Modernize Your SAP Landscape with Cloud Automation

lemongrass

**SAP on Cloud** | Hyperscale. Hyperspeed. Hypercare.

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Agenda

- Introductions
- Lemongrass Overview
- Customers' views on SAP on Cloud
- Cloud Operating Model
- Automation Framework
- Minimized Downtime Operations (MDO™)
- RISE with SAP
- RISE Centric Capabilities
- Q&A

We are Lemongrass

SAP + [cloud] = lemongrass
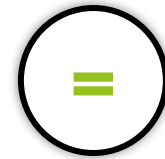
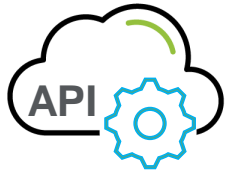| SAP as Part of a Digital Process	SAP Digital Service Delivery	SAP on Native Hyper-Scale Cloud	Native Cloud Operating Model	SAP Part of Enterprise Data Model	SAP on Cloud Automation
SAP API Engine	Lemongrass Service Portal	aws / Azure / Google Cloud Platform / RISE WITH SAP	Patterns, Architecture, Skills	SAP Data Connector	Lemongrass Cloud Platform (LCP)

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How We Deliver
Driving a Culture of Innovation

1k+
Cloud Certifications

330+
SAP Certifications

145+
Other Delivery Certifications

700+
Experts Across the Globe

220+
SAP Engagements in 20+ Countries

8k+
SAP Servers Under Management

750k+
SAP Users Supported

Product Development
United States, United Kingdom, Argentina, South Africa, Philippines, India

Offshore Delivery
Mexico, Argentina, South Africa, Philippines, Malaysia, India

Operating Regions
Americas, EMEA, APAC

HM Government G-Cloud Supplier

ISO 9001:2015 MANAGEMENT SYSTEM MSECB CERTIFIED
ISO/IEC 27001:2013 MANAGEMENT SYSTEM MSECB CERTIFIED
ISO/IEC 27018:2019 CODE OF PRACTICE MSECB ATTESTED
AICPA SOC

Cloud Operating Model

SAP Journey to Cloud

Automation delivers the key features of Cloud

What SAP Customers Want

What is available

Innovation

| Express Labs | S/4 MVP | Data Integration |
| Custom POCs | Innovation Sessions | |

RISE

SAP RISE

Agility

| DevOps for SAP | Digital Catalog |

Cloud Platform

Operational Excellence

Operate | Implement

| BasisOps | SecOps | Greenfield | Modernize |
| SysOps | 0h-Maint. | Lift & Shift | LCP Migrate |

RISE

SAP RISE

Business Case

| Migrate Assessment | Discovery | FinOps |
| Health Assessment | Business Case | |

RISE

SAP RISE

| Lemongrass Services for RISE | SAP RISE Services |

Customers' Views on SAP on Cloud

How to discover and remove barriers?

SAP runs cheaper in its own Data Center?

SAP workloads not Cloudy enough?

Siloed Ops - Not seeing promises?

Appears the same as running on-premises?

How to leverage native Cloud innovations?

"Customers seem to fully understand and leverage the Cloud only after, they've already moved to it"
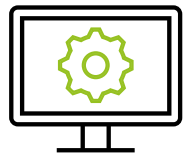
Adopt a Cloud Mindset

Getting SAP to the Cloud is not enough.

Define a comprehensive **Service Catalog**

…enabled by Tooling & **Automation**

…delivered by a **Cloud Operating Model**

…..underpinned by **experience and methodologies**
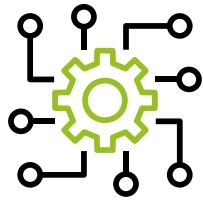
Technical Design – Landing Zone, Target Layout Design, System Design, Recoverability Design, **Tools and Automation**, **Operate Design. Technical Build, Test and Go Live**.
Leverage a proven methodology for the Migration and Implementation and ensure a 100% success rate.

Putting the Cloud in SAP

RISE with SAP and Cloud Native Enablement

Cloud Operating Model

Cloud Adoption

SCP — Cloud platform
HCS — HANA Cloud Service
SaaS — Salesforce, Zendesk, Marketo...
C/4HANA — Customer experience
LoB — Success Factors, Ariba, Fieldglass, Concur

Innovate and Accelerate

Tying SAP **Data sources** in with Other Data sources including unstructured data, Cloud Native generated data, 3rd party data and using advanced tools: Datalakes, AI/ML etc.,

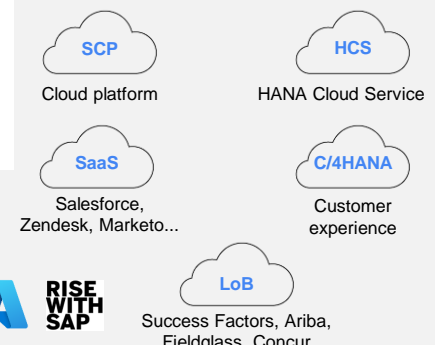**Enable systems of record to be systems of insight**

Modernize Operations

Leverage advanced capabilities for **Automation, Availability, Network, Performance** management, and **Flexible Commercial** models

Lift and Shift

Basic Cloud benefits including scalability, elasticity, consumption billing

Increasing **Agility**, decreasing time To **Value,** and enabling new **Insights**

SAP on Cloud Automation Evolution

Orchestration
Easy-to-use overview, alignment of automation content to Services, integration with ITSM

Open-Source Tooling
Publicly available content in open-source format for forking, with some support

Hyperscaler Tooling
Services from Hyperscalers which allow some build & maintenance on their platform

Proprietary Tooling
Compiled applications to cover some of the build & maintenance processes

Spot-Automation
Discrete and independent scripts to automate certain steps of build & maintenance

Console
Using the Hyperscaler Console to build each element, and manually maintain the various components (IaaS, OS, DB, App)

Leveraging High-Levels of Native Automation

Cloud native technology, provides unified Cloud orchestration management, operations and rapid access to new innovations on Cloud with any tool chain

