

# Successful Upgrade and Unicode Conversion of SAP HR and Enterprise Portal at Engen Petroleum Limited

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# AGENDA

**Company Profile**

**Technical Upgrade Programme Overview**

**Project Scope and Structure (Characteristics)**

**Project Approach**

**Challenges / Issues**

**Lessons Learned**

# Company Profile

**PETRONAS**



**Worldwide  
Africa  
Investments**

80%

20%



**ENGEN**

45%

**Afric Oil**

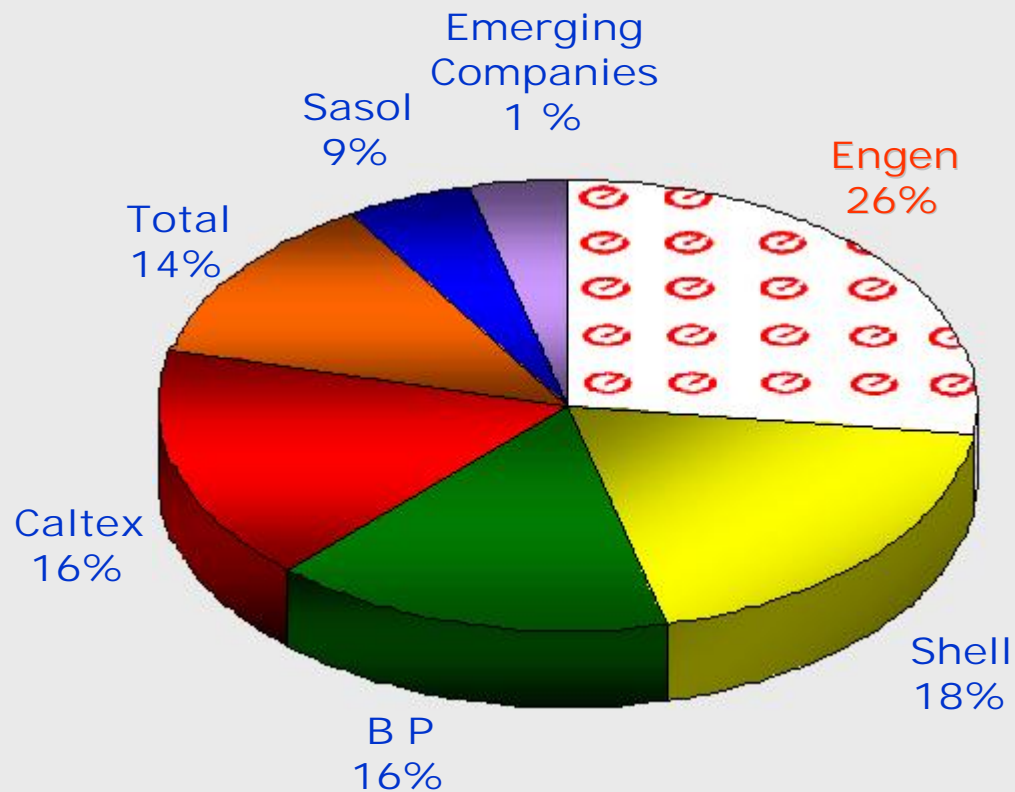


With us you are Number One

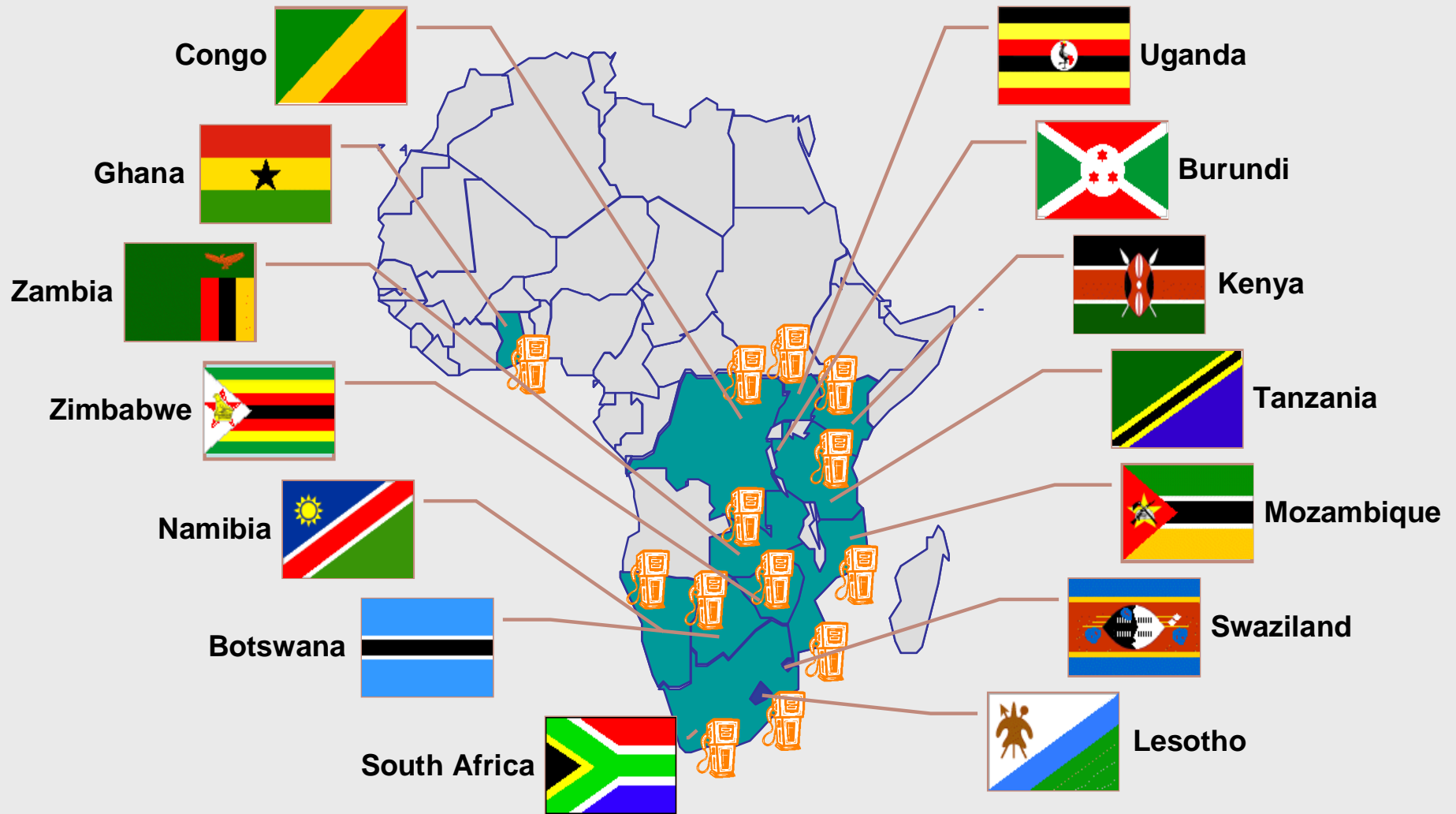
## Key facts and figures

- Turnover ZAR 35 billion (Engen group 2007 excl. duties & levies)
- Volumes 8 billion litres per annum (incl. affiliates & export)
- Refinery capacity of 135,000 barrels per day
- 2790 employees (incl. Contractors & affiliates)
- Market share leader in South Africa – 26%
- Over 1400 service stations (across sub-Saharan Africa)
- Over 600 Quick shops / Convenience centres
- 66 depots
- 7 terminals
- Transport fleet of 176 vehicles

# Petrochemical Market Share in SA



# Current Presence in Africa



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# Programme Eagle

Programme Eagle focuses on the delivery of key IS initiatives, over a three year period, in support of Engen's 2016 vision to be "A Champion in Africa"

The scope of Programme Eagle includes the following streams:

- SAP Technical Upgrade
- Realisation of Business Opportunities
- Business Process Mapping and Reengineering

# Programme Eagle : Streams

## SAP Technical Upgrade (Platform Preparation)

- ✓ EP Upgrade (03/3/07)
- ✓ BW Upgrade (12/3/07)
- ✓ HR Upgrade (26/3/07)
- ✓ SCM Upgrade (23/4/07)
- ✓ Core SAP Upgrade (16/7/07)
- CRM Re-implementation (26/11/07)
- Technology Refresh

## Business Process Mapping and Reengineering

- Aris
- ...

## Realisation of Business Opportunities

### People Productivity Improvement

- Role Based Portals
- xApps for Analytics
- SAPGUI Upgrade
- BW Front-end Migration
- ...

