Alstom Maximo Cloud Migration Journey

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Agenda

- **Introduction**
  - **Alstom Transportation**
  - **Cloud Migration Project**
  - **Maximo Landscape**

- **The Digital Transformation Program**
  - **Challenges**
  - **Key Considerations**
  - **Migration Approach**
  - **Cloud Architecture**

- **Program Highlights**
  - **Lessons Learnt**
  - **Infosys Partnership**
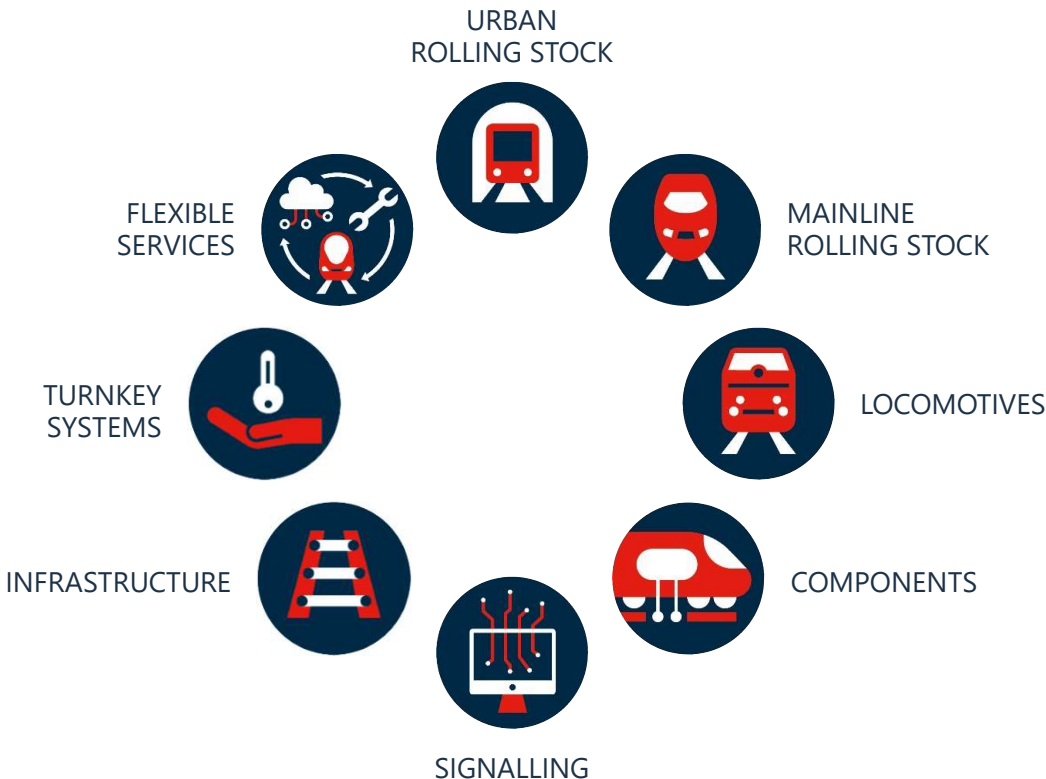
- **Relevance to MAS Upgrade**

At Alstom, we partner with our stakeholders to optimise transport networks by understanding what moves people. We are proud to work together to reinvent mobility and make transport easier and more intuitive.

A global leader in the transportation sector in the digital age

Leading societies to a low carbon future

Alstom develops and markets mobility solutions that provide sustainable foundations for the future of transportation.