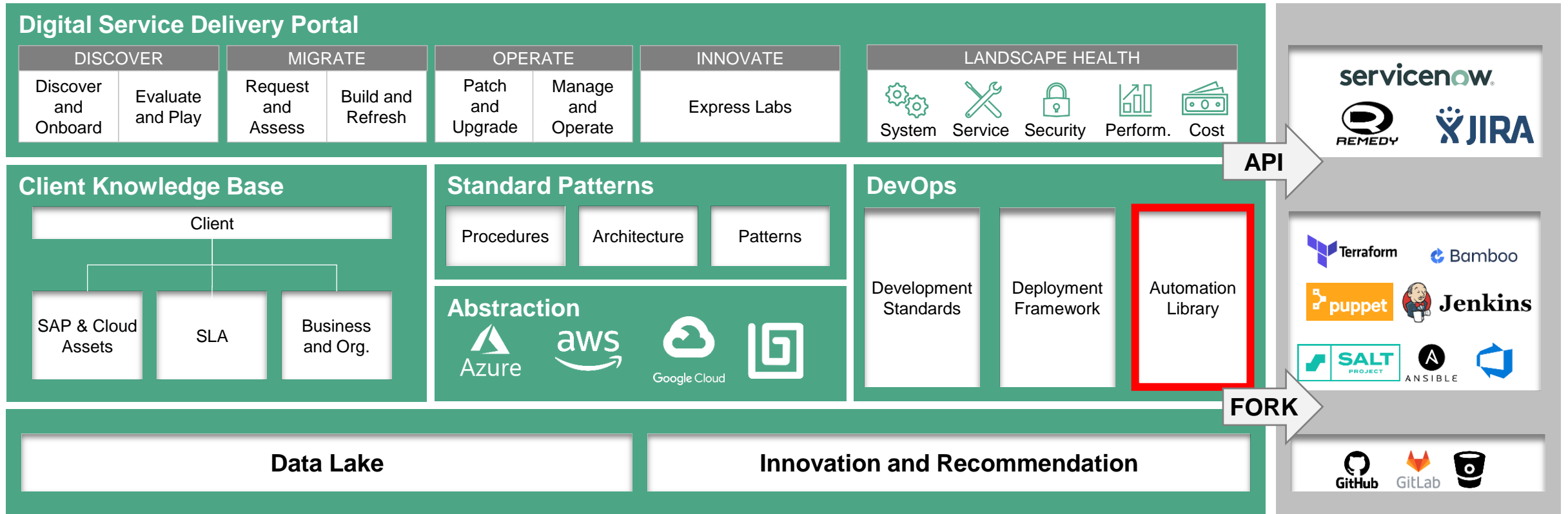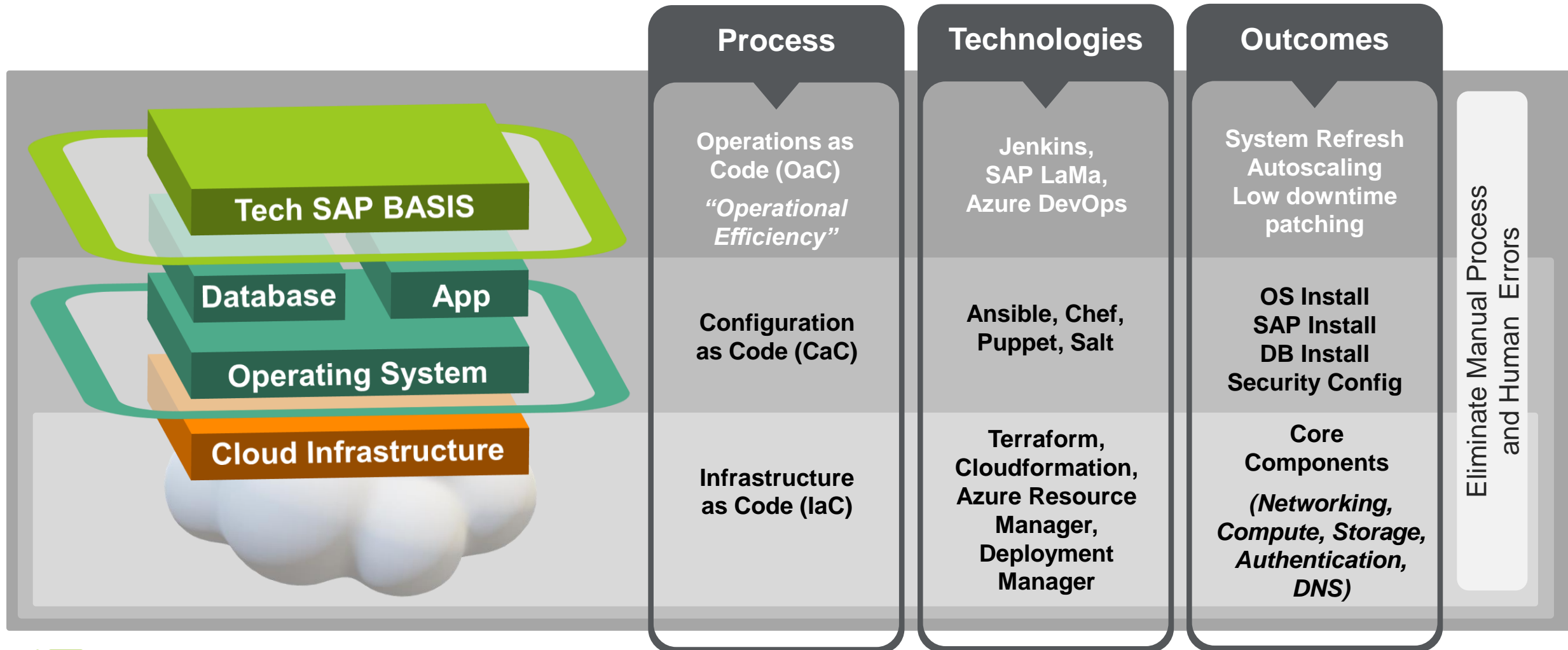## Digital Service Delivery Portal

DISCOVER		MIGRATE		OPERATE		INNOVATE
Discover and Onboard	Evaluate and Play	Request and Assess	Build and Refresh	Patch and Upgrade	Manage and Operate	Express Labs

LANDSCAPE HEALTH

System   Service   Security   Perform.   Cost

servicenow
REMEDY   **JIRA**

API

Client Knowledge Base

Client

SAP & Cloud Assets   SLA   Business and Org.

Standard Patterns

Procedures   Architecture   Patterns

Abstraction

Azure   aws   Google Cloud

DevOps

Development Standards   Deployment Framework   Automation Library

Terraform   **Bamboo**
puppet   **Jenkins**
SALT PROJECT   **ANSIBLE**

FORK

Data Lake

Innovation and Recommendation

GitHub   **GitLab**

Lemongrass Native Tool Chain   Client Tool Chain

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Modernize SAP Landscape Operations

Key Technologies

Tech SAP BASIS

Database **App**

Operating System

Cloud Infrastructure

Process	Technologies	Outcomes
Operations as Code (OaC) *"Operational Efficiency"*	**Jenkins, SAP LaMa, Azure DevOps**	**System Refresh Autoscaling Low downtime patching**
Configuration as Code (CaC)	**Ansible, Chef, Puppet, Salt**	**OS Install SAP Install DB Install Security Config**
Infrastructure as Code (IaC)	**Terraform, Cloudformation, Azure Resource Manager, Deployment Manager**	**Core Components** *(Networking, Compute, Storage, Authentication, DNS)*

Eliminate Manual Process and Human Errors

SAP Landscape Automation Capabilities

Automated Server Copy	Automated HANA Patching
SAP Aware Start/Stop	Automated Server Resize
Application Server Auto Scale	Auto DR Failover
OSS Note Import	Auto OS Patching
Environment Rebuilds	Auto DB Patching

Infrastructure as Code

- Automate infrastructure provisioning
- VM deployments
- Storage configuration
- Network configuration

Configuration as Code

- OS parameters
- Auto install of DB
- DB parameters
- SAP application install
- Add-on installs
- Baseline security
- HA configuration
- DB replication
- Non-HANA log shipping

