

# Cloud: Digital Transformation & Governance

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# Digital Transformation

Content:

- Digital Transformation What?
- Type, Success, Challenges
- Objectives
- Digital Transformation Framework
- Strategy



# Digital Transformation: What?

**Digital Transformation** the process that uses digital technology to transform businesses fast with ever-changing technology to create **new or modify existing customer experience** to **meet** shifting **business and market requirements**.

Two key elements:

- Allowing for continuous changes: **change build-in**
- Aligning with what customer want: **customer first**

Trends:

- Increased remote work
- Specialized talent shortage
- Personalized AI
- Human augmentation (human + AI or tech)
- Homomorphic encryption: encryption that allows data to remain encrypted whilst being analyzed or processed
- From BYOD (Bring Your Own Device) to **BYOE (Bring Your Own Enhancement)**

Technology Predictions:

- **Public Cloud: cloud & data center as commodity**
- RPA: cheaper automatization even in difficult circumstances
- 5G: faster internet outside the office (HVAC (heating, ventilation and air-conditioning), CCTV, elevators)
- Platform Governance: protecting user's privacy, false information, security
- Quantum Computing

Disruptive Technologies

- IoT
- VR & ER
- AI
- **Cloud Computing**
- Edge Computing
- Quantum Computing
- 5G
- Blockchain
- RPA
- Big Data

The Any\* Paradigm:

- **Anytime, anywhere, any service, any device**



# Digital Transformation: Types, Successes, Challenges

Types of digital transformation:

- **Business process transformation:**
  - new ways for business processes through data, AI, analytics, API's, machine learning
  - focus on finite areas of business
- **Business model transformation:**
  - fundamentally change of building blocks on value creation
  - focus on full business
- **Domain transformation:**
  - unlock complete new business opportunities beyond the current served markets.
  - focus on new markets
- **Cultural/Organizational transformation:**
  - agile workflows, learning, decentralized decision making
  - focus on organization

Key Success Factors:

- **Digital Aptitude:** right capabilities
- **Digital Platform:** place to run
- **Digital Partnerships:** collaboration to run across different sectors
- **Digital Agility:** to keep advancing and improving

Key Challenges:

- **Organizational resistance to change:**
  - disruption of the way things were always done
- **Lack of clear vision for a digital customer journey:**
  - if a company is only focused on itself it is hard to see market disruptions
- **Ineffective gathering and leveraging of customer data:**
  - data is driver for decisions so good customer data is competitive advantages
- **Inflexible technology stack and development processes:**
  - iterate using test and learn approach, add feature regularly, if iterations are impossible feedback loops are suboptimal
- **Technology stack optimized to the legacy business model:**
  - old systems and processes may hinder to use agile methods and iterate

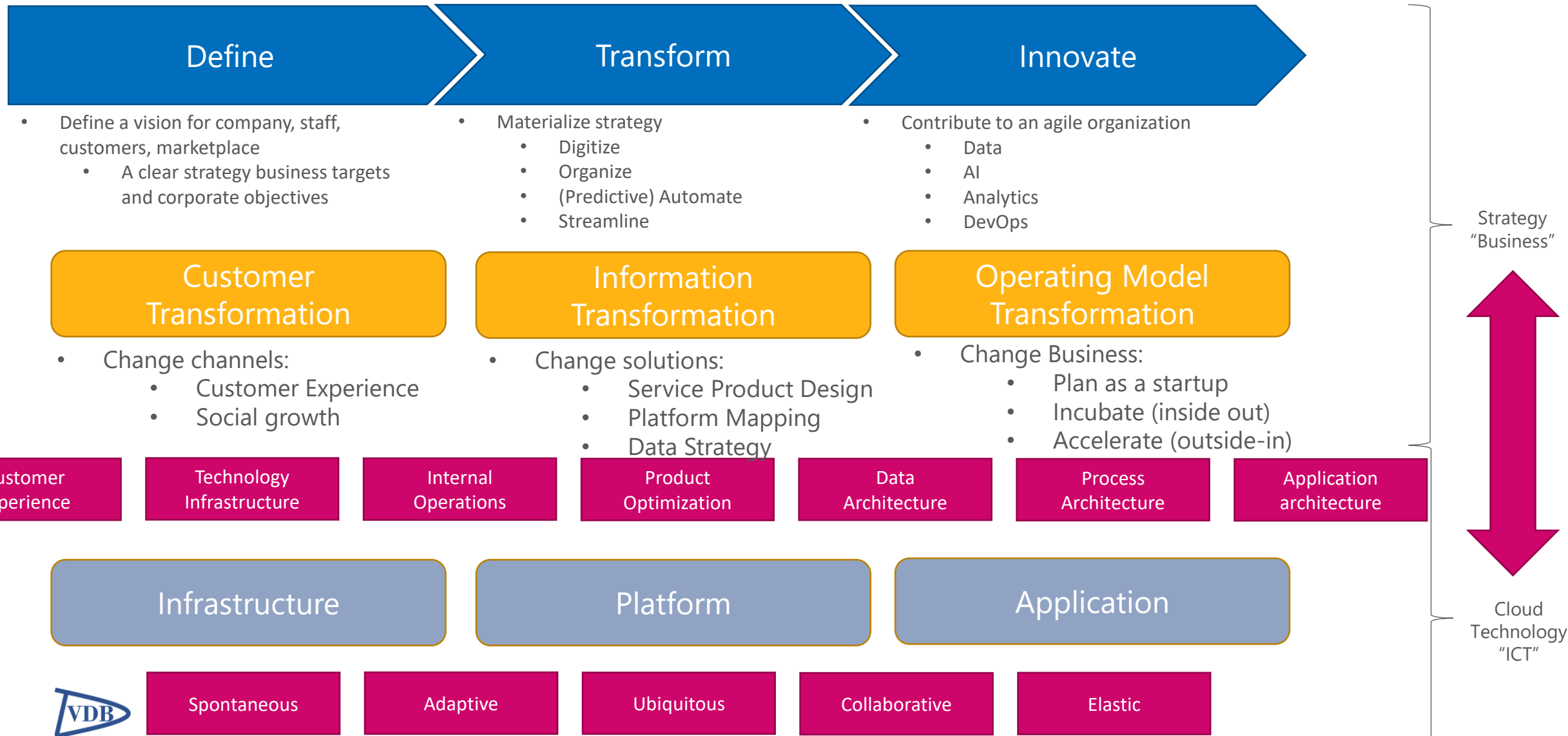
# Digital Transformation: Objectives

Objectives:

- **Reduction of costs:**
  - optimizing business technology & operations
  - lower cost per transaction & increased sales, streamlined customer focused processes
- **Better/New customer experience:**
  - enabling customer to do what they want, when they want and how they want
  - data rich & personalized
  - quality is not a differentiator anymore, experience is
- **Skillset improvements of staff:**
  - staff will be required to update their skill to meet the changing technological environment
  - will have better knowledge and capabilities
  - empower employees to work anywhere, any time and at their comfort
- **Foresting a digital culture:**
  - digitalized business environments increase productivity
  - silos become visible and processes will bridge silos or replace them
  - respond rapidly to changing environment
- **Improved data collection and analysis:**
  - easier to monitor, collect and analysis customer data
  - better informed decisions
- **Digitalization of Business Operations:**
  - digital products and services
  - streamlined operational processes
  - digital operations allows for more timely and insightful decision taking
- **Digitalization of Products and Services:**
  - digital processes are faster than non-digital ones allowing for quicker service to customers
  - new revenues based on digital platforms
- **Staying competitive and modern**
  - competition ensures adaption/learning/growing
  - survivability of a company



# Digital Transformation: Framework



# Digital Transformation: Strategy

## Observations on Strategy:

- Strategy not technology drives digital transformation
- Digital strategy drives digital maturity
- Maturing digital organizations build skills to realize the strategy
- The digital agenda is led from the top
- C-level must understand the capabilities of technology

## Four ways a digital strategy is shaped:

- Look past your competitors:
  - disruption can come from anywhere so don't look only closely to competitors; look upstream-downstream/vertical-horizontal
- Ask your customers:
  - understand their pinpoints
- Use executive influence:
  - closed loop of strategy top-down and feedback bottom-up
- Align your company culture:
  - culture eats strategy for breakfast

# Cloud Computing

Content:

- Cloud What?
- Cloud Benefits, Challenges
- Cloud Adoption Framework
- Cloud Target Operating Model (CTOM)
  - Cloud Service Management (CSM)
  - Cloud Operations Management (COM)
  - Cloud Governance Framework (CGF)





# Cloud Computing: What?

Cloud computing empower business to create [solutions to connect to systems of engagement \(SoE\)](#) and to [optimize enterprise applications by moving appropriate applications into the cloud](#)

SoX:

- **System of Reference (SoR, or "Record", or System of Business SoB):**
  - Backoffice/backend systems
  - Transactional, stateful, absolute consistency and transactional integrity,
- **Systems of Engagement (SoE):**
  - Front-end/edge systems
  - Interaction, stateless, eventual consistency, optimistic integrity
- **Systems of Interaction (Sol):**
  - Bridging/Interfacing
  - Service Orchestration (micro-services), API management between SoR & SoE
- **Systems of Intelligence (SolntI):**
  - Event processing/AI model execution
  - Intake of events and mass data

NIST: "Cloud computing is a model for *enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction*"



Business Drivers:

- **Experience Centric:** the center of application development is no longer the ERP tool but customer engagement
- **Outcome-Based:** ability to measure and manage business-aligned metrics in every IT process
- **Agile and Lean:** IT needs to efficiently deliver at consumer cost levels
- **Service-Oriented:** consume everything as a service, pay as you consume, integrated services (orchestrated)
- **Ecosystem Driven:** integration of partners, suppliers and employees



Technology Drivers:

- **Cost effective**
- **Organizations' Maturity**
- **Increased agility**
- **Dynamic scaling**
- **Speed to market**
- **Innovative**

# Cloud: Benefits & Challenges

## Benefits:

- **Increase Agility:** fast deployment and consumption no long procure/purchase/provisioning cycles
- **Consumption Base Delivery:** no up-front costs charged, benchmark on-prem 15% utilization of resources in cloud 65%
- **Elasticity:** fast scale-up and down
- **TCO and OPEX Smoothing:** avoid peaks and avoid CAPEX to manage peaks, right-sizing
- **Accessibility:** anywhere and browser, mobile, federated access
- **Innovation and Currency:** environments are automatically kept up to date by provider
- **Sustainability:** energy efficiency is organized by provider, they are forced to do so to remain profitable
- **Visible and contractual SLA's:** well-defined SLA's
- **Portability:** containerization decouples and makes things portable
- **No Maintenance Costs:** no hardware or software costs only a service bill
- **Availability Guaranteed:** high-availability is a cloud foundation
- **Cyber and physical security:** providers invest massively and are responsible for the security of the platform
- **Disaster Recover:** cross-region replication, restore point, disaster discovery tools,