Our comprehensive product portfolio ranges from high-speed trains, metros, monorail and trams, to turnkey systems, services, infrastructure, signalling and digital mobility solutions.
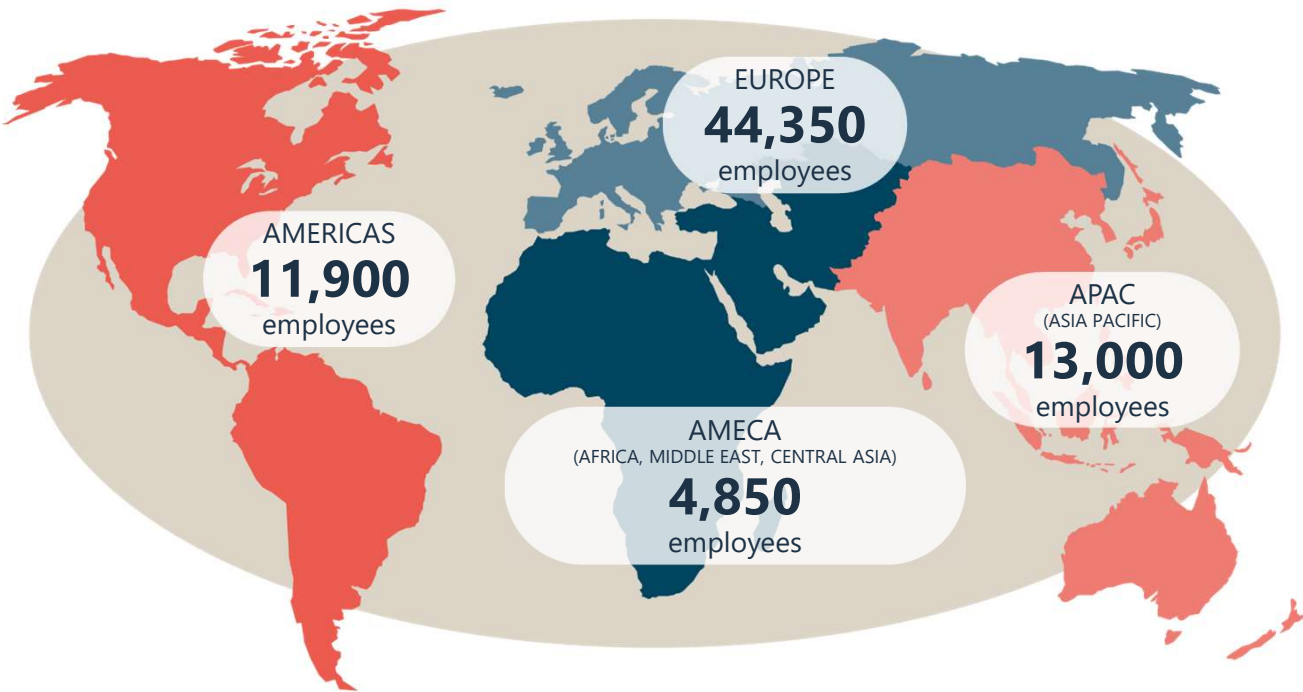
URBAN ROLLING STOCK