Operations as Code

- Bill of Materials
- Service Contracts
- Operational State
  - Confirm configuration
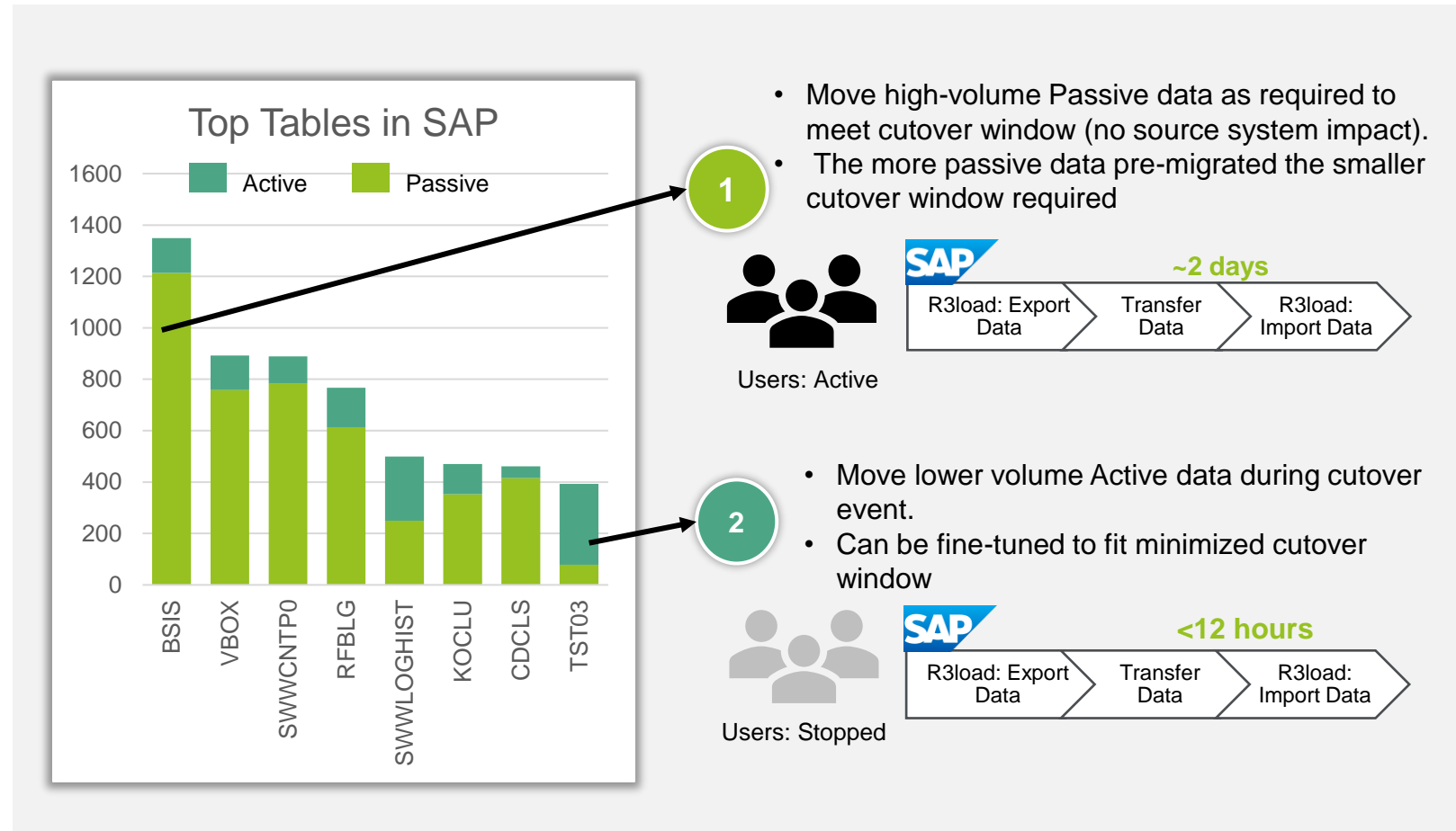 - Validate patch levels
- Backup Status

Large Heterogeneous Migrations

A combination of software and services that enables companies to seamlessly migrate double-digit or triple-digit terabyte SAP databases to hyperscale Cloud with guaranteed low downtime

- Incremental approach for large heterogeneous migrations
- Can be combined with upgrade
- Allows removal of technical and/or historical data
- Minimal impact to workloads on production systems
- SAP supported

Top Tables in SAP

1
- Move high-volume Passive data as required to meet cutover window (no source system impact).
- The more passive data pre-migrated the smaller cutover window required

Users: Active

~2 days

R3load: Export Data → Transfer Data → R3load: Import Data

2
- Move lower volume Active data during cutover event.
- Can be fine-tuned to fit minimized cutover window