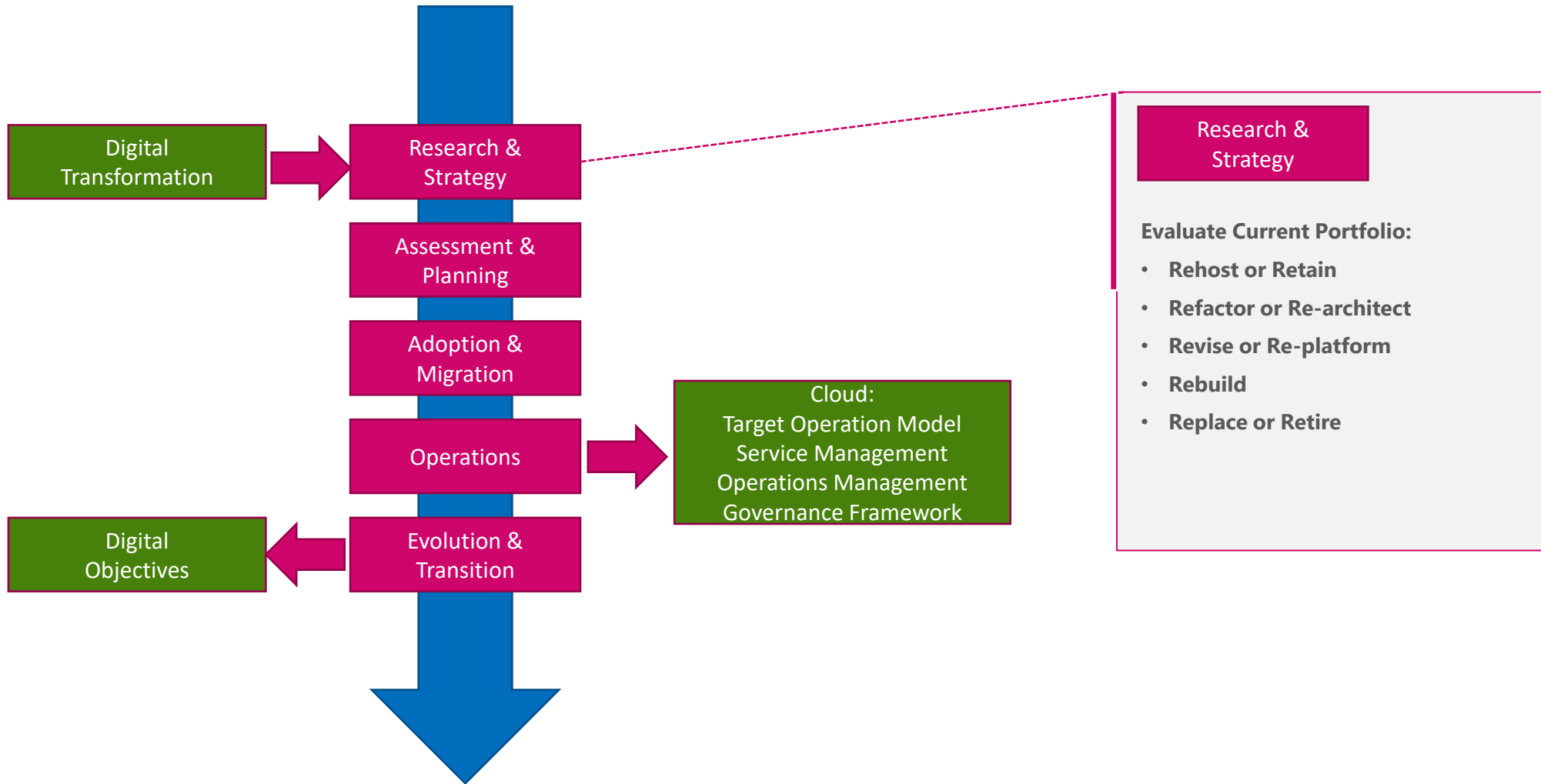


- **DevOps:** CI/CD
- **Futureproof:** seamless upgrades and patching
- **More business focus:** from managing IT to strategic IT focus, part of management delegated to provide so focus can be on IT as core enabler.

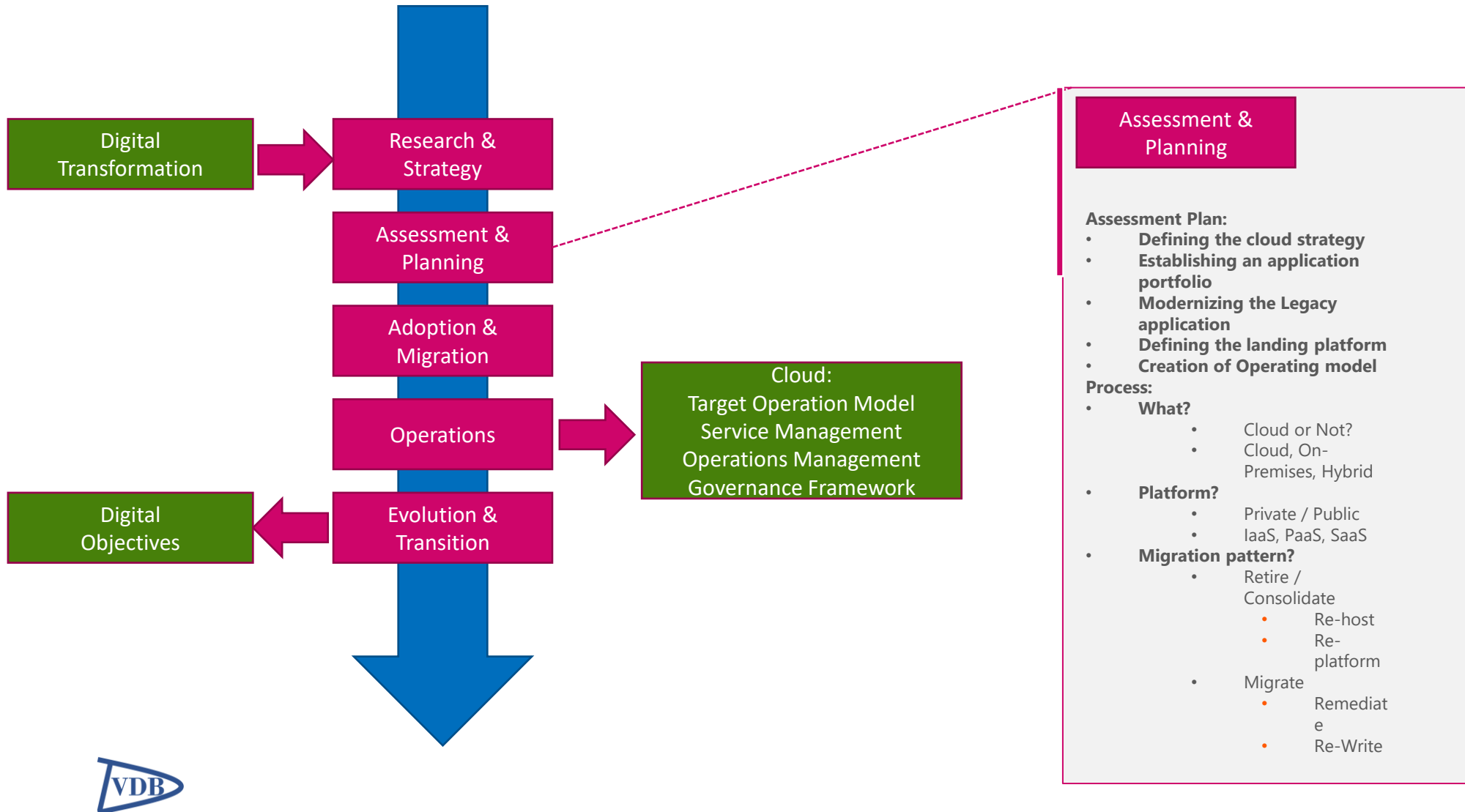
## Challenges:

- **Security:** less controls based on trust
- **Compliance:** laws and regulations, but also interception and data access laws from governments to providers
- **IT Operating Model:** cloud requires new skills, processes, policies, service partners
- **Service Assurance:** SLA are fixed by provider and may not have an equivalent for an internal SLA
- **Consistent Performance:** challenging to guarantee performance moreover when on-premises components are used
- **Financials:** CAPEX to OPEX might not suit the organizational financial models
- **Integrations:** complex dependency might make it hard find an equivalent in combined cloud services
- **Vendor Lock-In:** once service consumed it might be difficult to find equivalents when changing providers is considered
- **Cloud Experience:** skill gap and shortage of skilled people
- **Change Management:** internal organizational resistance to change

