



SBN conference 2020

Presenters



Stig Hamre

Head of SAP Product Management
Norsk Hydro

Stig Hamre has long experience from Application architecture, Application management, Project management, SAP Roadmaps and S/4 transformations and IT integration and segregation in M&A processes



Dharmesh Shah

SAP Tech Arch
Accenture

Dharmesh has 15 years of SAP Experience in various TechArch and Delivery Roles.

He has been solutioning and delivering SAP migration projects for the last 5 years across Europe.

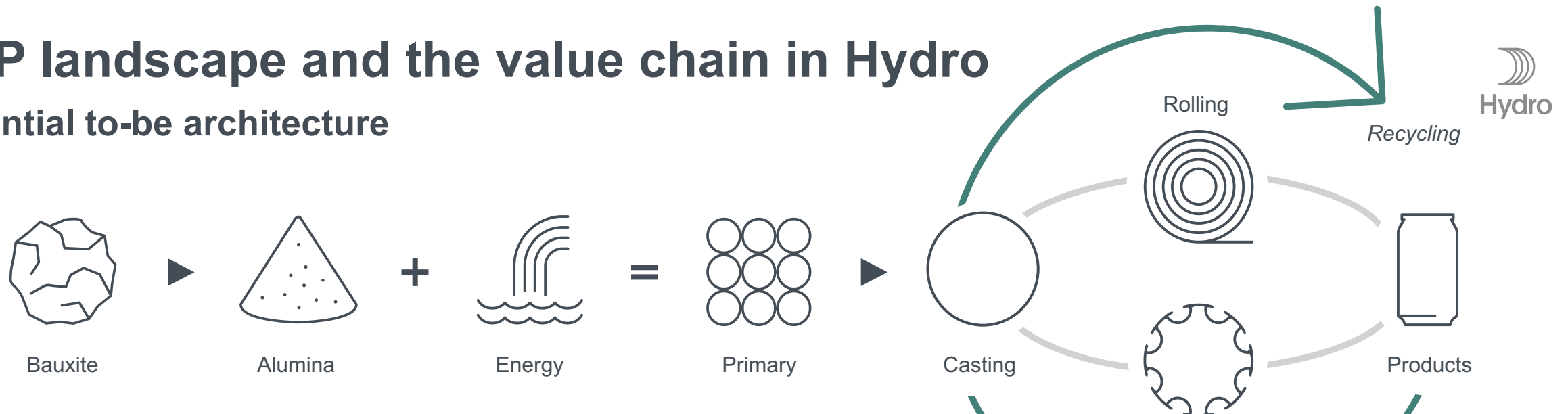
Dharmesh has good experience in managing large SAP landscapes and he wants to ensure customer get the value out of their IT investments and solutions are aligned with business needs.

Background

- **Very limited investments done in the SAP solutions in the years after the finance crisis**
 - R/3 instances running non-Unicode and classic G/L
 - Limited investments in applications outside the R/3 instances
 - Outsourced hosting
- **2014 – 2016**
 - Growing demand for new solutions and renewal of the SAP landscape
 - 2015 – the SAP agreement was changed to a HANA agreement
 - 2015 – first S/4 project through investment in SAP treasury and cash management solution
- **2015 Strategy**
 - Prepare the SAP operations for S/4 and a 2020/2025 roadmap
 - Jump as many steps as possible from being “laggards” to be in the fore front
 - Get the future platforms in place as early as possible to reduce complexity and potential redevelopment of Industry 4.0 initiatives
 - Avoid fundamental changes to the infrastructure and service set up during the functional implementation of the S/4 Roadmap
 - 2 main 6.0 instances, covering 95% of Hydro
- **2018 Merger of SAPA into Hydro**
 - 23.000 employees, 80 production facilities and a S/4 Roadmap in the start up phase
 - Allow for system consolidation and scaling, Hydro as 9 SAP landscapes, 3 PI systems, 3 solution Manager and 40 non SAP ERP systems