MAINLINE ROLLING STOCK

LOCOMOTIVES

COMPONENTS

SIGNALLING

INFRASTRUCTURE

TURNKEY SYSTEMS

FLEXIBLE SERVICES

We are where mobility is needed

Over
74,000
employees worldwide

From
166
nationalities

70
countries

Over
250
sites

EUROPE
44,350
employees

AMERICAS
11,900
employees

APAC
(ASIA PACIFIC)
13,000
employees

AMECA
(AFRICA, MIDDLE EAST, CENTRAL ASIA)
4,850
employees

19,700
engineers

More than
9,400
patents

Over
150,000
vehicles in commercial service

Partner to over
300
cities

As of 31 March 2022

5

Alstom Transportation

- One of the largest Manufacturers of Rolling Stock, Locomotives, Trams and Rail Equipment across globe
- Alstom's acquisition of Bombardier was in 2021
- We provide after sales Long term Maintenance Service Contracts for customers
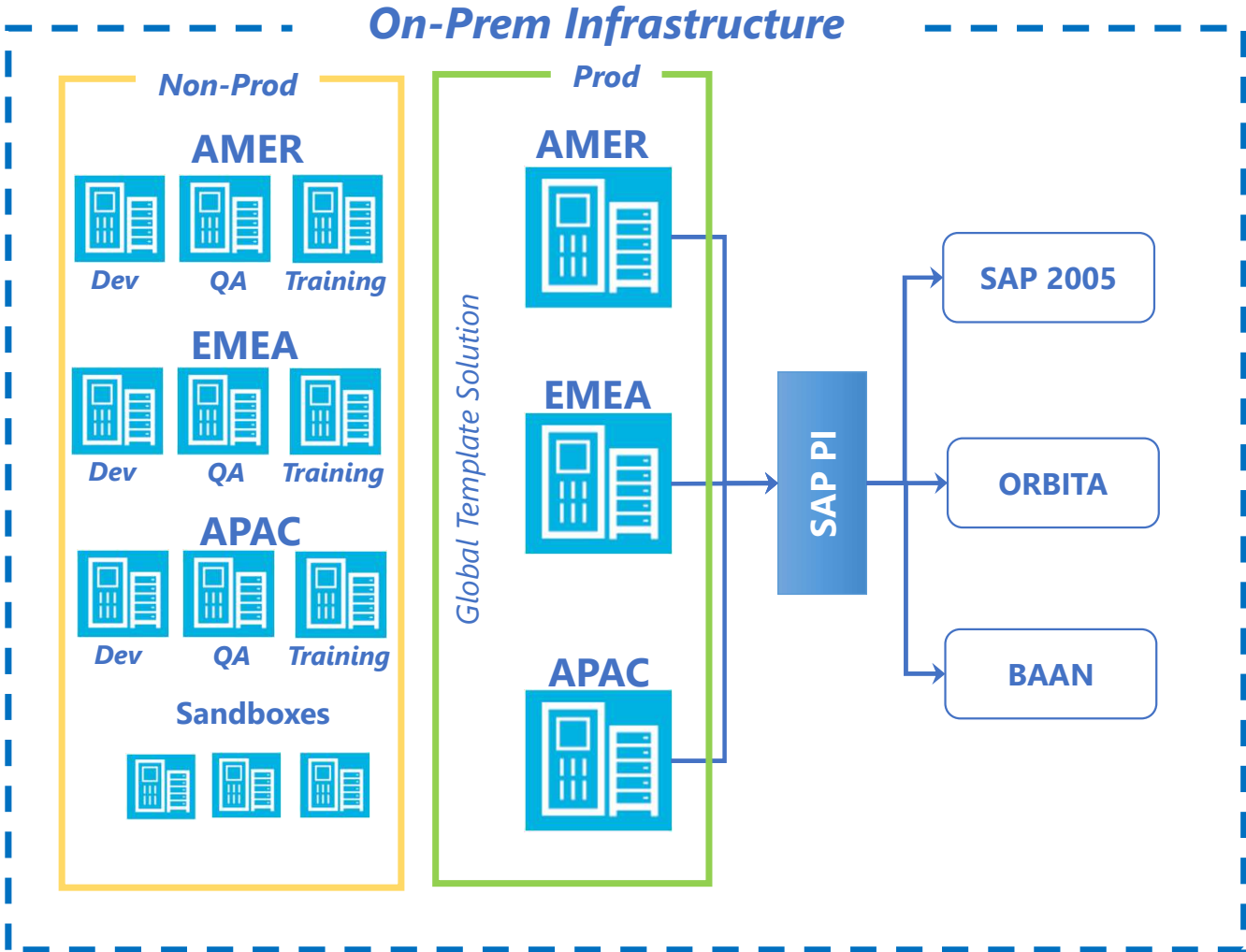
IBM Maximo