Users: Stopped

<12 hours

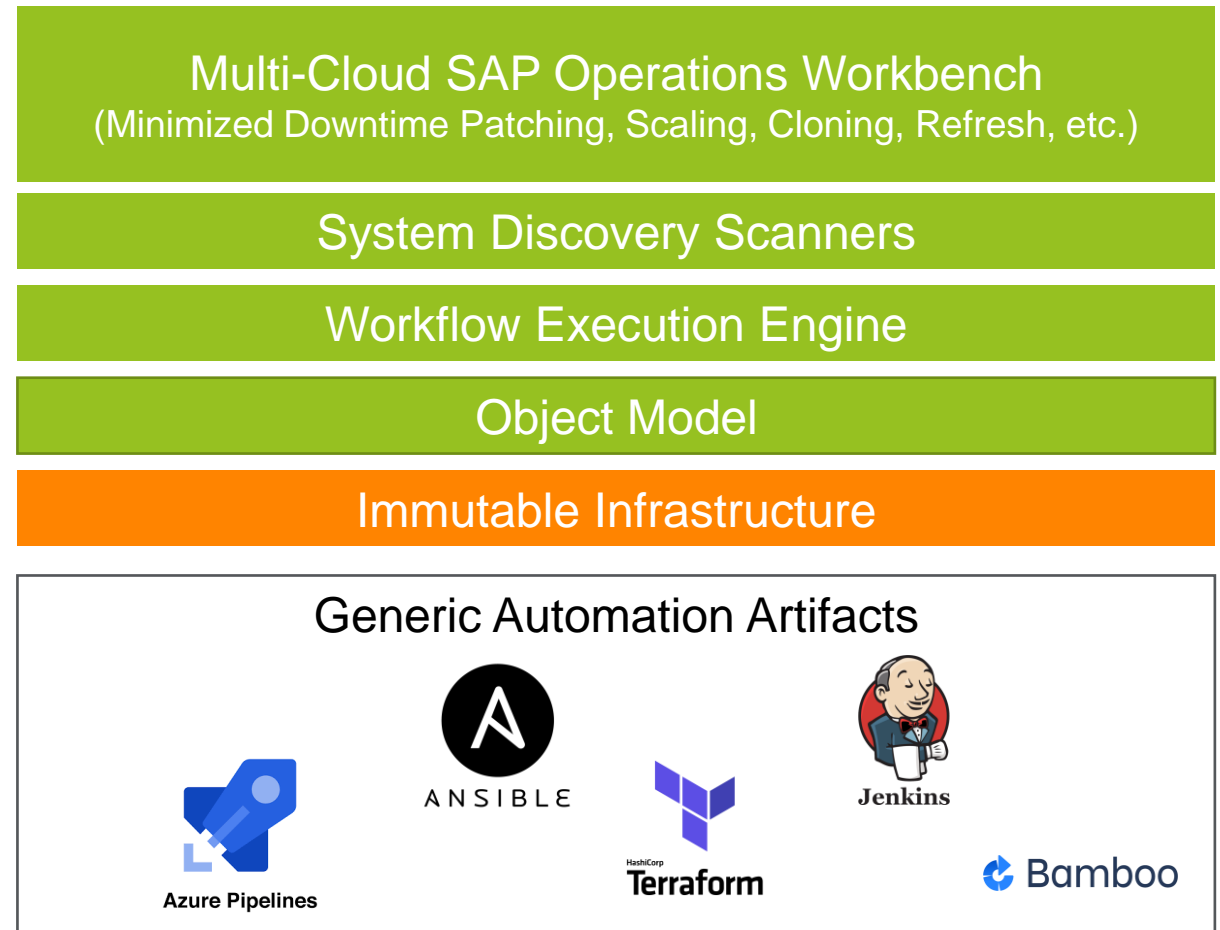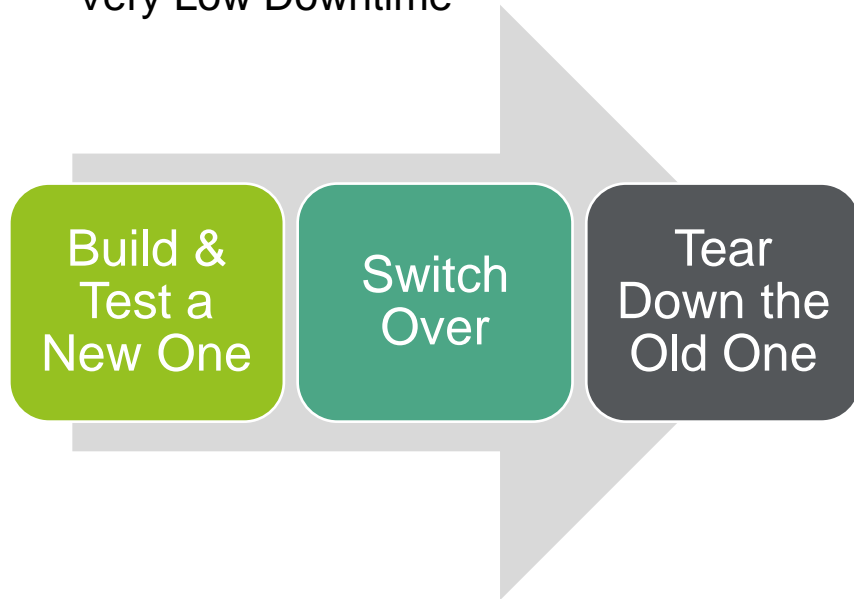R3load: Export Data → Transfer Data → R3load: Import Data

MDO™ (Minimized Downtime Operations) for SAP

Applying the concept of an immutable SAP platform, patent-pending MDO (Minimized Downtime Operations) revolutionizes the customer experience for running SAP in the Cloud.

A solution that allows customers or consultants to trigger, monitor, and schedule significant operations on SAP Systems and the infrastructure on which they reside, with:

- Very Low Complexity
- Very Low Effort
- Very Low Downtime

Build & Test a New One → Switch Over → Tear Down the Old One

Multi-Cloud SAP Operations Workbench
(Minimized Downtime Patching, Scaling, Cloning, Refresh, etc.)

System Discovery Scanners

Workflow Execution Engine

Object Model

Immutable Infrastructure

Generic Automation Artifacts

Azure Pipelines   ANSIBLE   HashiCorp Terraform   Jenkins   Bamboo

LCP: Integrated Automation Platform

Customers are in Full Control

- Choice of hyper-scaler, region, and CI/CD pipeline
- Multi-Tenant or Dedicated Clusters

Your Application Your Way

- Generic UI Types that enable rapid deployment
- Low code declarative environment to enable faster customer customization
- Flexible Roles & Permissions Setup
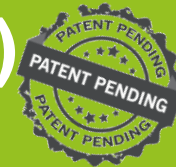
One Application to Integrate Them All

- Integrate Existing Pipelines & Automation
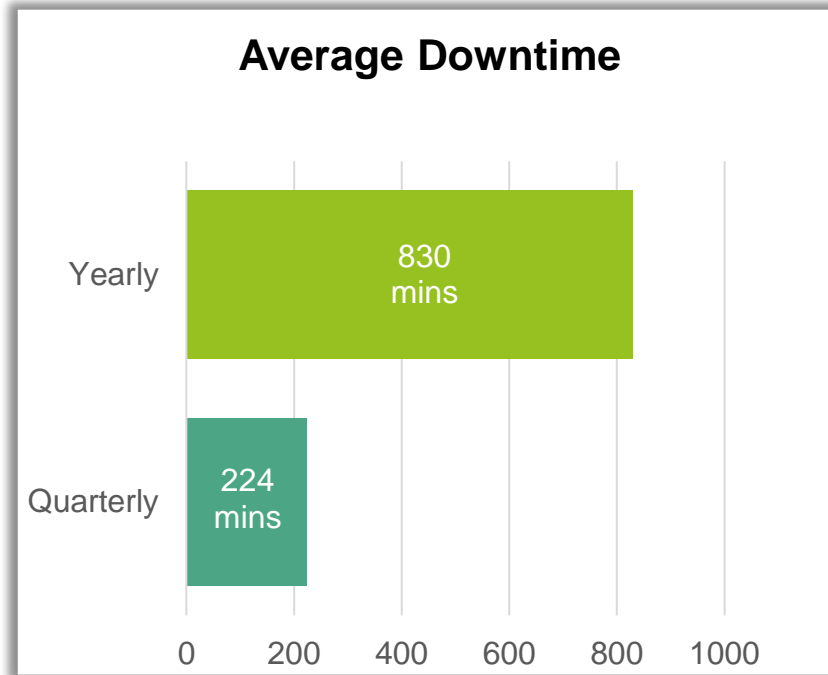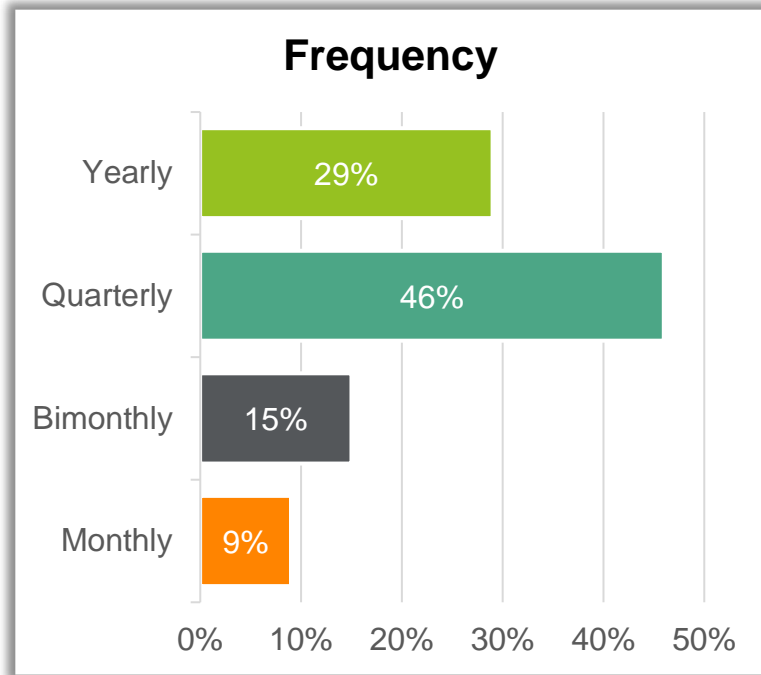- Discovery of Customer Accounts, Infrastructure, and Applications