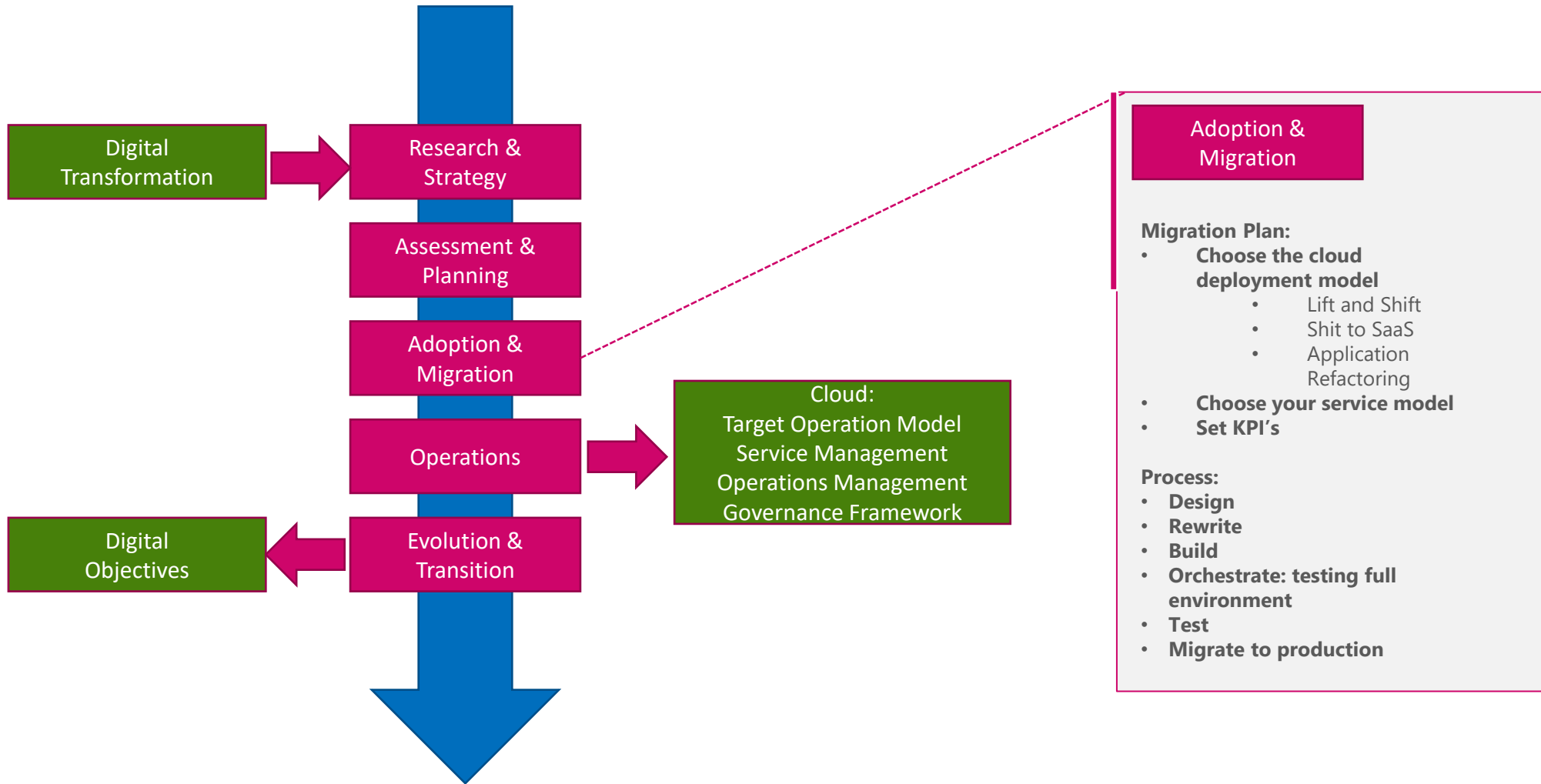
# Cloud Adoption: Framework



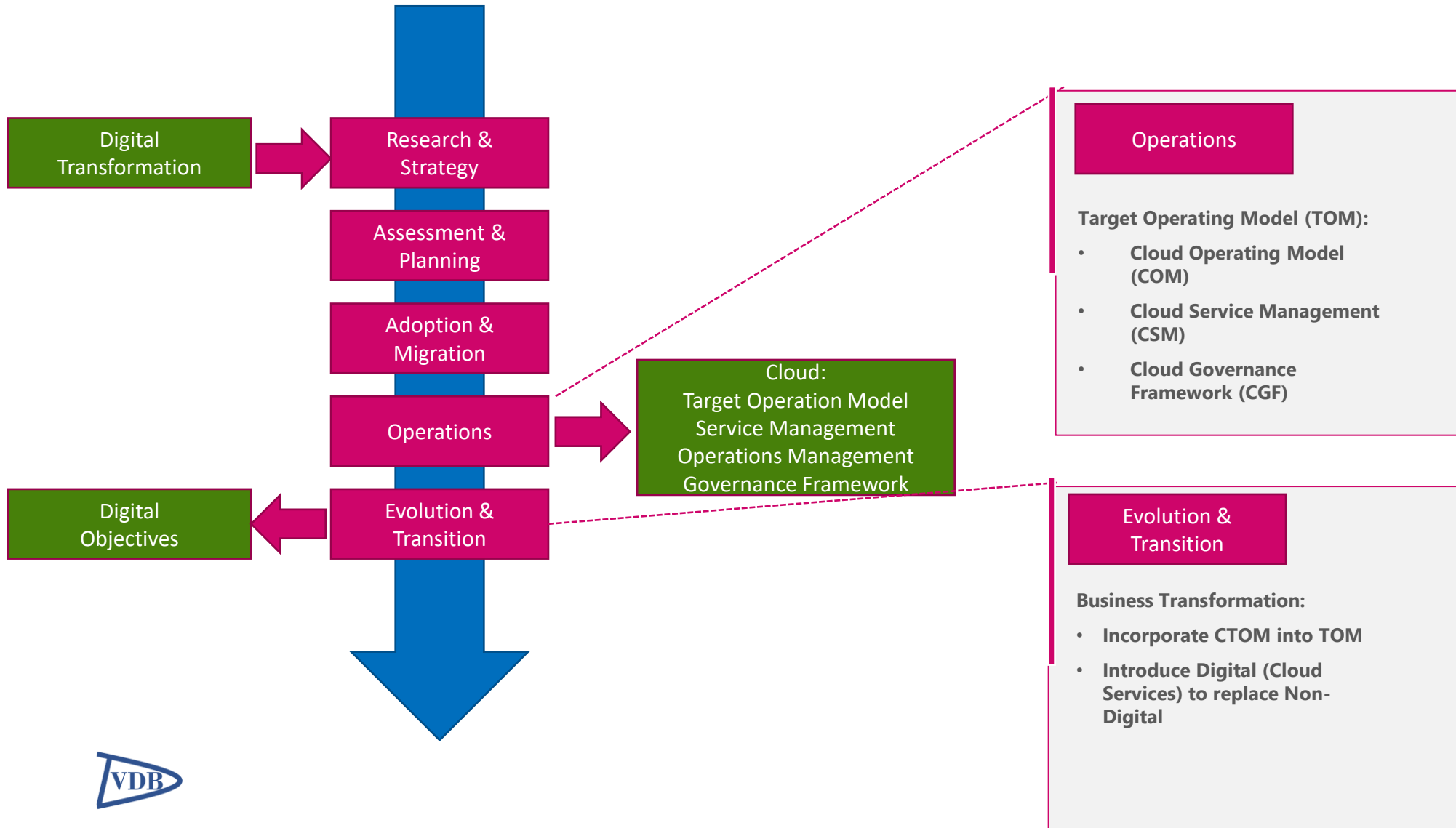
# Cloud Adoption: Framework



# Cloud Adoption: Framework

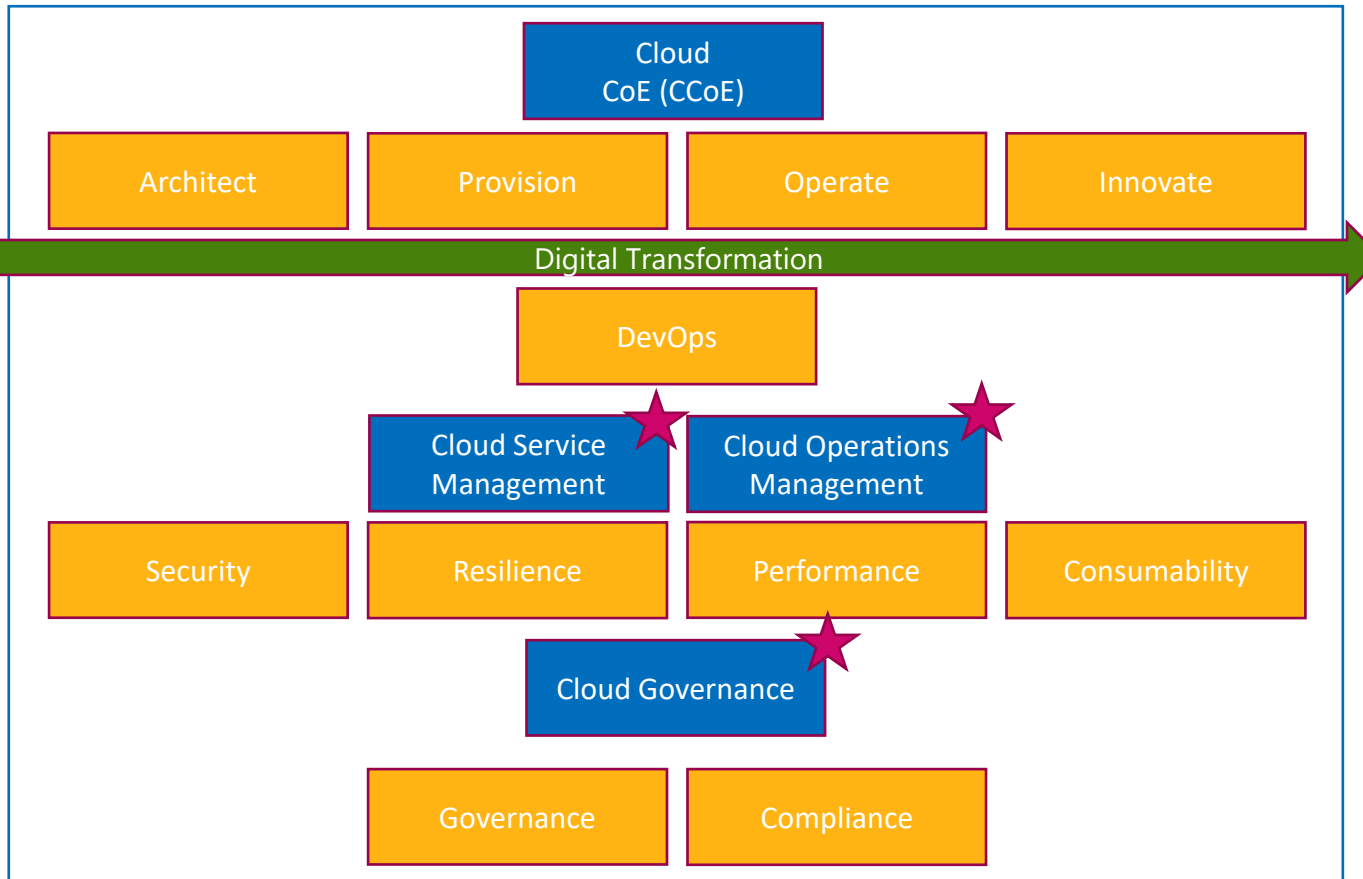


# Cloud Adoption: Framework



# Cloud Operations: Cloud Target Operation Model (CTOM)

## Cloud Target Operation Model



### Architect

- Design Authority
- Design Principles
- Security Model
- Integration

### Provision

- Self-Service
- Service Catalog
- Entitlements
- Orchestration

### DevOps

- Development
- Version Control
- CI
- Quality Assurance
- Approval
- Foundation

### Operate

- Fulfilment
- Monitoring
- Metering & Billing
- Backup & Archiving

### Innovate

- Big Data & Analytics
- Financial Analysis
- Business Intelligence
- Artificial Intelligence

### CCoE

- Design Authority
- Governance Board
- Architecture Assurance Board
- Cloud Security and Cyber Threat Management
- Metering, Billing and Accounting

# CTOM: Cloud Service Management (CSM)

## Cloud Service Management

- Business Support:
  - Contract Management
  - Inventory Management = service catalog
  - Accounting and billing
  - Reporting and auditing
  - Pricing and rating
- Provisioning and Configuration:
  - Rapid provisioning
  - Resource changing
  - Monitoring and reporting
  - Metering
  - SLA management
- Portability and Interoperability

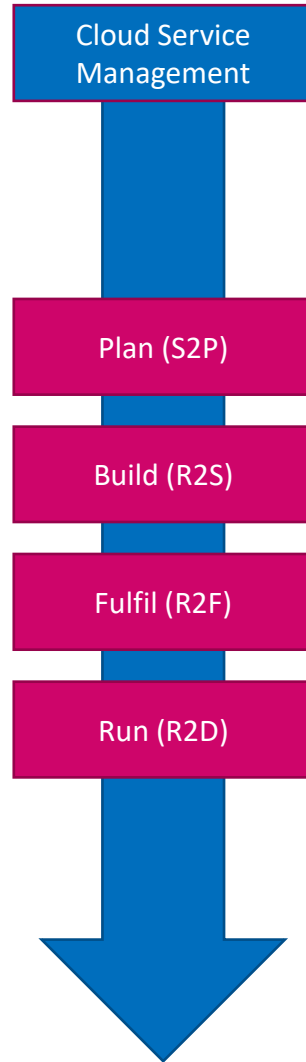


Service Value Chain:

- Plan: [Strategy to Portfolio \(S2P\)](#)
  - Portfolio: transition, production, retirement
  - Policy: regulatory, compliance, security, pricing and costing
  - Demand: deterministic, probabilistic usage
  - Finance: chargeback (cost) and showback (revenue)
- Build: [Requirement to Deploy \(R2S\)](#)
  - Defect & Test
  - [SLA: from SLA to XLA \(Experience Level Agreement\)](#)
  - Requirements management
  - Release & Component: lifecycle from inception to disposal
  - Capacity & Availability: auto-scale, bursting, redundancy, failover, disaster recovery, data replication to limit downtime, Component delivery lead time management
- Fulfil: [Request to Fulfil \(release/delivery\) \(R2F\)](#)
  - Offer management
  - Fulfillment: self-service portal
  - Catalog
  - Usage
- Run: [Detect to Correct \(R2D\)](#)
  - Incident Management: managing the lifecycle of an incident to restore regular operations as soon as possible, problem management (ITSM)
  - Event Management: service monitoring; detect, interpret and determine correct action
  - CMDB: asset management, change management
  - Runbook (automation)