- Maximo in use for more than 30 years from version 4
- Maximo is the EAM tool for handling the maintenance contracts for 285 customers
- Current version 7.6.1.1 with Transportation and Asset Configuration Manager Add-Ons
- Heavily Configured and Customized Global Template
- Integrated with external systems for Procurement, Finance and Condition Monitoring
- 10+ years of Partnership with **Infosys** for support, enhancements, rollouts and integration projects

Cloud Migration – Need of the hour

- **Alstom Digital Transformation Roadmap**

- **Security standards and policies for new application landscape from legacy Bombardier**

- **Improvement in Application performance**

- **Reduce Overhead Cost on Infrastructure maintenance and support**

- **Infrastructure scalability for expanding Customer base**

- **Move closer towards Maximo Application Suite upgrade**
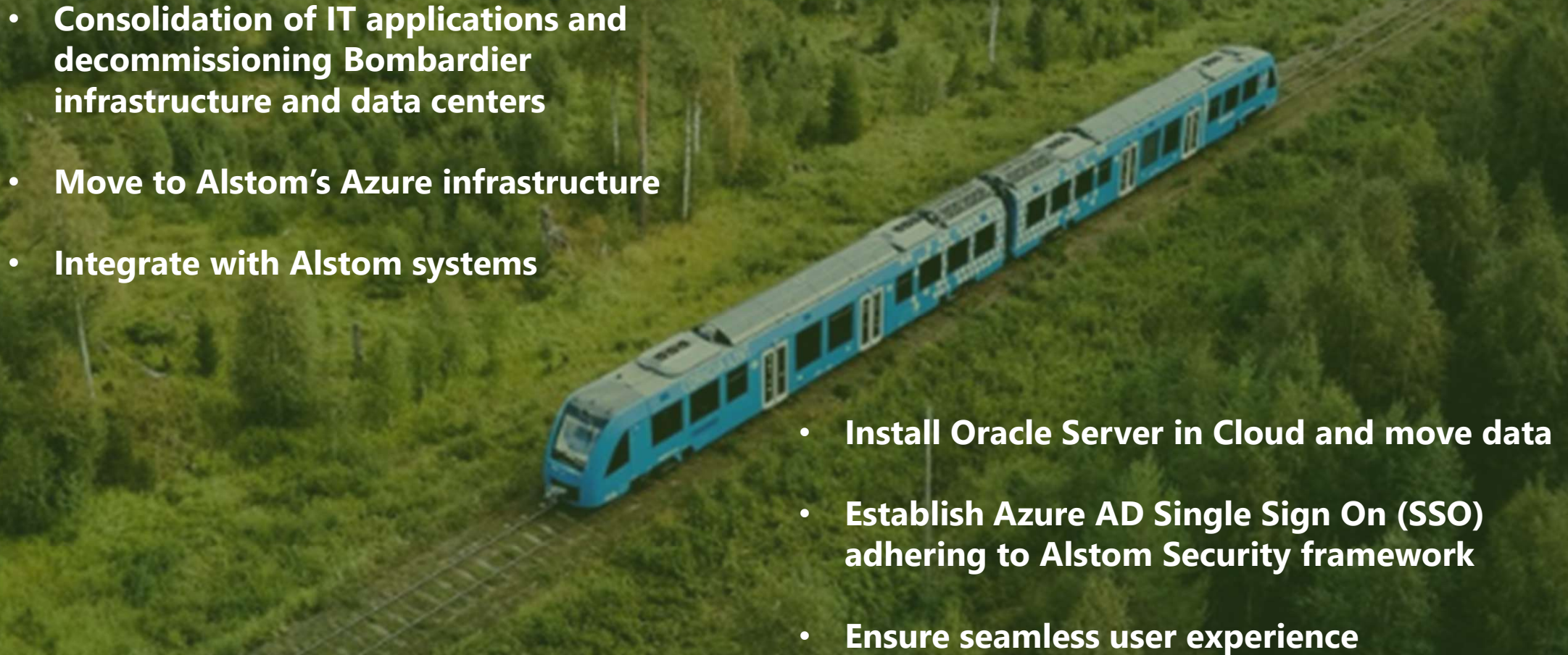
Maximo Landscape Before Migration