SAP landscape and the value chain in Hydro

Potential to-be architecture



	Bauxite & Alumina		Energy	Primary		Rolled	Extruded	
Instance	HAMP		HAMP	HAMP		PRO21	ES S/4HANA	HBS
Users	2000		200	2000		1600	1000	750
Version	S/4 1809		S/4 1809	S/4 1809		ECC 6.0	1610	ECC 6.0
FI/CO	X	X	X	X	X	X	X	X
MM	X	X	X	X	X	X	X	X
PM	X	X	X	X	X	X	X	
SD/LE		X			X	X	X	X
QM					X	X	X	X
WM								X
PP					v	X	X	X
PS		v	X	v				

Hosting of SAP in Azure



First Azure migration, scope 3 R/3 instances, PO Instance, Document archive and BO landscape



Architecture and design of system landscape in unknown territory

- SAP infrastructure design : reference architectures (SAP & Microsoft) and hosting partner (Accenture)
- Network design and zones

Project experience

- Used 3-4 months longer than planned,
 - Get the architecture design in place
 - Issues with the service used to transform the data from AIX to Linux
- After 12 – 15 months with fine tuning and learning how to manage a cloud service we arrived at the cost level foreseen in the business case

Hosting of SAP in Azure



First Azure migration, scope 3 R/3 instances, PO Instance, Document archive and BO landscape



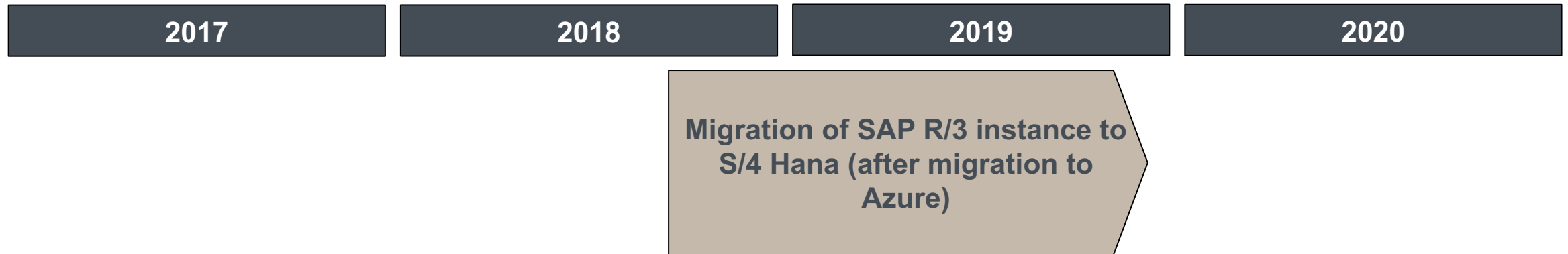
Operational experience

- Same or improved performance
- 2-3 incidents the 3 first months after go live in 2018 caused by cloud operational model, stable since
- OS and security updates done with a high frequency
 - The maintenance windows will be used
- Increased focus on infrastructure questions and how to reduce the cost level
 - Cloud capabilities and development of the commercial models

Hosting of SAP in Azure



R/3 - S/4 migration for 1 instance with 4500 users and 110 company codes



Migration scope

- Unicode migration
- 2 SLO transformations
- R/3 to S/4 as-is migration

Experiences

- Scalability and flexibility for the infrastructure set up
 - To reduce the timeline at a point in time all 3 streams were running in parallel with parallel landscapes
 - Original proposed timeline was 18 to 24 months, final plan was down to 15 months
- Easy to deploy VMs and installation of the SAP instances, but remember to close down when not used anymore

Hosting of SAP in Azure



HEC to Azure migration for two S/4 Hana instances, Treasury Cash Management and Extruded Solution



Scope

- Migration of 2 S/4 Hana landscapes from HEC to Azure
- Background was to consolidate SAP systems with one service provider and one SAP license model
 - 1 HEC system had a CPO subscription agreement, while 75% were own SAP licences
 - SAP changed the strategy to “Hyperscalers first”, remaining on HEC long term could require a Azure migration