Automation to remove the Planned Downtime
Minimized Downtime Operations (MDO™)

Challenges with Planned Downtime*

Frequency

Yearly	29%
Quarterly	46%
Bimonthly	15%
Monthly	9%

(x-axis: 0% 10% 20% 30% 40% 50%)

Average Downtime

Yearly	830 mins
Quarterly	224 mins

(x-axis: 0 200 400 600 800 1000)

= **$7K USD / Min & not frequent enough**

Nearly 75% of large US enterprises conducted system maintenance operations only 1 to 4 times a year
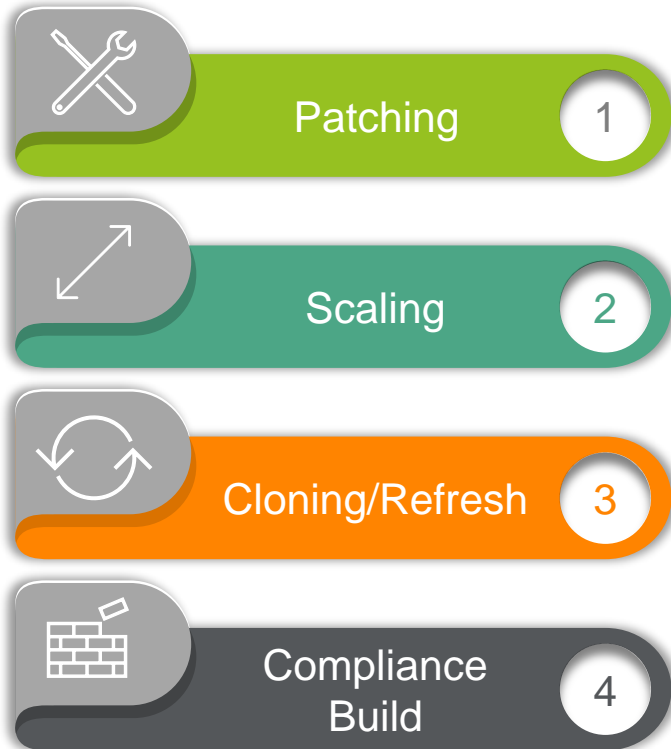
On average, IT leaders stated that planned downtime costed their organizations $1.5M quarterly and $5.6M yearly

* Source: Forrester Research Inc., "The Real Costs of Planned and Unplanned Downtime"

Usually, obtaining a downtime window is the main blocker for applying fixes

What Does MDO™ Do?