On-Prem Infrastructure

Non-Prod

AMER

Dev | QA | Training

EMEA

Dev | QA | Training

APAC

Dev | QA | Training

Sandboxes

Prod

Global Template Solution

AMER

EMEA

APAC

SAP PI

SAP 2005

ORBITA

BAAN

Statistics

	AMER	EMEA	APAC
👥	3400	8100	2500
🗄	500 GB	1.4 TB	200 GB

Major Processes

- Model and Subassembly Configuration
- Asset Lifecycle Management
- Maintenance Planning
- Incidents / Problems / FRACAS
- Work Order Management
- Inventory Management

Digital Transformation Program

- **Consolidation of IT applications and decommissioning Bombardier infrastructure and data centers**

- **Move to Alstom's Azure infrastructure**

- **Integrate with Alstom systems**

- **Install Oracle Server in Cloud and move data**

- **Establish Azure AD Single Sign On (SSO) adhering to Alstom Security framework**

- **Ensure seamless user experience**

Challenges

- Complexity due to Involvement of multiple vendors/teams

- Huge volume of data – 2.5TB to be migrated to Cloud with historical and transactional live records

- Short cutover window (24-48 hours over weekend) to ensure minimum user disruption

- Ensuring connectivity for existing interfaces

- System Performance on cloud environments across the regions

- Major risk of impacting 285 clients and 14,000 appx end-users

- Lack of proper documentation for Configurations and Customization
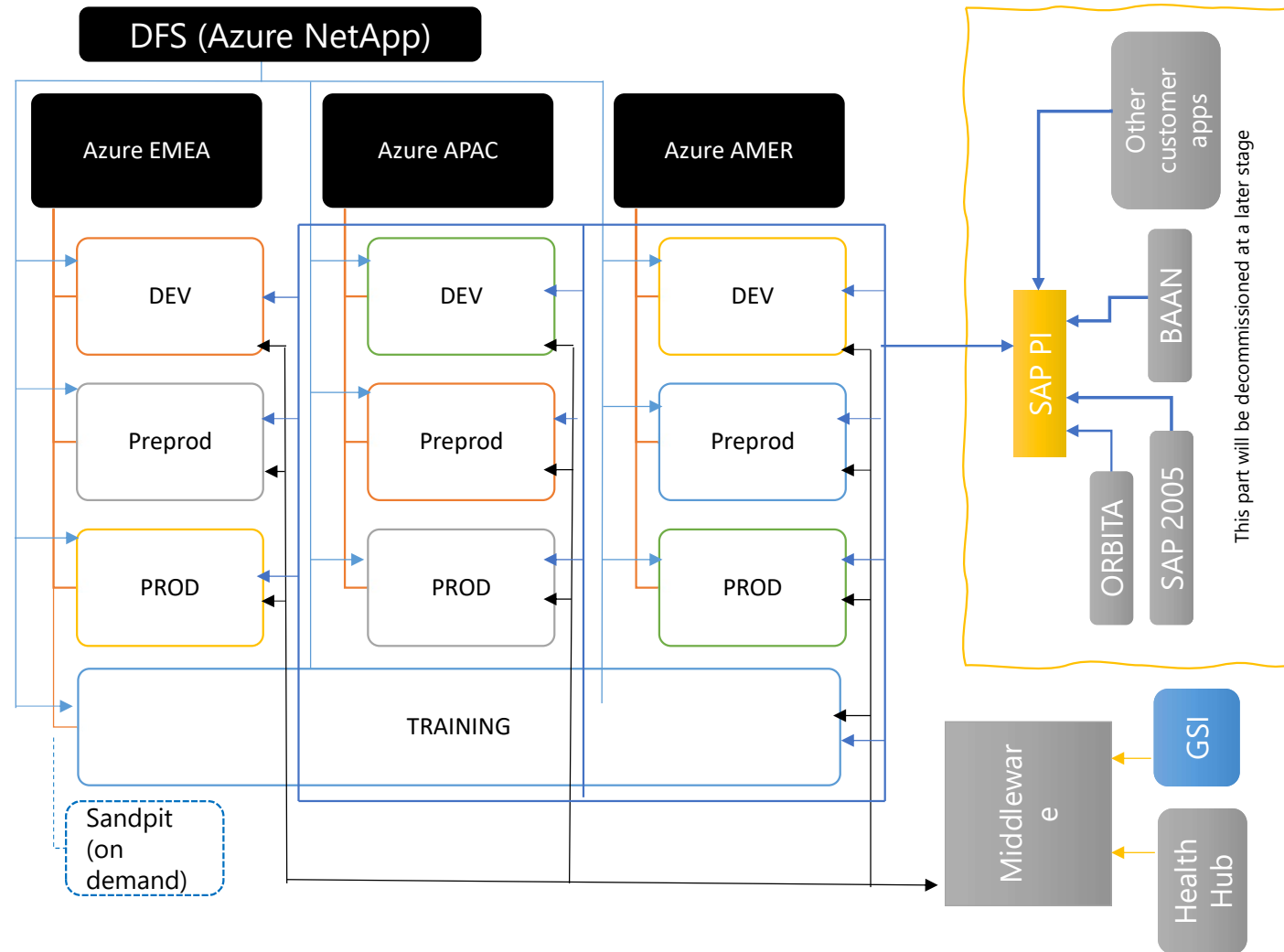
Key Considerations