Project experience

- Project timeline 6 months
- With experience from the first migration in 2017 – 2018, the migration was smooth without any real issues
- Cost level for the business case was met after 3 months in production compared to 15 months in the first migration

Operational experience

- Go live May 2020: Stable operation from the start
- An S/4 1610 to 1909 upgrade project started in parallel while system was being migrated to Azure, go live in December

System landscape

Status Q4, 2020

- **IBM SAP environment**

- 6.0 Instance, planned migrated to Azure in 2021 (9 TB)
- 6.0 Instance, units will eventually be migrated to S/4 Extrusion
- 4.6C Instance, units are being migrated to ES S/4 in 2021
- 7.1 PI instance

- Other:
 - 40 non SAP ERP systems will over the next 5 – 10 years be replaced by ES S/4

- **Azure**

- S/4 1809 for upstream value chain
- S/4 1610 for Extrusion Business (being upgraded to 1909 in Q4)
- S/4 17009 for Treasury and Cash Management
- R/3 6.0 for Rolling mills
- R/3 6.0 Payroll Instance for Germany
- 7.5 PO instance
- 7.5 Solution Manager
- BW4Hana version 1.0
- SLT instance for real time data replication
- GRC
- 2 Fiori landscapes

- **Cloud**

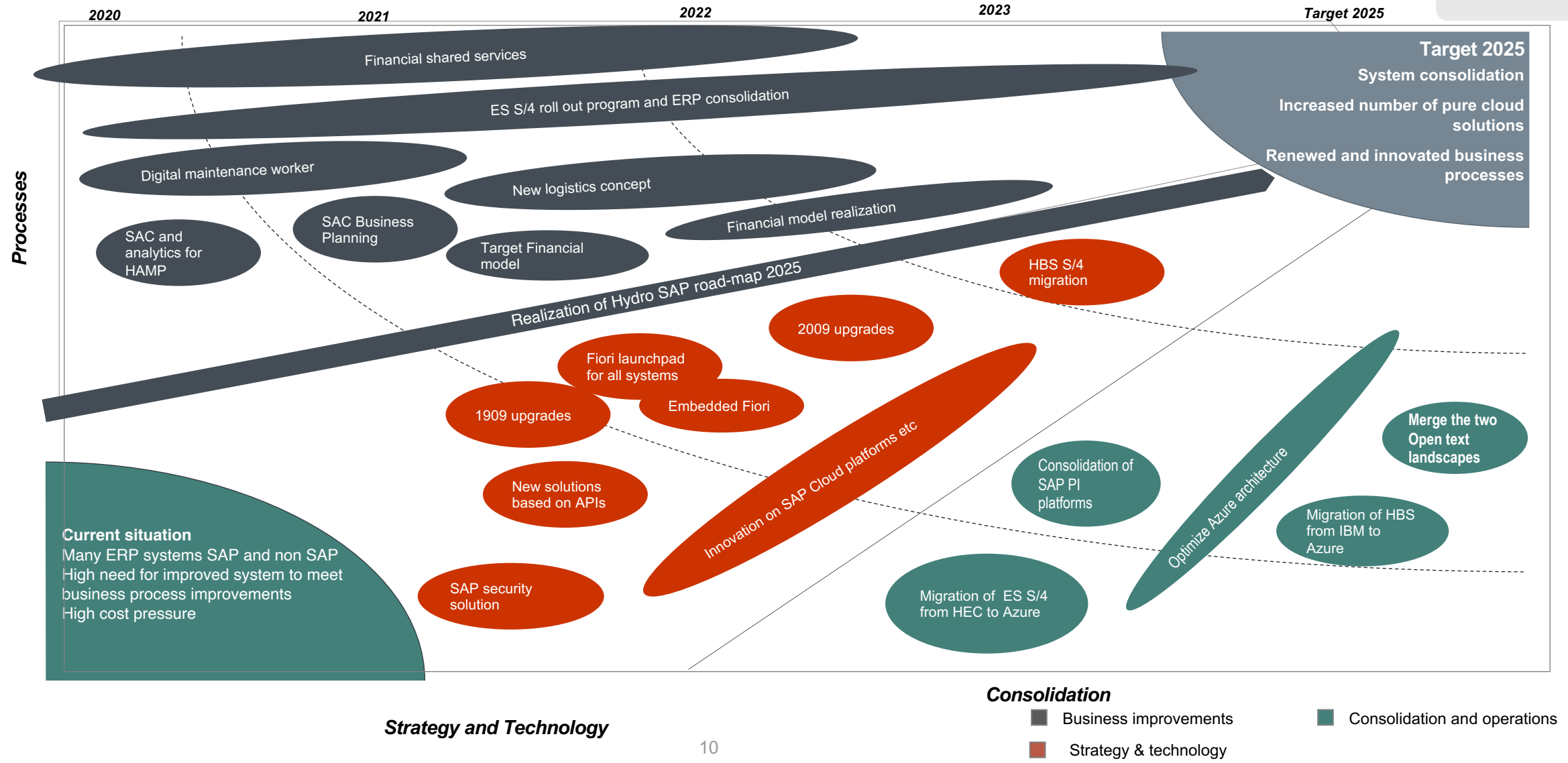
- CPI
- API management
- Fiori development
- SAP Analytics Cloud
- Work Manager mobile app
- SAP cloud platform subscription for exploration and innovation