1 Patching

2 Scaling
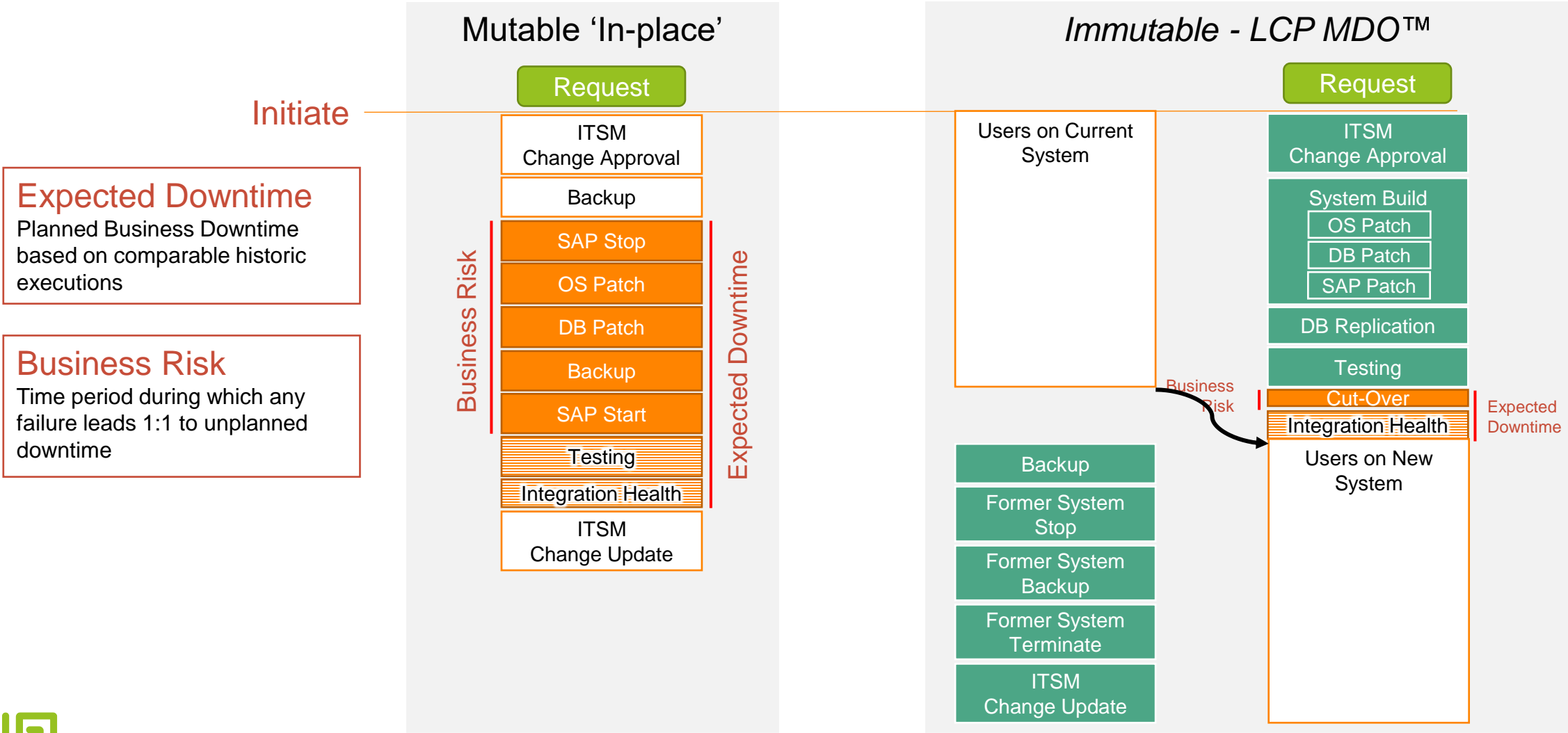
3 Cloning/Refresh

4 Compliance Build

- Fail-forward patching/upgrade for OS, DB, and SAP Kernel patching
- Vertical scaling of SAP infrastructure (Compute & Storage)
- On-demand Horizontal App Server Scaling
- SAP system refresh
- Cloning to create a new SAP system
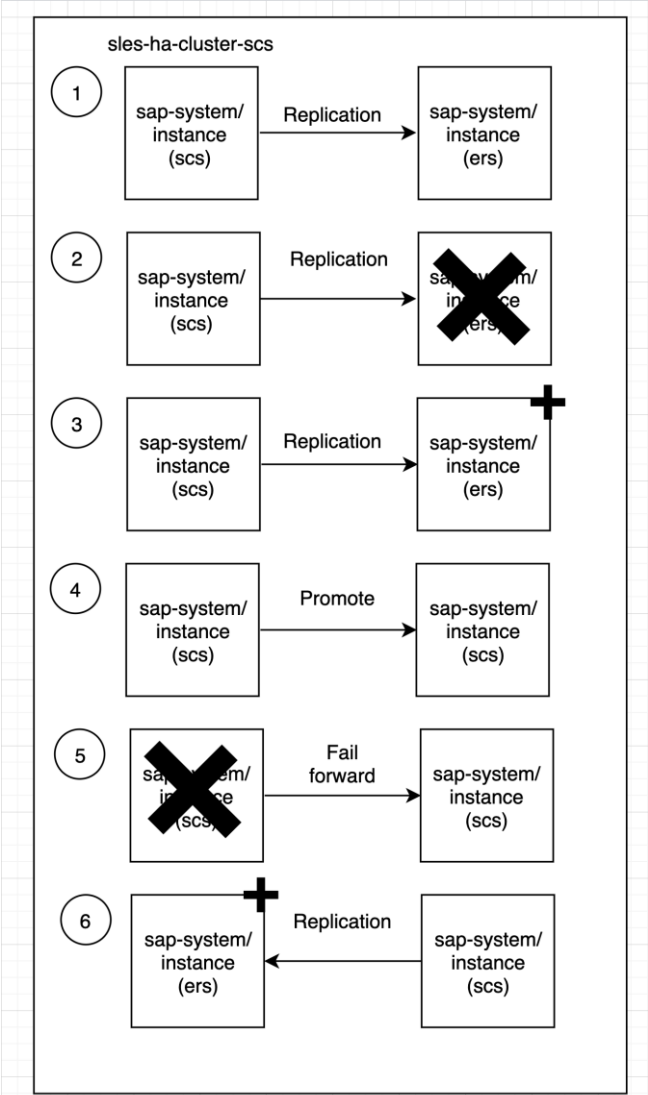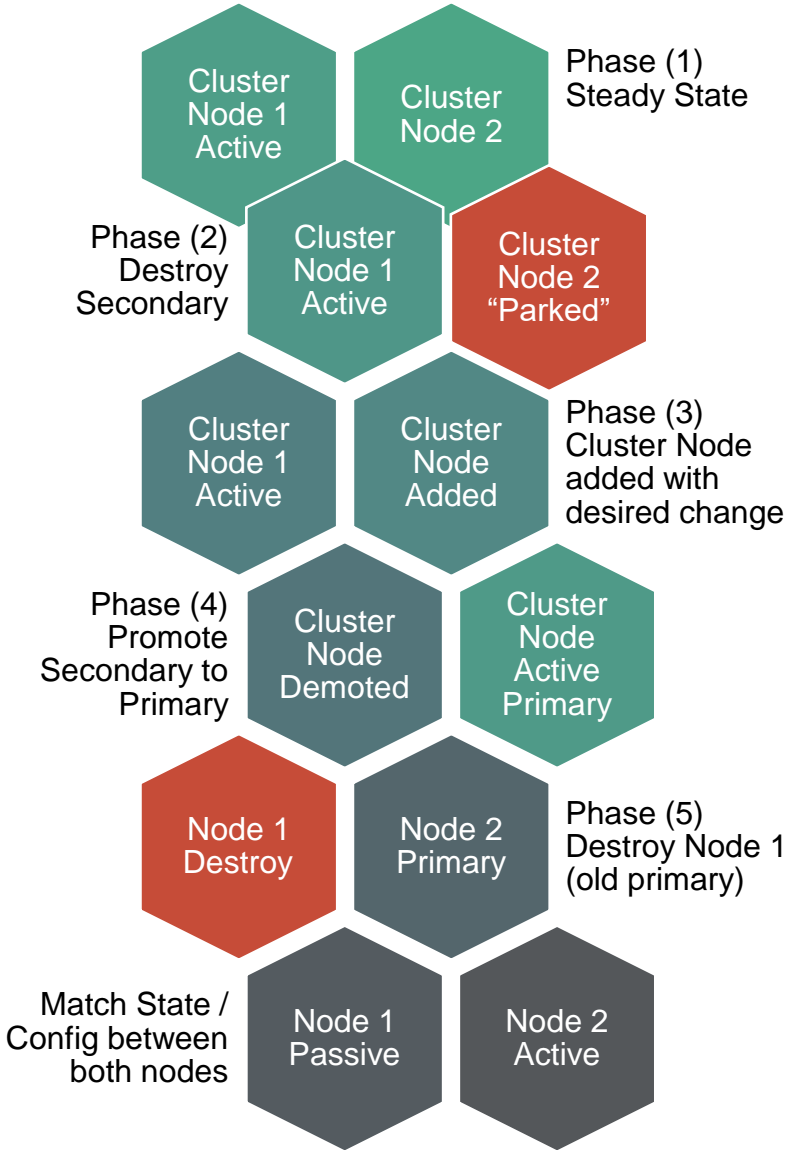- Compliance build for ransomware prevention

Reducing Planned Downtime
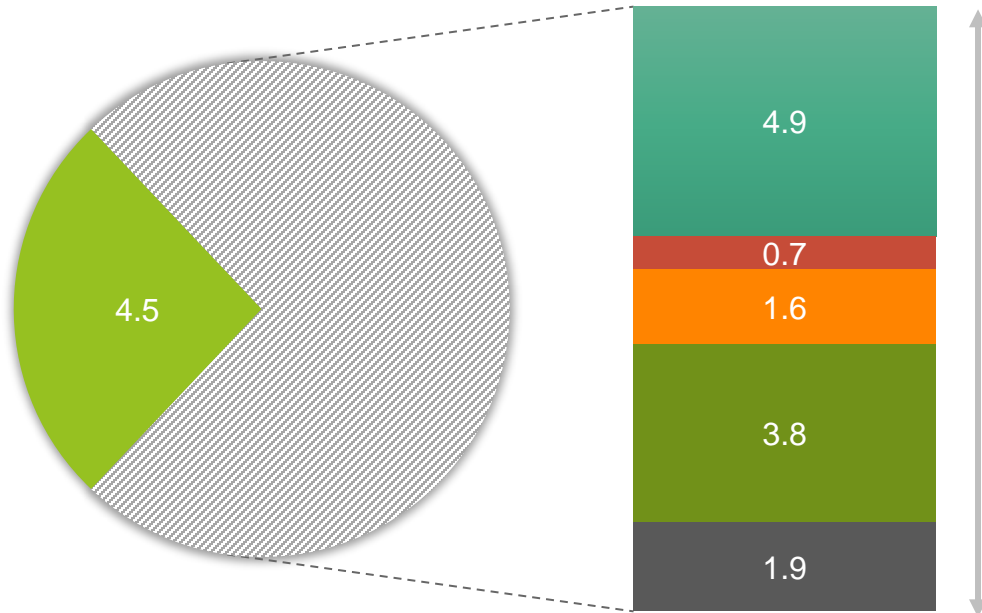
Mutable vs Immutable Operations