- **Assessment of Cloud Migration Strategy aligned with organization digital transformation goals**

- **Sizing of Cloud Infrastructure to reduce overall cost and improve system performance**

- **Analysis of different approaches towards migration activities**

- **Partnership with experienced Service Provider**

- **Strong Project Management and Communication**

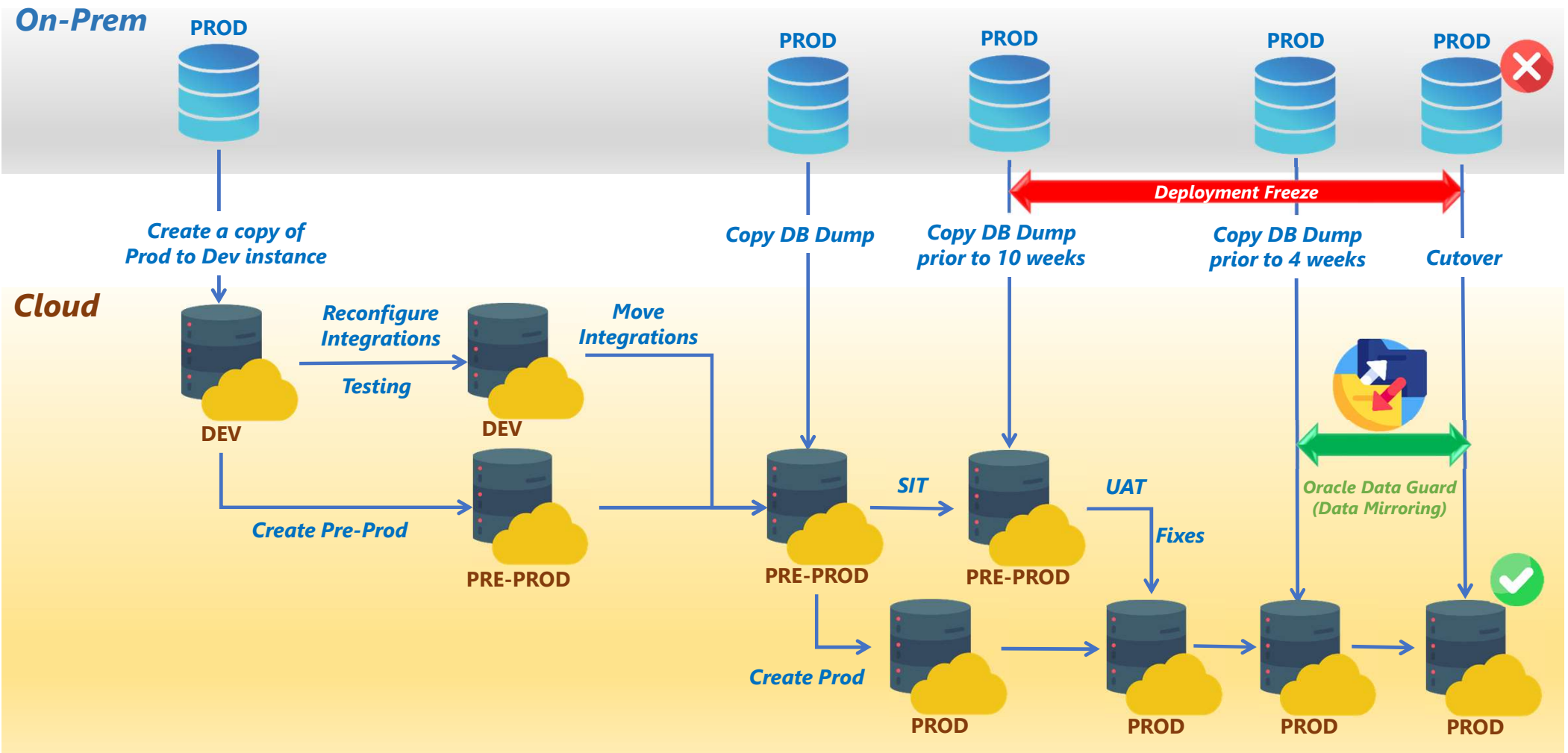- **Minimal disruption to End Users with shorter cutover window**

