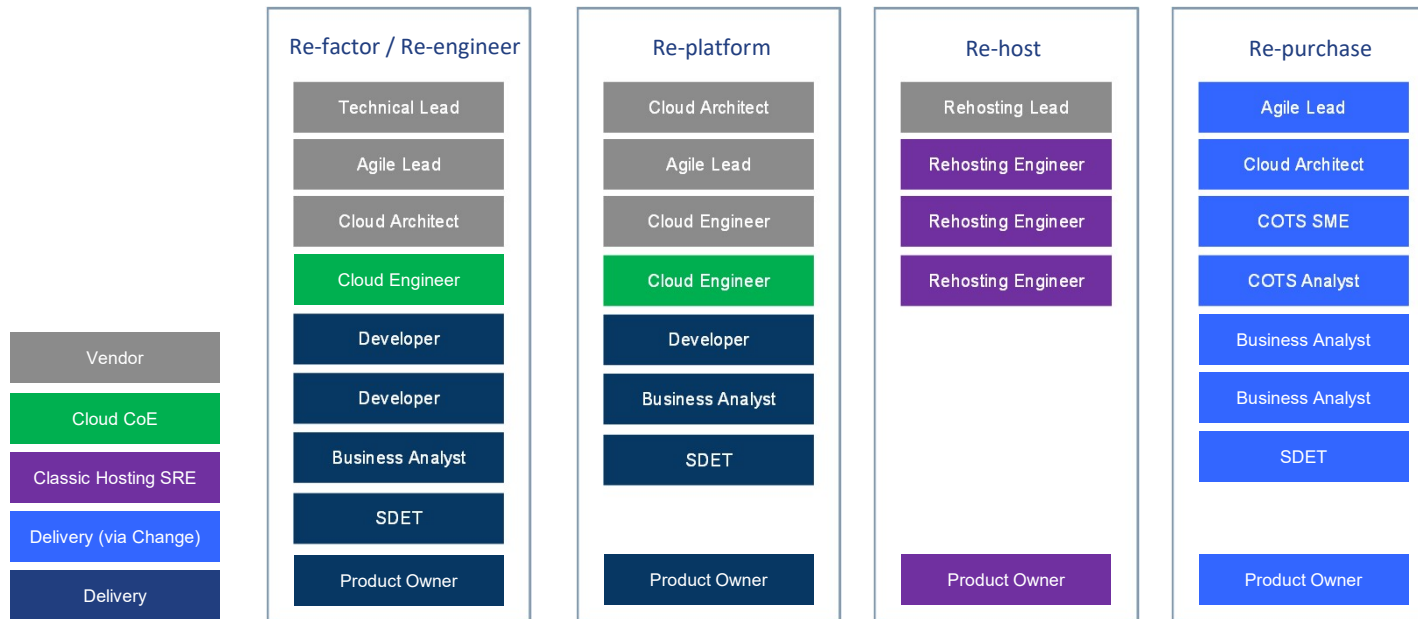
Darker shading indicates areas which can significantly accelerate cloud migration at scale.

# Factory Migration Model and Plan





# Indicative Team Shapes and Resourcing by R Classification



Accelerated Mobilisation			JUL	AUG	SEP	OCT	NOV	DEC
Prepare	Design factory operating model		█					
	Align active domains to operating model			█				
	Plan initial factory model domains and applications			█				
Mobilise	Mobilise factory model resources				█			
	Develop CCOE resources for initial migrations	e.g. DevOps patterns & test automation E2E testing Tool selection			█			
	Develop migration factory resources for initial migrations	e.g. Overarching test strategies Establish approval mechanisms			█			
	Technology enhancements to accelerate migration	e.g. Framework upgrades			█			
Run	Establish agile governance	e.g. Configuration & population of ADO Establish reporting metrics			█			
	Deliver initial migrations					█		

# Shaping the future of digital business

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