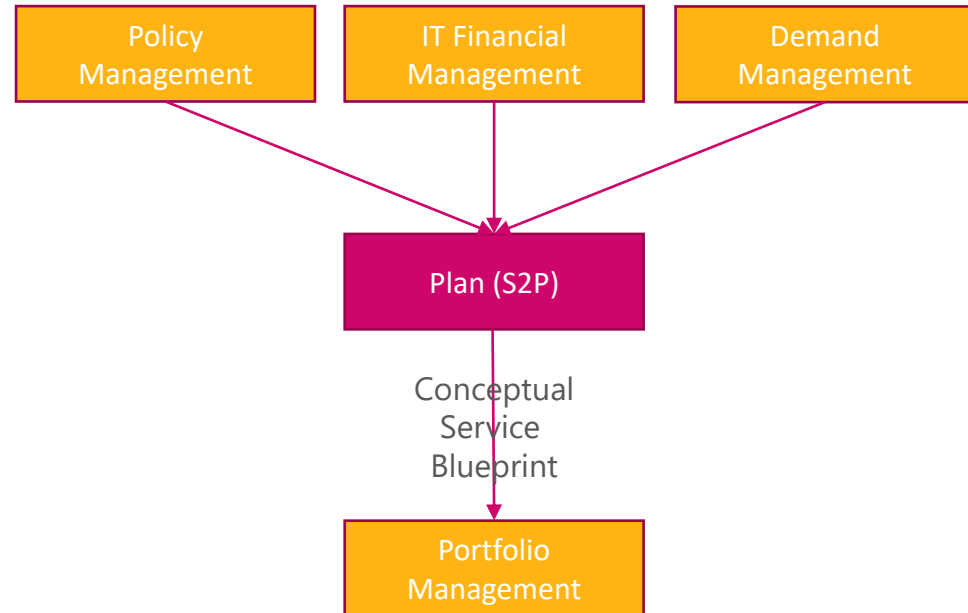


# CTOM: CSM

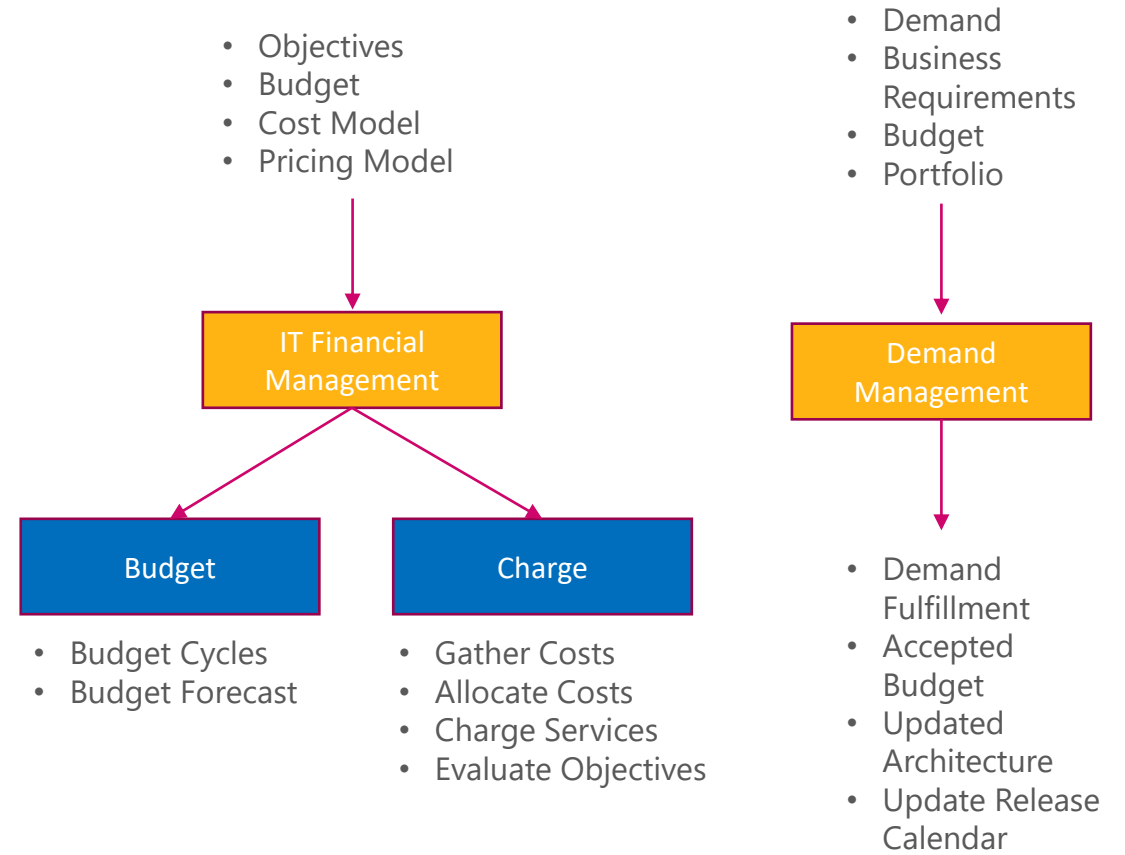
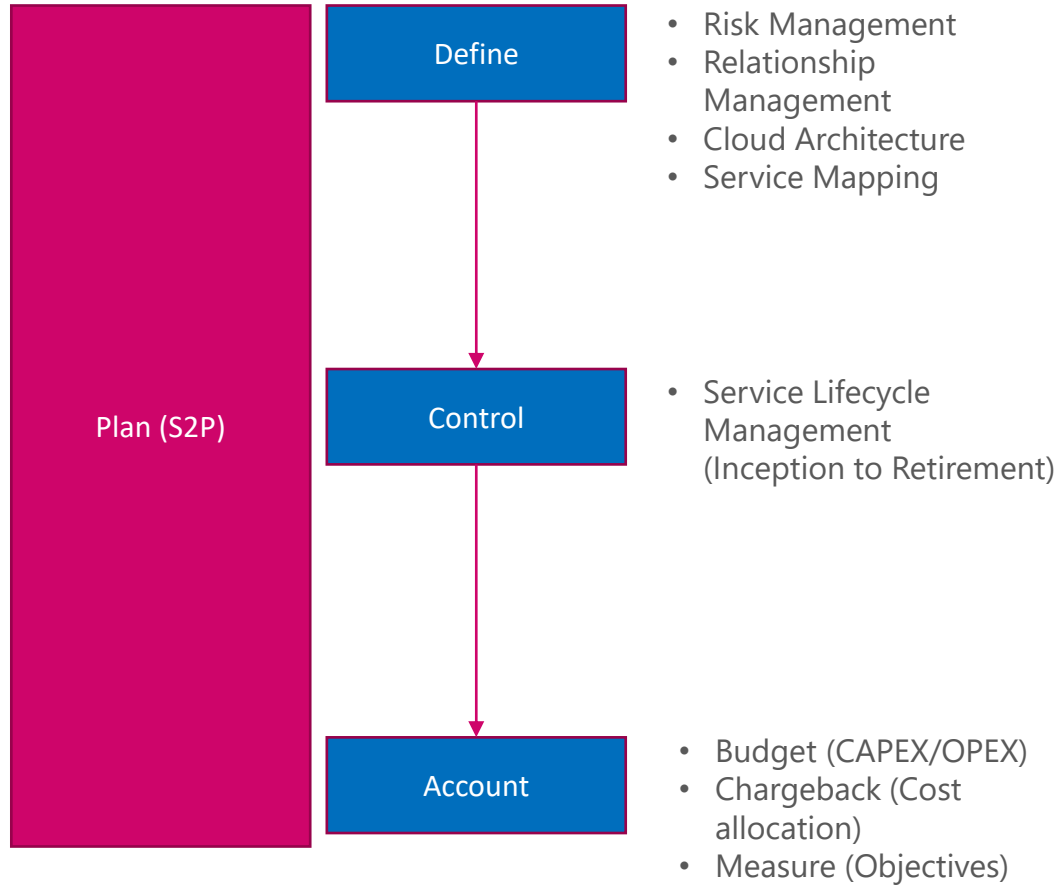


Plan: Strategy to Portfolio (S2P)

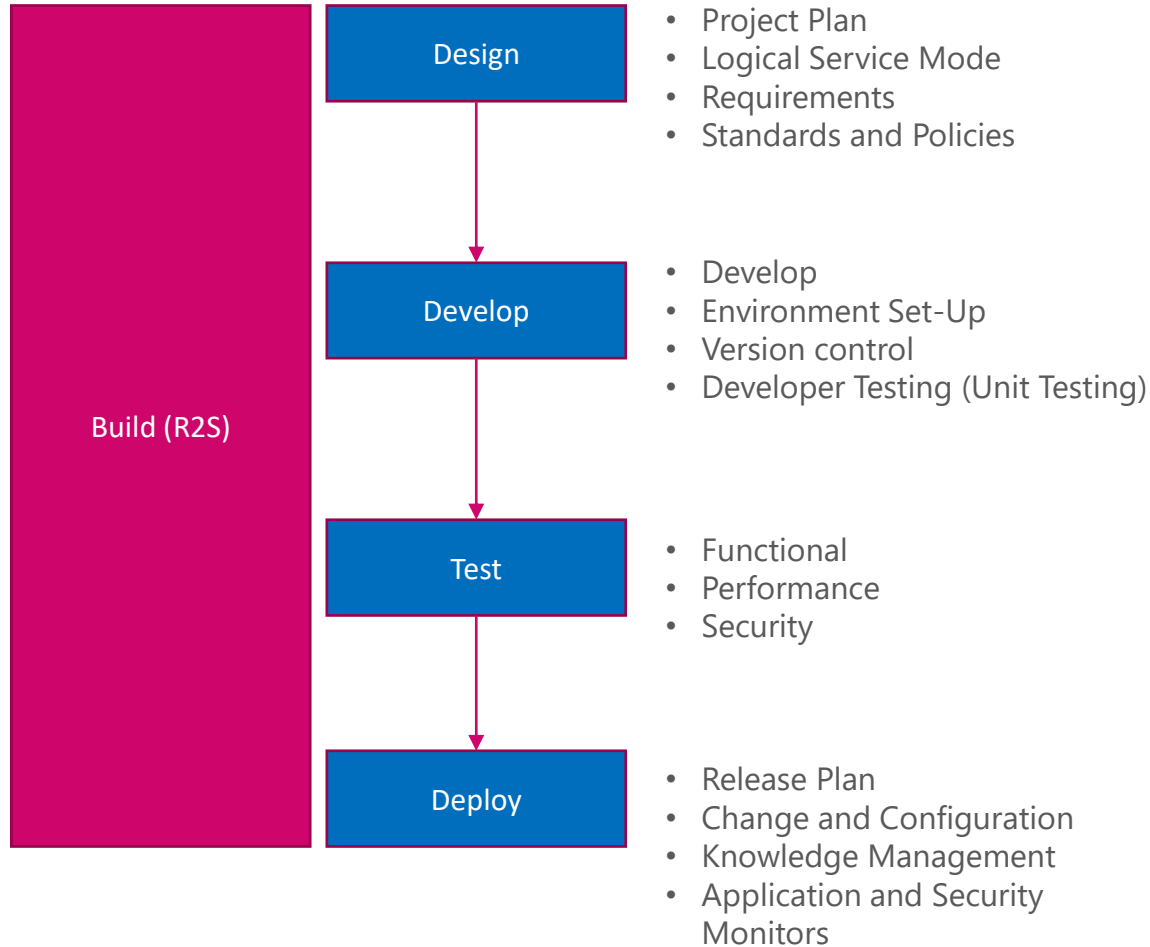
- Regulatory
- Compliance
- Security
- Organizational
- Pricing and Costing
- Budget
- Objectives
- Business Strategy
- Fixes, Change Requests