Cloud Architecture

- Equivalent architecture of on-prem Maximo solution in Azure – 3 separate regions for AMER, APAC and EMEA

- All 3 regions have 4 environments each - DEV, Pre-PROD, PROD

- One environment for TRAINING to be used for all the 3 regions

- Sandpit Environment

DFS (Azure NetApp)

Azure EMEA
- DEV
- Preprod
- PROD

Azure APAC
- DEV
- Preprod
- PROD

Azure AMER
- DEV
- Preprod
- PROD

TRAINING

Sandpit (on demand)

Other customer apps

BAAN

SAP 2005

ORBITA

SAP PI

This part will be decommissioned at a later stage

Middleware

GSI

Health Hub

Migration Approach

9 Months (AMER → APAC → EMEA)

On-Prem

PROD · PROD · PROD · PROD · PROD ✖

Deployment Freeze

Create a copy of Prod to Dev instance · Copy DB Dump · Copy DB Dump prior to 10 weeks · Copy DB Dump prior to 4 weeks · Cutover

Cloud

Reconfigure Integrations · Move Integrations

Testing

DEV · DEV

Create Pre-Prod

PRE-PROD · PRE-PROD · SIT · PRE-PROD · UAT

Fixes

Create Prod

PROD · PROD · PROD · PROD

Oracle Data Guard (Data Mirroring) ✔

Business Benefits

- **Reduction in Overall Infrastructure maintenance cost**

- **Reduction of cutover window from 5 days to 2 days using Oracle Data Guard approach**

- **Use of Oracle Database for target architecture resulted in cost savings.**

- **Establishment of Azure AD Single Sign On reducing 600 Service requests annually for user creation / deletion**

- **Optimized infrastructure scalable for future demands**

Lessons Learnt

- **Well defined Cloud Migration Strategy, preparation and leadership support**

- **Proper sizing assessment for Cloud infrastructure**

- **Strong Project Management, Coordination and communication**

- **Engagement with right partner with Maximo and Cloud experience**

- **Test – Test – Test**

- **Use of Data Mirroring tools for seamless cutover**

- **Ensuring availability of proper documentation on Configurations / Customizations**