SAP Roadmap

SAP, Microsoft and Cloud as the key strategy elements

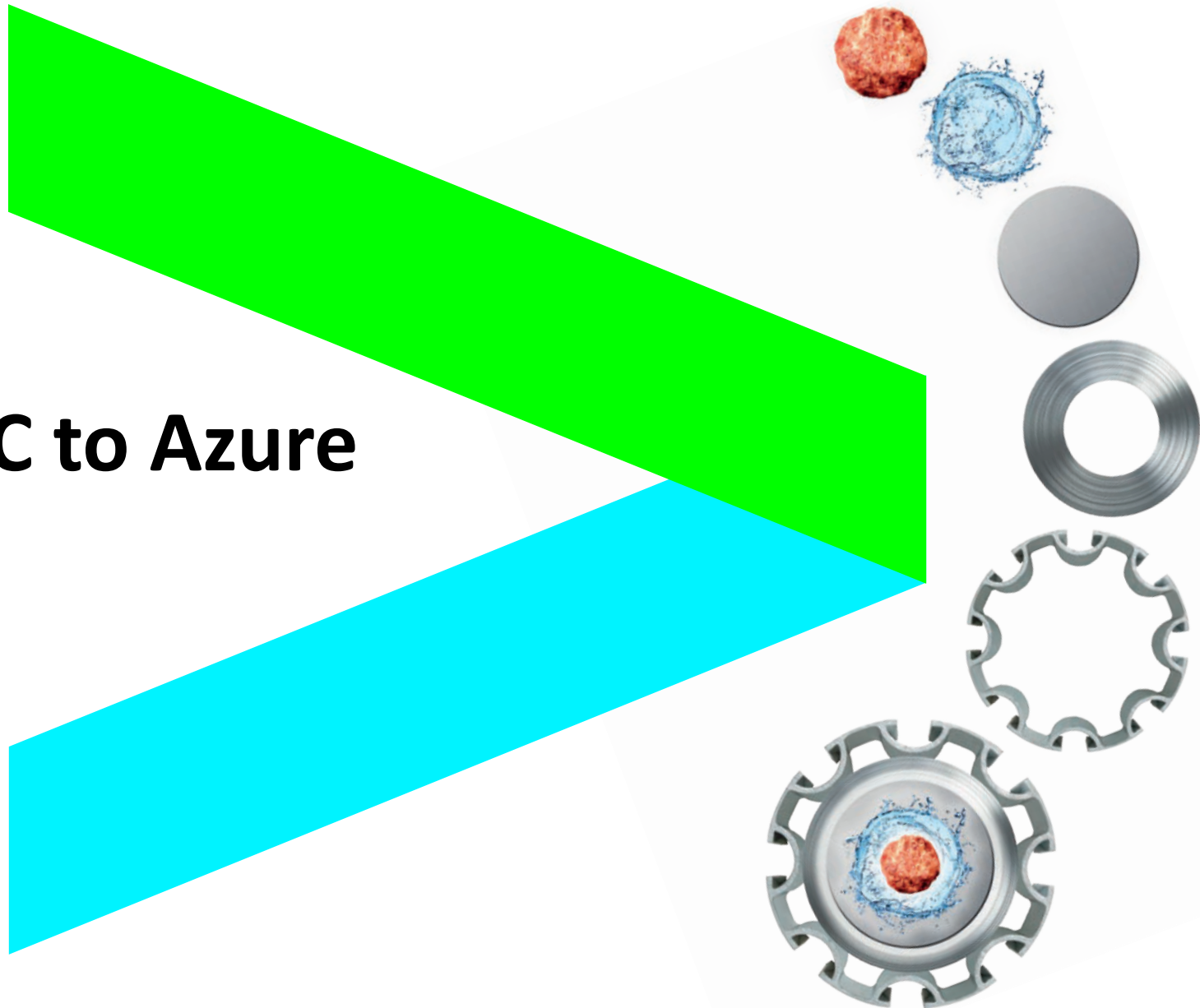


DRAFT



Migration from HEC to Azure

SBN Conference
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Key highlights

PROJECT IMPLEMENTATION SCOPE

- Migration of 2 SAP Landscapes – 2 different subscriptions on SAP HEC