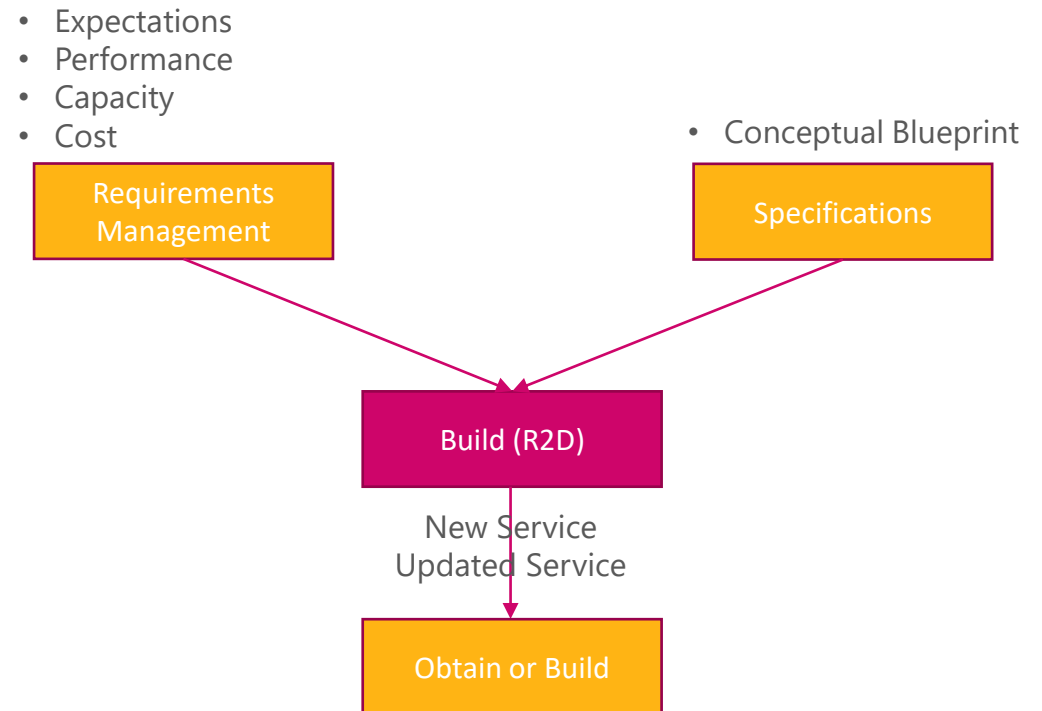
# CTOM: CSM



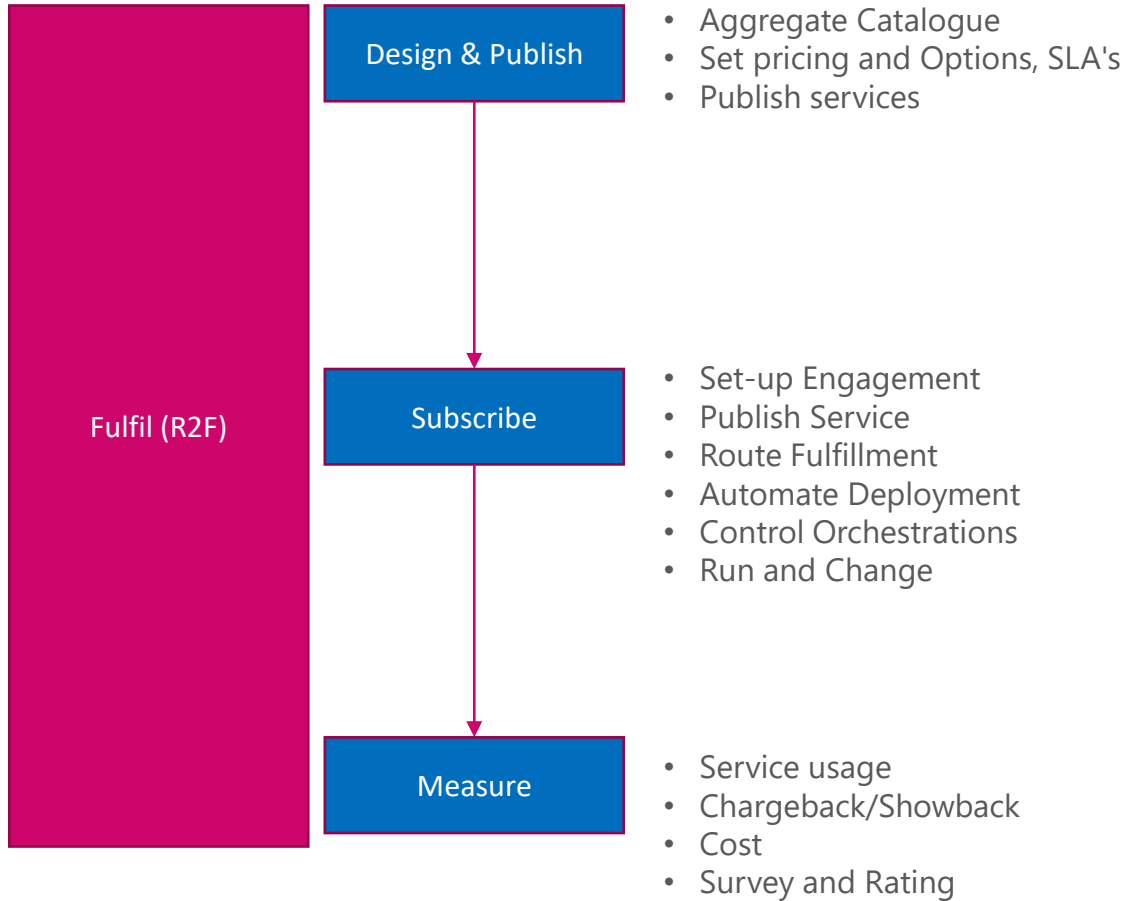
# CTOM: CSM



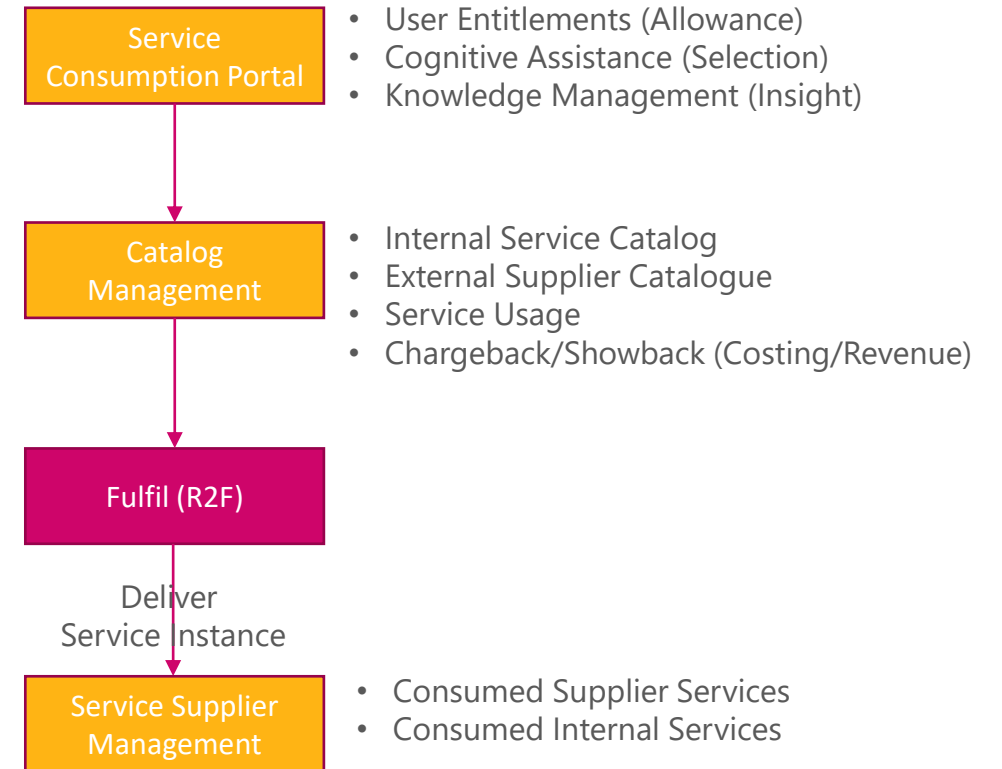
Build: Requirement to Deploy (R2D)