Infosys – The Right Strategic Partner for Alstom

- **Long standing relationship – Partner than a Service Provider**

- **18+ years of experience with 300+ certified consultants on Maximo projects**

- **Breath of Service Offerings from Consulting, Implementation, Upgrade, Integrations and Support**

- **Platinum partnership with IBM**

- **Domain experience across multiple industry segments such as Utilities, Transportation, Manufacturing**

- **Strong Cloud Migration expertise across IBM, AWS, Azure Cloud**

- **Cost effective Global Delivery Model**

GUIDED BY OUR PURPOSE - TO AMPLIFY HUMAN POTENTIAL AND CREATE THE NEXT OPPORTUNITY FOR PEOPLE, BUSINESSES AND COMMUNITIES
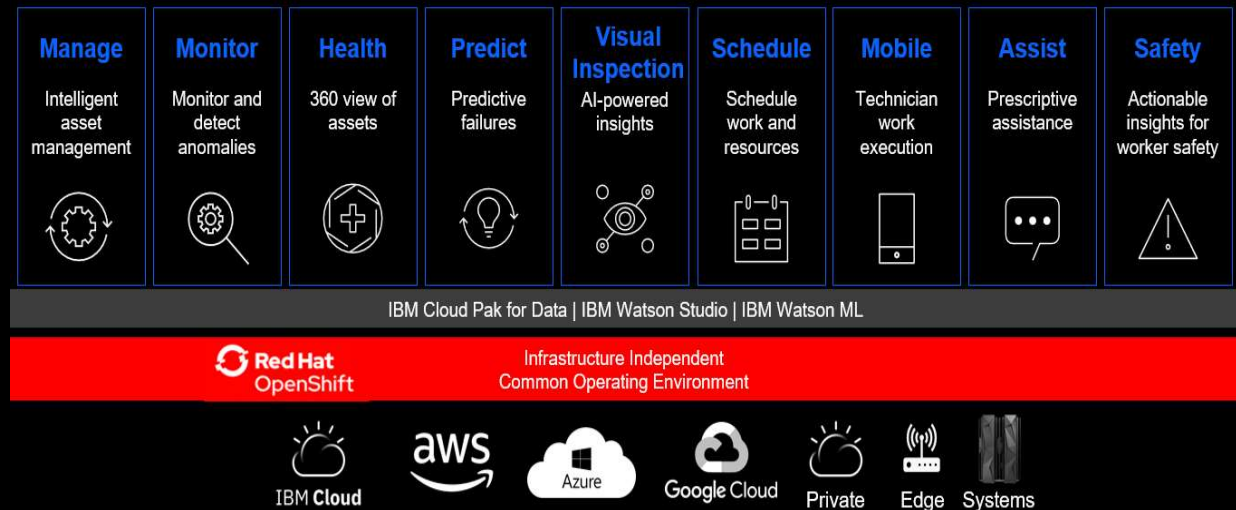
40+ YEARS OF REINVENTION SINCE 1981

343,234 PASSIONATE NAVIGATORS COLLABORATING WITH 1,872 TRUSTING CLIENTS FROM THE 50+ COUNTRIES WE ARE PRESENT IN

US$18.21 BILLION IN REVENUE (LTM), 62.9% REVENUES FROM DIGITAL IN Q4 FY23

Infosys®
Navigate your next

Relevance to MAS Upgrade

- **Infrastructure Independent RedHat OpenShift Operation Environment**

- **Versatility to work across different cloud options**

- **Cloud infrastructure relevant to support entire Suite features**

- **Scalability and Cost Benefits on Cloud options**

- **Alignment with Organizational Digital Transformation Goals**

- **Utilization of IoT/AI/ML features for improved maintenance**

Thank You