- Consolidation of PI – Migrating SAP PI interfaces from HEC to Azure PI system
- ~70 VMs on SUSE, having HANA and ASE DB
- Setup a new DR site
- Migration cutover to be achieved within 42 Hrs
- Implementation of new PaloAlto firewall for SAP systems hosted on Azure.
- Migration of Document Archiving solution.

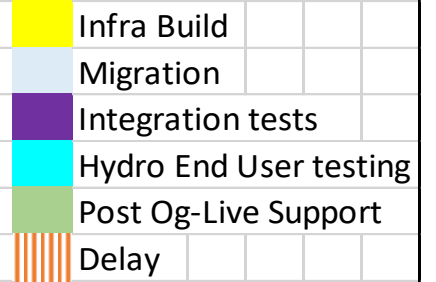
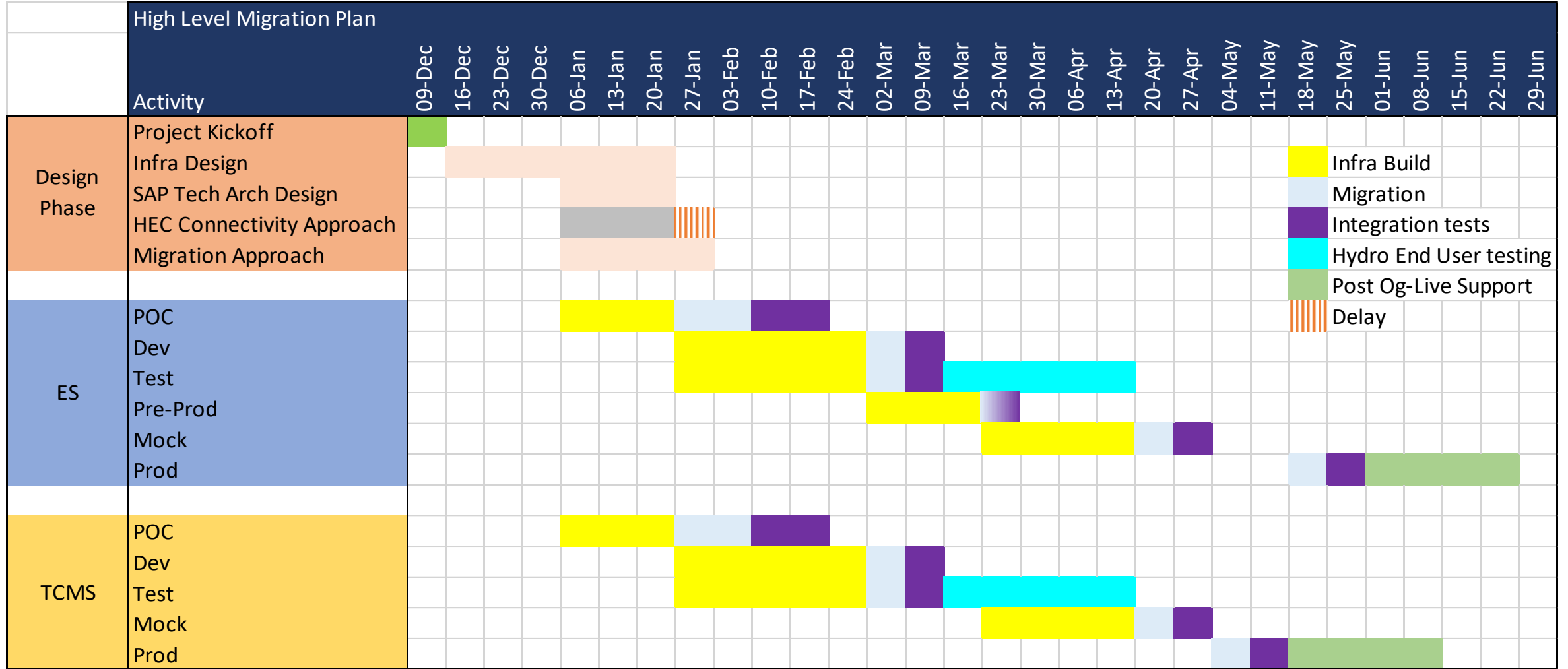