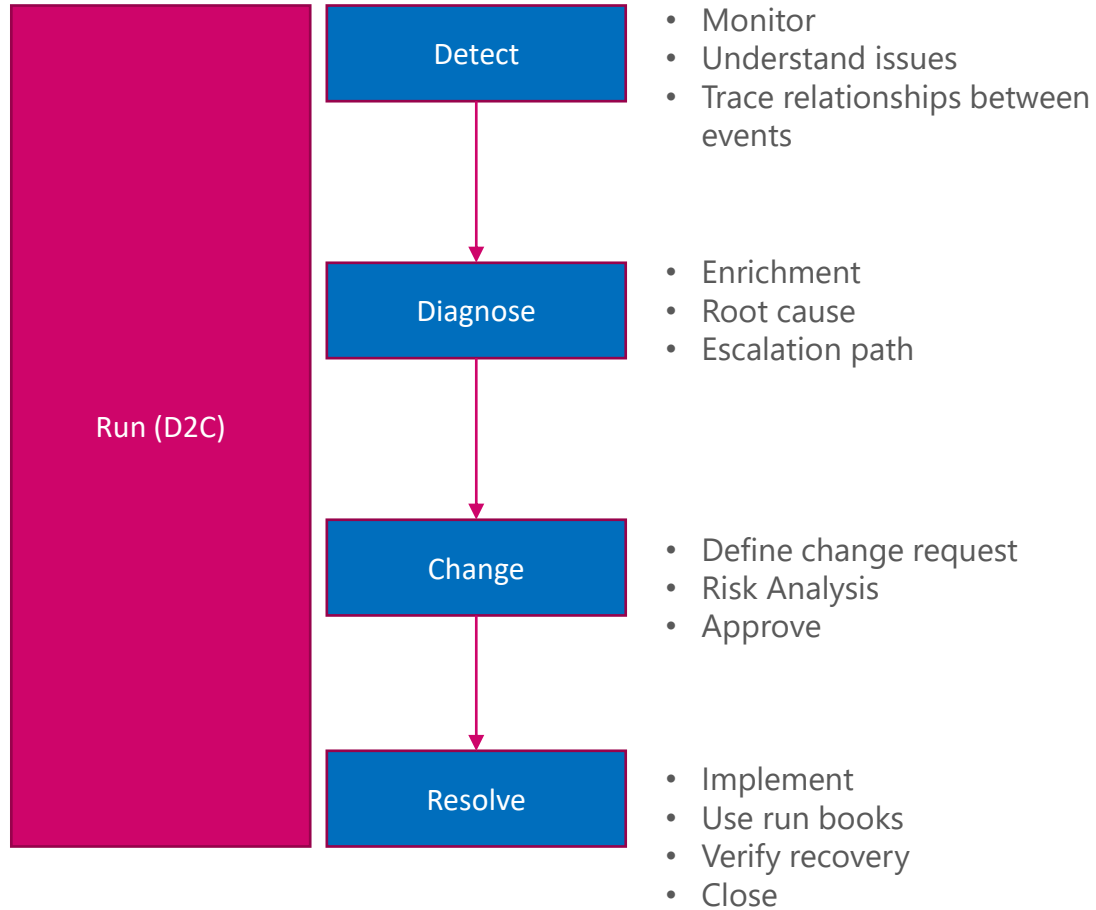
# CTOM: CSM



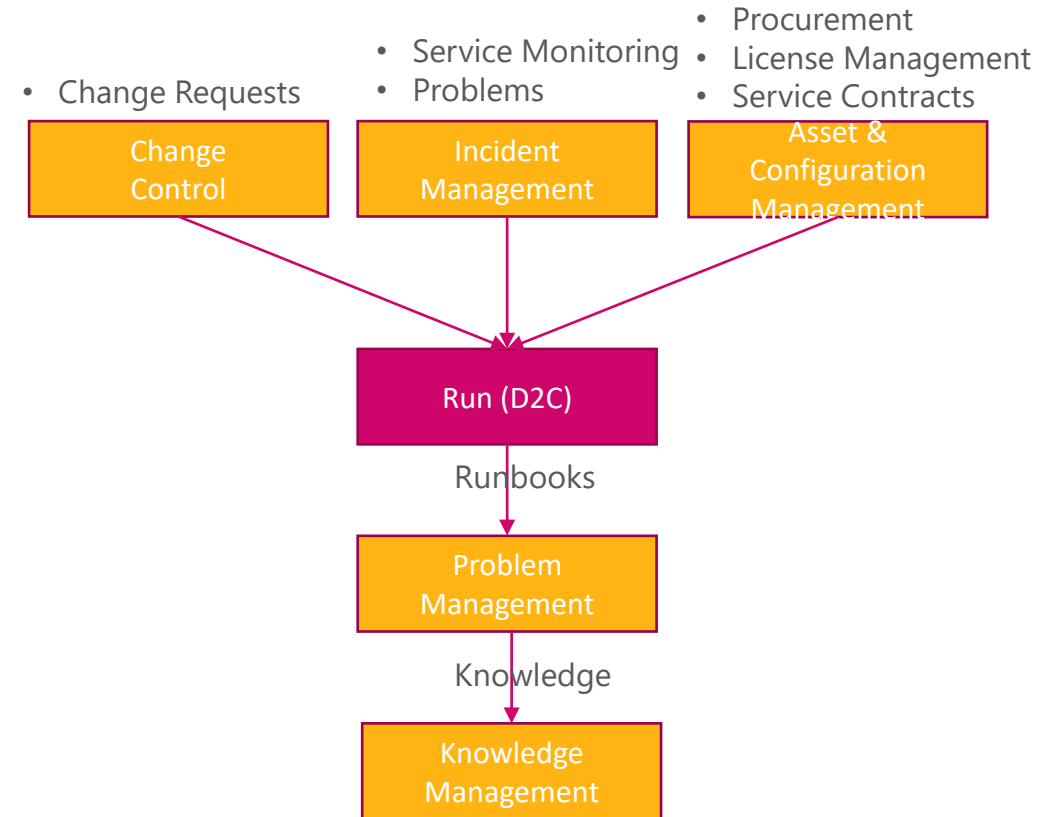
## Fulfil: Requirement to Fulfil (R2F)



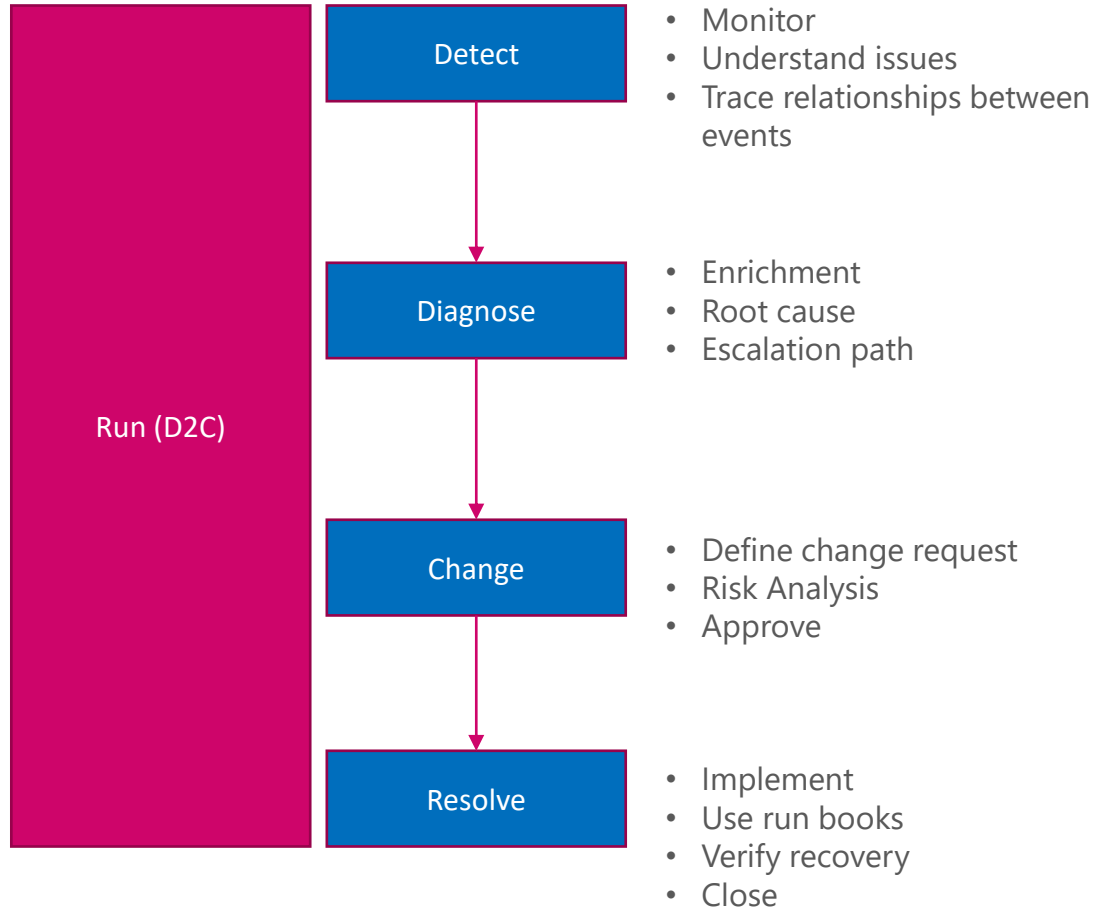
# CTOM: CSM



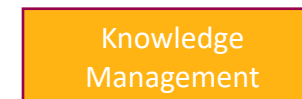
Run: Detect to Correct (D2C)



# CTOM: CSM



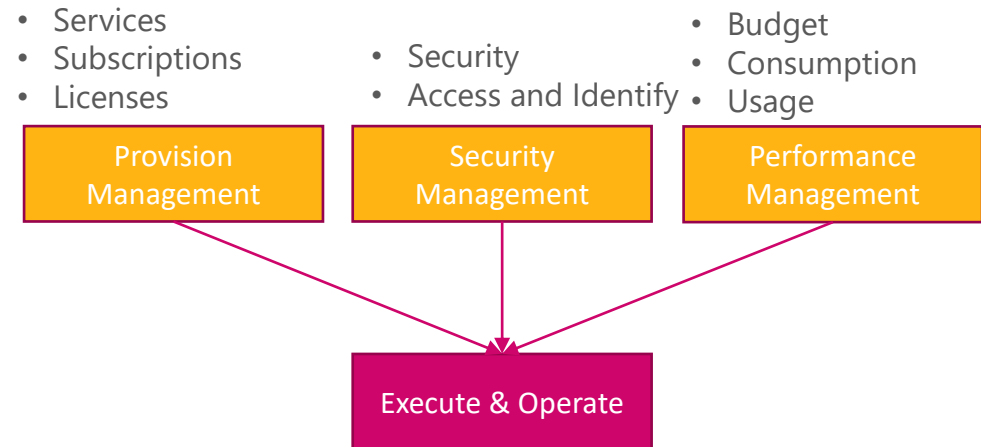
- Identification
- Containment
- Investigation
- Eradication
- Recovery



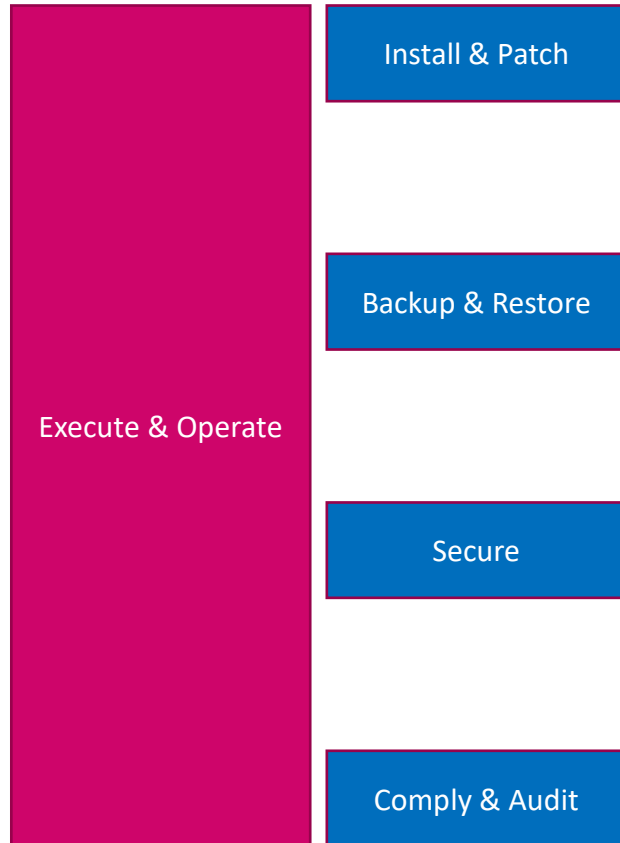
- Capture
- Refine
- Store
- Manage
- Disseminate