Initiate

Expected Downtime
Planned Business Downtime based on comparable historic executions

Business Risk
Time period during which any failure leads 1:1 to unplanned downtime

Mutable 'In-place'

Request

- ITSM Change Approval
- Backup
- SAP Stop
- OS Patch
- DB Patch
- Backup
- SAP Start
- Testing
- Integration Health
- ITSM Change Update

Business Risk | Expected Downtime

Immutable - LCP MDO™

Request

- Users on Current System
- ITSM Change Approval
- System Build
  - OS Patch
  - DB Patch
  - SAP Patch
- DB Replication
- Testing
- Cut-Over
- Integration Health
- Users on New System

Business Risk | Expected Downtime

- Backup
- Former System Stop
- Former System Backup
- Former System Terminate
- ITSM Change Update

Get the IT downtime to Zero. Minimized Downtime Operations are a way forward.

MDO™

Phase (1)
Steady State

Phase (2)
Destroy
Secondary

Phase (3)
Cluster Node
added with
desired change

Phase (4)
Promote
Secondary to
Primary

Phase (5)
Destroy Node 1
(old primary)

Match State /
Config between
both nodes

Cluster Node 1 Active

Cluster Node 2

Cluster Node 1 Active

Cluster Node 2 "Parked"

Cluster Node 1 Active

Cluster Node Added

Cluster Node Demoted

Cluster Node Active Primary

Node 1 Destroy

Node 2 Primary

Node 1 Passive

Node 2 Active

sles-ha-cluster-scs

1 sap-system/instance (scs) → Replication → sap-system/instance (ers)

2 sap-system/instance (scs) → Replication → sap-system/instance (ers) ✕

3 sap-system/instance (scs) → Replication → sap-system/instance (ers) +

4 sap-system/instance (scs) → Promote → sap-system/instance (scs)

5 sap-system/instance (scs) ✕ → Fail forward → sap-system/instance (scs)

6 sap-system/instance (ers) + ← Replication ← sap-system/instance (scs)

MDO™ vs Non-MDO™ Maintenance

Data from Lemongrass Operate Non-MDO-enabled Customers

Typical Non-MDO-Enabled Maintenance Window Timeline (in hours)

MDO-Enabled Maintenance Window (in hours)

Value	Segment
4.9	Prep
0.7	Stop
1.6	Patch
3.8	Start
1.9	Post

4.5 (Plan)

Manual effort and multiple handovers amongst teams often result in long maintenance windows

No in-between handovers

4.5

■ Plan ■ Prep ■ Stop ■ Patch ■ Start ■ Post
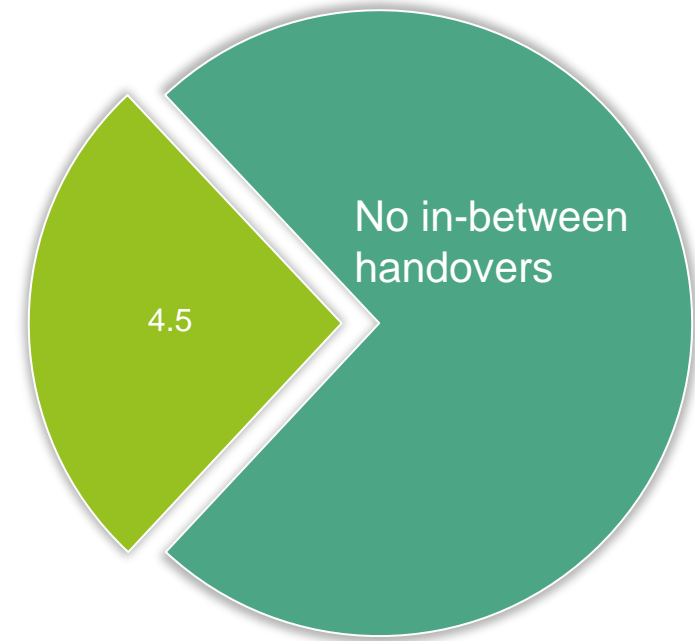
■ Plan ■ Minimized Downtime Operation

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RISE with SAP

Starting the RISE with SAP Journey

Lemongrass is a certified RISE with SAP partner and has developed a suite of advisory services that can help define the best path for your business and Cloud transformation


Things on your mind:

- What ERP solution are you currently running? (ECC, SoH, S/4HANA)

- When are your contracts renewing on existing SAP platforms?

- Should you move to S/4HANA entirely or partially? (when moving to a RISE model)

- Should you do a Greenfield Migration and start fresh? (even if you are an existing SAP client)

- Are you considering a Brownfield migration and move your SAP systems quickly without transforming them?

- What's your target Cloud Operating Model?

- And much more….

Accelerating the Journey to RISE

Barriers to Adoption

- Clients still working on business case for wider S/4HANA approval

- Some industry specific SAP elements not yet ready on S/4HANA

- Dependencies between Non-SAP systems creating complexity in migration

- Long term business transformation with significant cost and timeline

- Clients seeking one Operating Model for RISE, Remnant Systems, and Non-SAP.
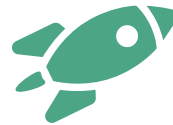
Mitigation Approach

- Focus on a 2-Step (SoH) on RISE -> S/4HANA. Simplifying initial migration to years to months.

- Build out parallel tenant to house SAP Remnants

- Leverage rapid migration capabilities to migrate dependent system to adjacent cloud tenant

- Transform through initial RISE migration to expand into a wider S/4HANA transformation

- Wrapper around RISE and integrate RISE reporting through a single pane

RISE-Centric Capabilities

Advise

RISE Journey Planning

| S4 Blue Print | + | CSP Plan | + | Rem-nant Plan |

S/4HANA and RISE Adoption

Methodology

| Cloud Strategy | Path to S/4HANA | API/ BTP Strategy |

RISE Method

- Operating Model
- S/4HANA Journey Planning
- Business Case
- Minimal Change Approach

Migrate

Full Scope Migration:

| RISE SAP | + | Non-RISE SAP | + | Non-SAP |

RISE-Aware Method:

- All touchpoints
- Back-to-back
- RISE-certified team

Migrate

| Move to SoH RISE | Move to S/4 RISE | Move to Any Cloud |

RISE Migrate Wrapper:

- Governance
- Day-to-day Comms
- Trouble-shooting

Operate

Full Scope Operate:

| RISE SAP | + | Non-RISE SAP | + | Non-SAP |

RISE Flex

| SBX | DV2 | QA2 |
| DEV | QAS | PRD |

Operations

RISE Wrapper

| RISE Tenant | RISE+ Tenant | RISE Flex |

RISE Operate Wrapper:

- Single Pane of Glass
- CAS Services
- Back-to-back ticket mgmt.