ACCENTURE RESPONSIBILITIES

- Ensure migration within the aggressive timeline of 5 months
- Overall Delivery and Project Mgmt.
- Cloud Foundation on DR site
- Cutover within planned timelines
- Co-ordinate with internal systems and external partners to ensure all integrations work
- Ensure no performance degradation
- Technical Migration Services/Basis
- Infrastructure and Basis Support



Migration plan



Migration metrics



5 Months



End to End Migration completed in 5 months for 2 SAP Landscapes, complete exit from the SAP HEC as planned.

2 Months



Low Level Azure and SAP design for all component, including DR site completed in 2 months

Optimized DR Setup



DR setup co-hosted with Sandbox to ensure utilization of the machine and ensuring hardware availability in case of DR

HA/DR for ASE DB



One of the few ASE DB HA/DR configured on Hyperscaler

2.5 Days



Migration of the Dev and Quality servers in parallel completed in 2.5 days

Data Checks



Data completeness and correctness checks completed with 100% match (including row counts of all Application tables)

Zero freeze period



No Freeze period for end users or development teams, migration done in transparent manner

Learnings



Area	Description	Recommendation
Data Transfer Approach	2 SAP HEC Accounts cannot connect to single Target and hence VPN usage not possible for both systems. Required to use current network and provision for longer downtime.	Understanding the current setup and limitation of host environment important to plan and take remedial actions at early stages itself.
Azure Support	Technical testing for HA DR needs extensive Azure support.	Plan for dedicated support for these activities from Azure early in the program
Data Validation	Because of audit requirements, need to provide Table row count match for Application Schema tables. SAP HANA table M_TABLES takes some time to update and is not reliable.	Use the DB level query execution to get the exact row count.
ASE DB HA/DR	As two systems in migration were on ASE DB, configuring HA and DR (scenario applicable only in prod) created issues.	ASE DB HA/DR replication requires particular sequence to be followed.
Integration issues	One of the system not able to connect on HTTYPS protocol to Internet as the system parameters were not consistent across systems.	Ensure integration and System parameters are consistent across landscape in host environment,
Firewall Deployment	Challenges faced with multiple firewalls and no interface repository details available, to configure and test the integrations.	Get the detailed interface repository as pre-requisite and involve system owners, external partners early in the project.
Azure Design Rules for PPG	Using PPG for lower latency has its own design limitations.	Ensure the limitation of new features are understood and communicated before including in Architecture.



Hydro

We are aluminium