# CTOM: Cloud Operations Management (COM)

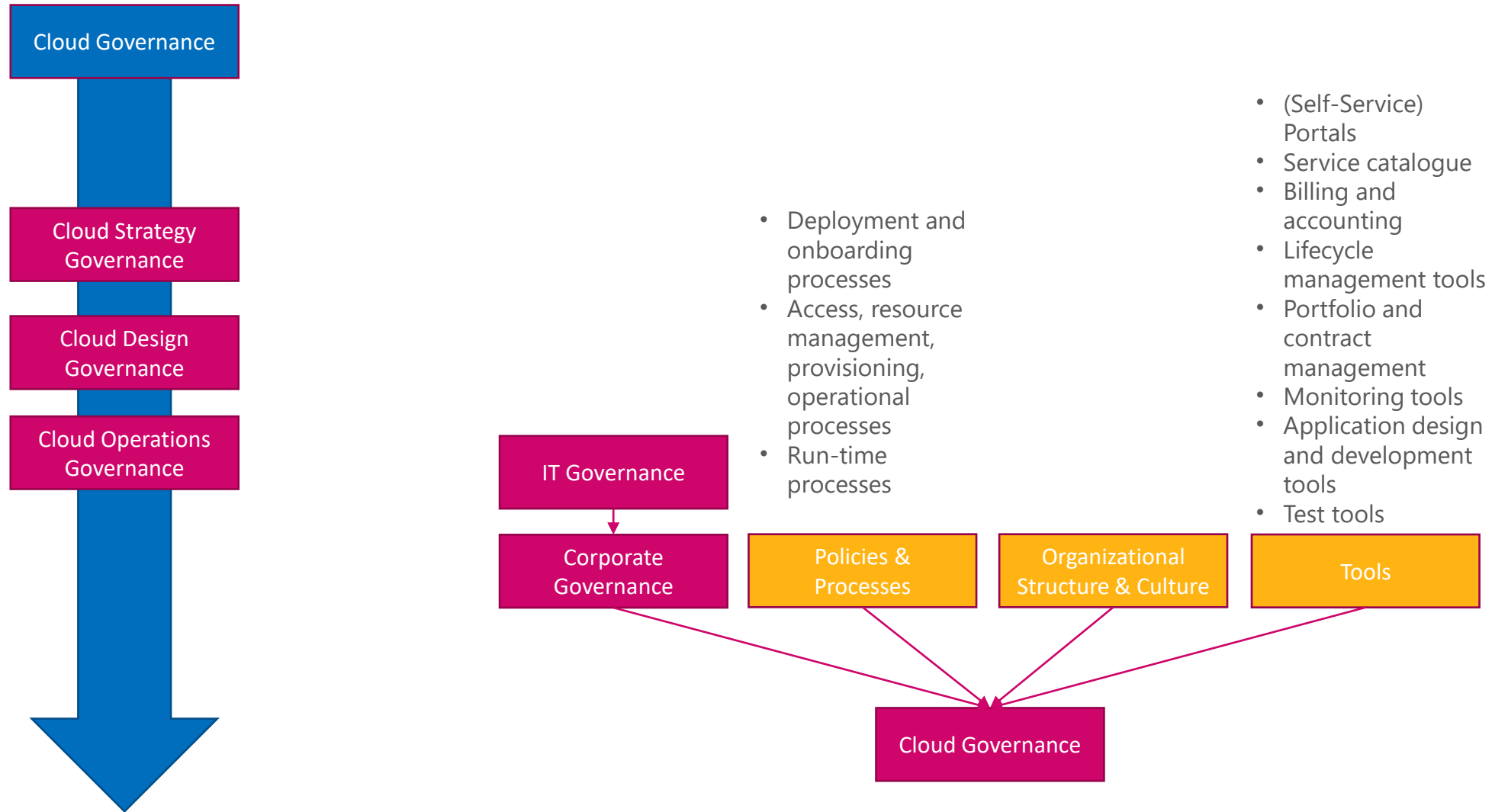


# CTOM: COM

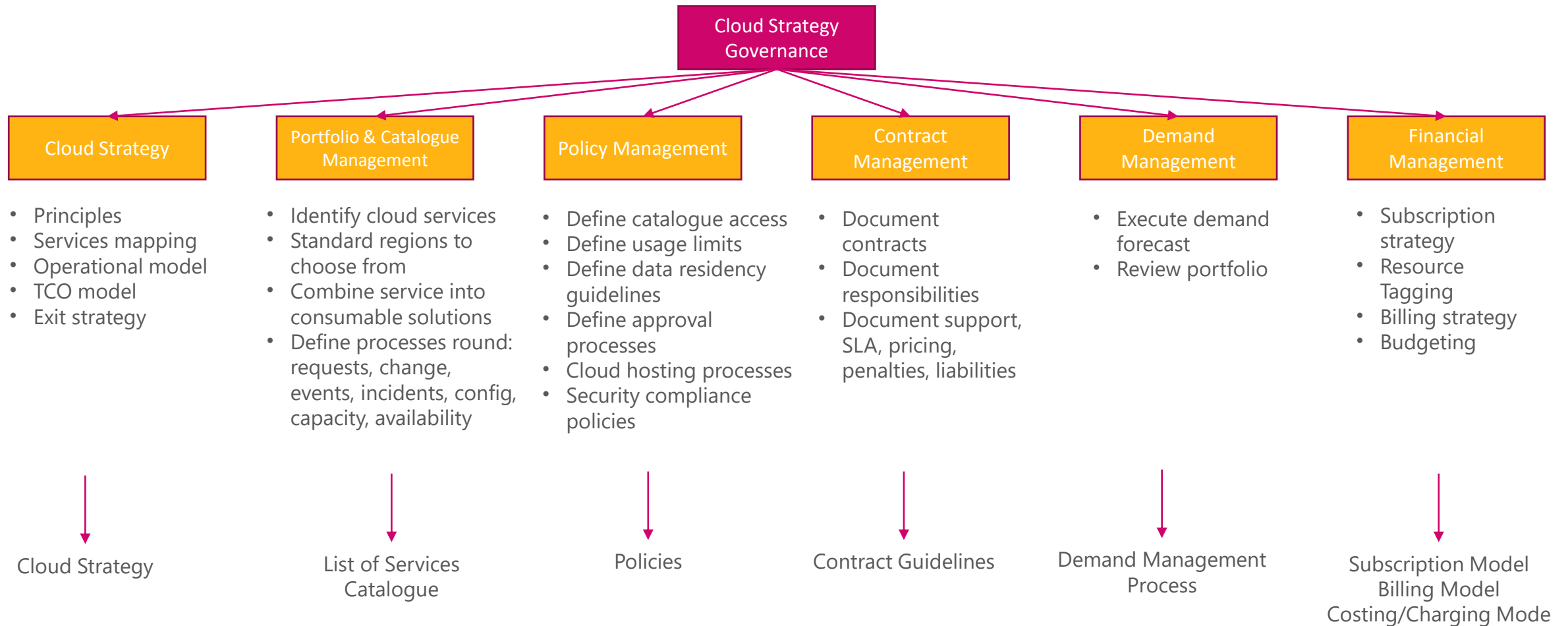




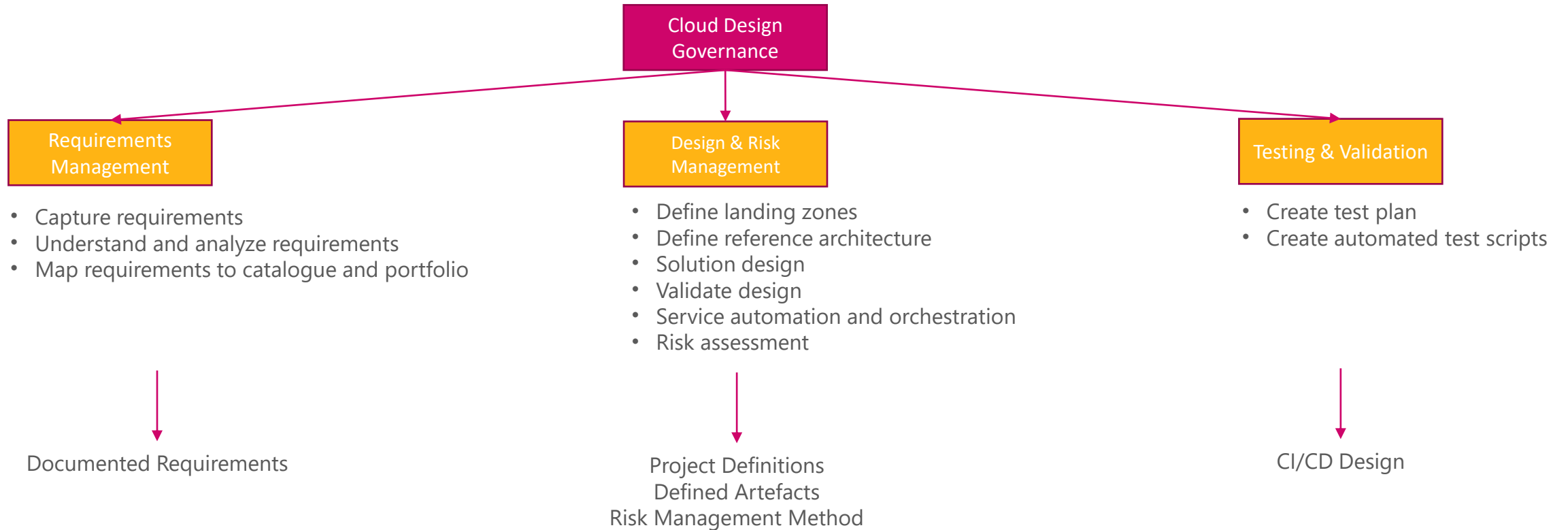
# CTOM: Cloud Governance Framework (CGF)



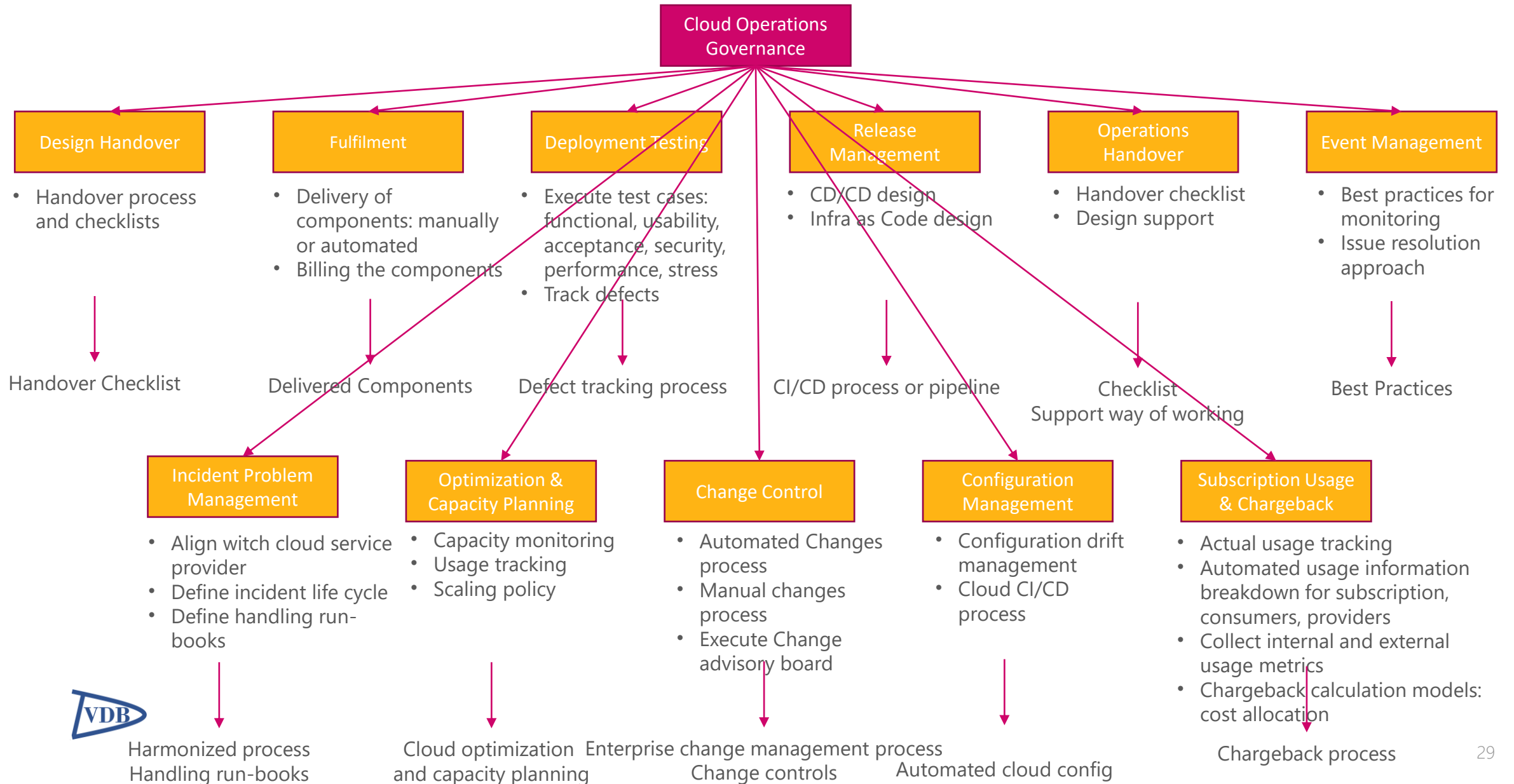
# CTOM: CGF



# CTOM: CGF



# CTOM: CGF



# CTOM: CGF Lifecycle





Appendix

# Digital Transformation: Roadmap

- Understand:

- See the future
- Create strategy

- Implement:

- Create a roadmap:
  - Change organization
  - Digital governance
  - Digital leadership
  - Digital organization
- Change solutions:
  - Service Product Design
  - Platform Mapping
  - Data Strategy
- Change Business:
  - Plan as a startup
  - Incubate (inside out)
  - Accelerate (outside-in)
- Change channels:
  - Customer Experience
  - Social growth

# Digital Darwinism

Technology & society are evolving faster than businesses can naturally adapt

- **Digital Natives**
  - people born in the digital age
  - selecting and consuming mobile, anytime, anywhere
- **Digital Immigrants**
  - reluctant adopters
  - accept technology but it feel unintuitive and hard to use for them
- **Digital Settlers**
  - where not born in the era of information technology
  - keep moving back & fort between real and virtual
- **Digital Voyeurs**
  - navigate widely in the digital world only to consume information without interactions
  - e.g. will never like something in Facebook but look at updates of others
- **Analog Holdouts**
  - people resisting digital change





# Cloud Computing

## Characteristics:

- On-Demand: self-service
- Broad Network: consume from anywhere in the internet, fast connection - limited latency, excellent QoS
- Resource Pooling: multiple customer served by same physical resources
- Rapid Elasticity: scale resources as per your need
- Measured Service: linked to billing, pay-what-you-use models

## Cloud Service Models:

- SaaS
- PaaS
- IaaS
- XaaS = Anything as a Service

## Deployment models:

- Private Cloud
- Public Cloud
- Hybrid Cloud
- Community Cloud
- Government Cloud
- Multi-Cloud

# Cloud: Supply-Chain & Services

## Cloud Supply-Chain

- **Cloud Consumer:** consumes cloud services
  - <-> Cloud Carrier: connectivity and transport of cloud services
- **Cloud Provider:** cloud service provider CSP, makes service available
  - Primary CSP: services hosted on owned infrastructure
  - Intermediary CSP: service delivered making use of services of Primary CSP
- **Cloud Broker:** manages the use, performance and delivery of services, negotiates between cloud providers and cloud consumers
  - Cloud Aggregator, Cloud Integrator, Cloud Customizers
- **Cloud Auditor:** conduct and independent assessment of cloud service

## Everything as a Service - XaaS:

- **Service Chain Entity:** creator, provider, supporter, integrator, orchestrator, consumer, payer
- **Service Economics:** cost model, chargeback, show back
- **Service Function:** name, function, utility, description, warranty
- **Service Support:** SLA, ownership, groups
- **Self-Service**
- **Service Monitor and Control:** instrumentation, monitoring boundaries
- **Service Security:** authentication, access control, permissions
- **Service Usage and Billing:** metering and billing, unit measurement, service consumption
- **Service Consumption**

# Cloud Architecture

## Cloud Toolchain

- **Build Tools:** configure, manage dependencies; create artefacts, run tests
- **Cost Management:** monitor and analyze cloud expenses
- **Cloud Optimization:** optimize usage to avoid over-buy
- **Cloud Integration:** integrating cloud-based and cloud with on-premises
- **Cloud Infrastructure Management:** cross-platform management tool infra for public, private and hybrid to have consistent governance and security
- **Cloud Data Integration:** manage data breach risks
- **Cloud Configuration Management:** Infrastructure as Code
- **Cloud Management:** monitoring, automation and governance of infrastructure and applications
- **Cloud Automation:** DevOps to have faster delivery and updates

# Cloud Computing: Cloud First

**Cloud native** means container-based environments i.e. services packaged in containers, deployed as micro-services and managed on elastic infrastructure through agile DevOps processes and CI/CD workflows

Supporting Technologies:

- **Password-less protection**: multi-factor authentication (MFA) where one key is unlocked via bio-metrics or pin (MS Hello for business)
- **Microservices**: application or services broken down in smaller units and combined using standard interfaces which are modular and agile in contrast with monoliths having elongated development, testing and upgrade cycles
- **Containerization**: containers run one OS vs. VM's running multiple OS's, containers simplify and reduce costs
- **Serverless**: abstraction between application and compute resources
- **IoT**: network connected devices generating potentially large amounts of data. Data is business value: used in forecasting, planning and maintenance
- **Edge computing**: to mitigate bandwidth and latency issues between location that produces data and data centers or cloud that consumes/processes the data
- **Internet of Value (IoV)**: electronic wallet, financial freedom and value exchange without intermediaries (Blockchain) - **Economy of Things (EoT)**

# Cloud Adoption: Performance Metrics

## Performance Metrics:

- Level of cloud adaption:
  - % of projects
  - % of cloud services
  - % subscribed users
  - Actual / Expected consumption
- Level of governance:
  - % of executed reviews
  - # of planned / actual
- Operational Efficiency:
  - Reported incidents
  - Average time to deploy
  - Average time to onboard
- Cost reduction
  - % of allocation IT budget
- Business value:
  - % of idle services
  - % SLA's met
- Service driven integration
  - % of services provide services / total number of services
  - Number of SLA's with exceptions
- Risk mitigation
  - % compliance with security policy
  - % schedule variance
  - # of incidents
  - Severity of exceptions

# Cloud Adoption

## Challenges:

- To many choices
- Operational complexities
- Security requirements
- Legacy technology
- Skill shortages
- Shadow IT
- Service quality
- Legal implications

## Stages:

- Application transformation:
  - Lift and Shift
  - Partial Refactoring
  - Refactoring
- Network Transformation
- Security Transformation

# Cloud: Managed Cloud Service Providers (MCSP)

## Benefits:

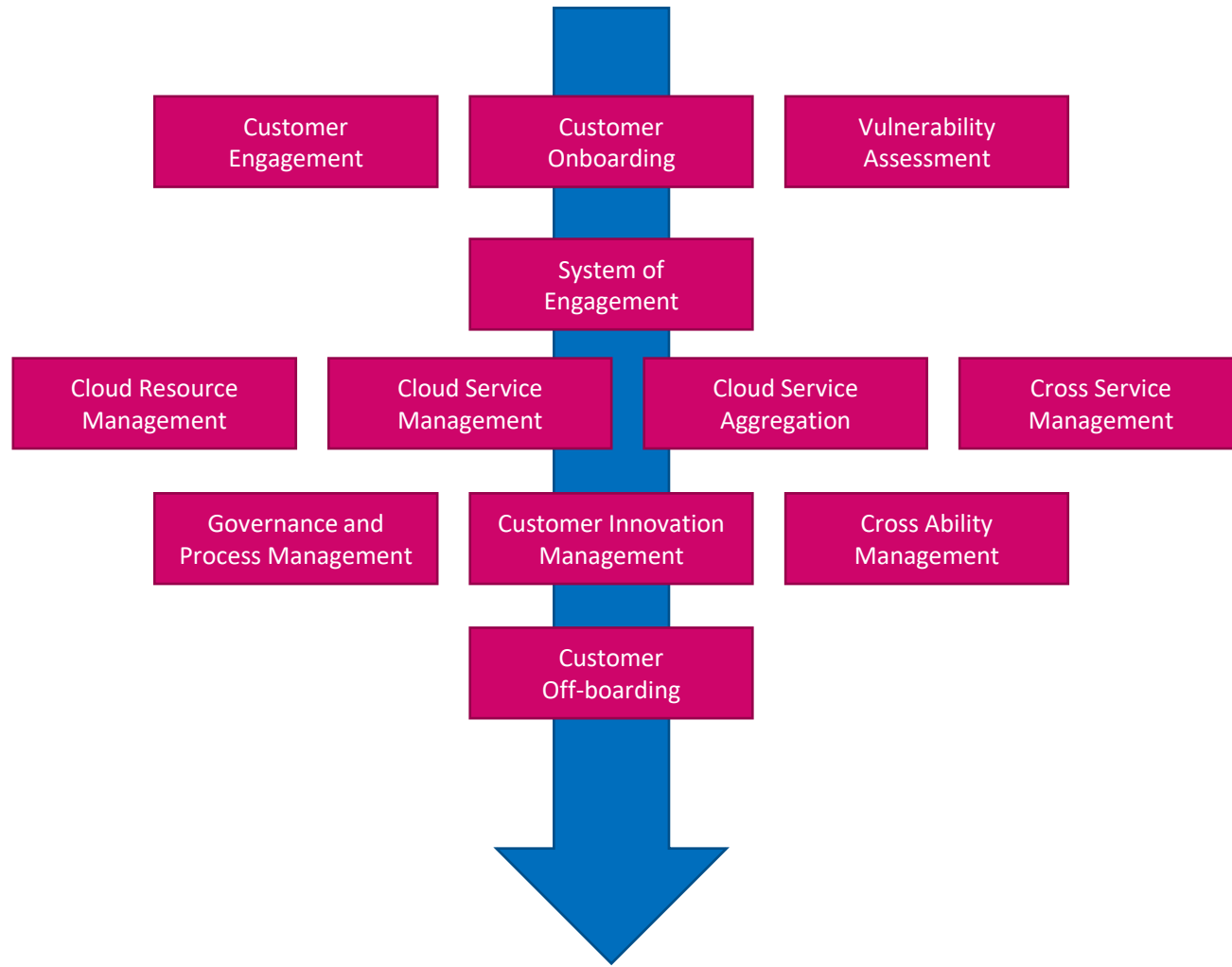
- **Better Control:** provisioning from a centralized provisioning platform
- **Business Agility:** SLA based business solution
- **Cost Management:** CAPEX to OPEX switch
- **Reliability and Privacy:** high-availability, resilient, redundant, virtual private cloud, encryption
- **Speed to Value:** no lead time and bottle necks
- **Security**

## Capabilities:

- Cloud Target Operating Model
- Cloud and Digital Accelerators
- Billing and Consumption Transparency
- Automation and DevOps
- Ready-to-go Cloud Platform
- Fully Managed Cloud and Digital Services
- Self-Service Catalog
- Anti-lock-in: vendor neutral and cloud agnostic
- Centralized User Portal
- Cloud Workload Migration



# Cloud: MCSP Framework



- Customer Engagement: as-is state
  - Cloud Assessment
  - Migration Preparation
  - Migration Enablement
- Customer Onboarding:
  - Design & Development
  - Network & Port Setup
  - Infrastructure Provisioning
- Service Enablement
- Vulnerability Assessment: identify, quantify and prioritize vulnerabilities
  - System of Engagement
  - Self-Service
  - Subscription
  - Service Catalog
  - Entitlements
- Cross Service Management:
  - Support
  - Service Delivery
  - Metering
  - Prevent & Manage
- Cloud Resource management
  - SaaS
  - PaaS
  - IaaS
- Cloud Service Aggregation:
  - AWS
  - MS
  - Google
  - Alibaba
- Governance and Process Management
  - Operation Governance
  - ITSM Process Management
  - Integration Management
- Customer Innovation Management: making sure the full digital potential of the cloud is realized
  - DevOps
  - Containers
  - Integration
- Cross Ability Management:
  - Security
  - Resilience
  - Performance
  - Consumability
  - Compliances
  - Monitoring
- Customer Offboarding
  - Account Removal
  - Data Transfer
  - Security Assessment





# Cloud Service Management

- Availability
- Policy
- Service Portfolio
- SLA's / OLA's



- Service Blueprint

# Cloud Governance

## Governance Domain

Incident  
Management

Problem  
Management

Change  
Management

Cloud  
Operation

Reporting and  
Dashboarding

# Sources