Innovate

Leverage RISE with SAP Capabilities:

| BTP | Signavio | Joule |

Add Cloud-Native Capabilities:

| Data | Events & API | AI |

Some SAP RISE Client Scenarios

Top Workwear and Uniform Manufacturer

- "RISE in the Corner"
- 90% Cloud Native ECC DB2 on GCP
- 10% RISE S/4HANA for Fire Department Uniforms
  - RISE+ : Basis Services to compliment Operate

Mining Company

- "Complementing Functional Implementation SI"
  - Supporting a Big 4 in a remote area
  - AWS

Large Technology Company

- Moving from Lemongrass to RISE
- SAP RISE team challenged – Extend the timeline
- Keep "friends of SAP"
- Long migration journey – Basis in parallel

Recreational Vehicles Manufacturer

- S/4HANA to S/4HANA Cloud Migration
- S/4HANA on Azure
- Cloud Migration to RISE

Food and Beverage Manufacturer
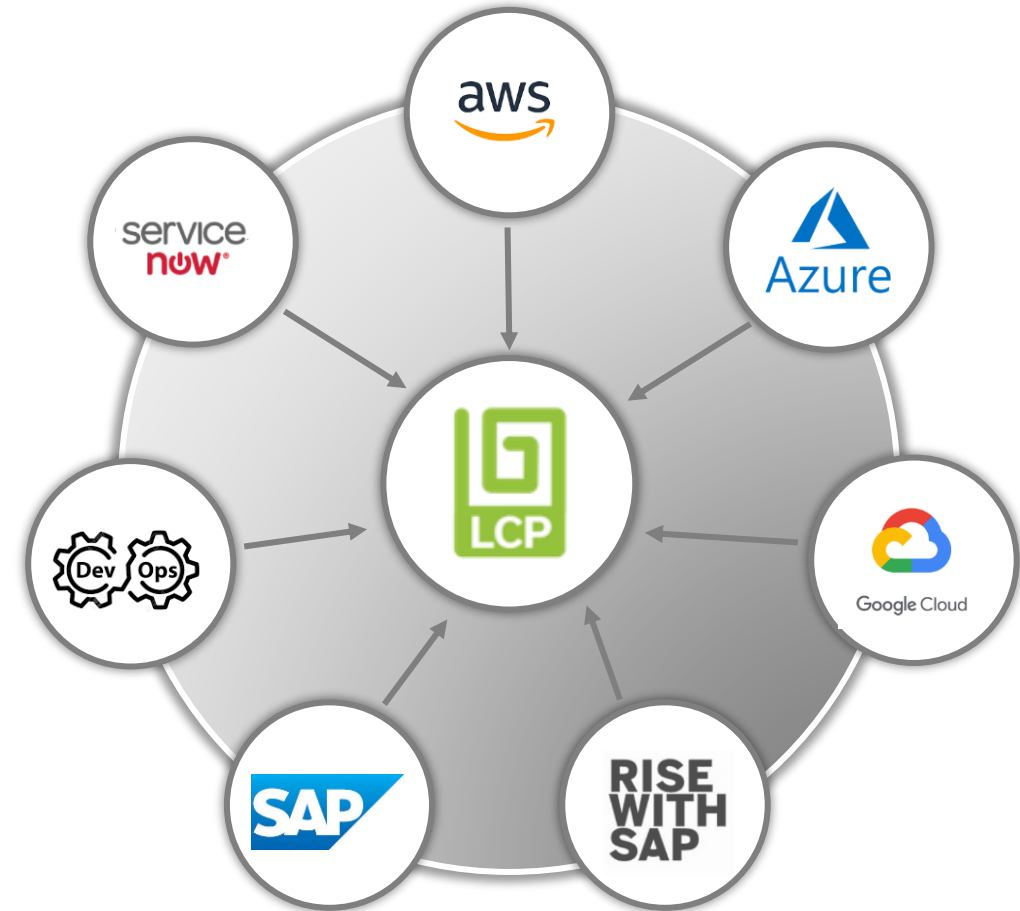
- Early Engagement
  - Advisory Opportunity

Insurance, Financial, Banking, Manufacturing, Retail Conglomerate

- Supported RISE Migration
- Provided Additional SBX/ DEV environments through S/4HANA rollout
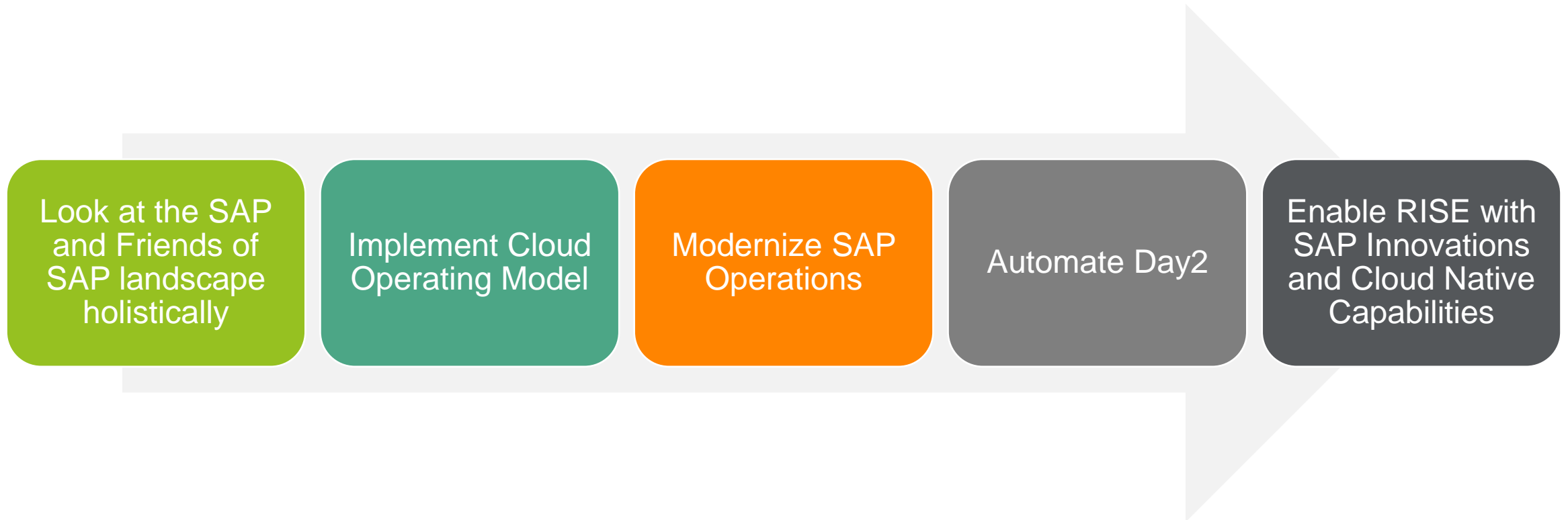- Virtustream Exit -> Azure + RISE

One Operating Model for RISE and Non-RISE

- One Platform Architecture to integrate with any Cloud service

- Extending the Object Model to consume RISE services

- Objective is to make a uniform Customer Experience irrespective of the cloud platform they are on

Modernize SAP Landscape with Cloud Automation

Look at the SAP and Friends of SAP landscape holistically

Implement Cloud Operating Model

Modernize SAP Operations

Automate Day2

Enable RISE with SAP Innovations and Cloud Native Capabilities

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Q & A

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