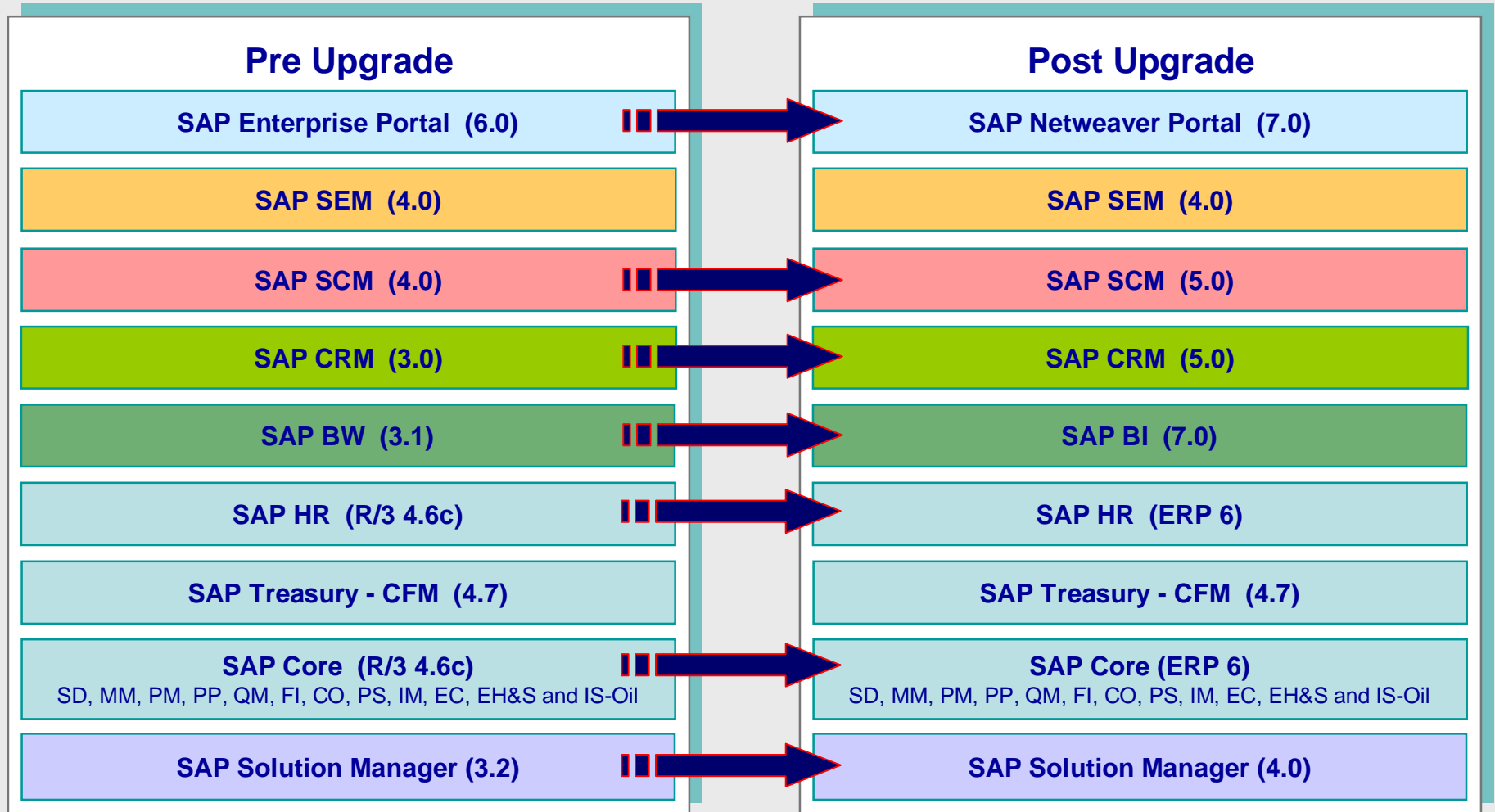
### Divisional Improvement Opportunities

- HCM functional enhancements
- Procurement Improvements
- Credit Improvements
- STO Optimisation
- Manufacturing Improvements
- MIS and Analytics
- Marketing Improvements
- ...

# Technical Upgrade Objectives

- To upgrade and prepare the various SAP system landscapes to effectively address the business opportunities identified during the business case.
- To ensure that Engen's SAP systems remain in mainstream maintenance until 2011
- To enable future exploitation of new / un-used functionality available with Netweaver and ERP6
- To leverage the horizontal and vertical synergies across the organisation and divisions, by implementing an ESA (Enterprise Service Architecture) platform
- To become Unicode complaint
- To upgrade from 32-bit to 64-bit hardware, where applicable
- To minimize the disruption to the business, during the technical upgrades

# SAP System Landscape



# Technical Upgrade Management Team

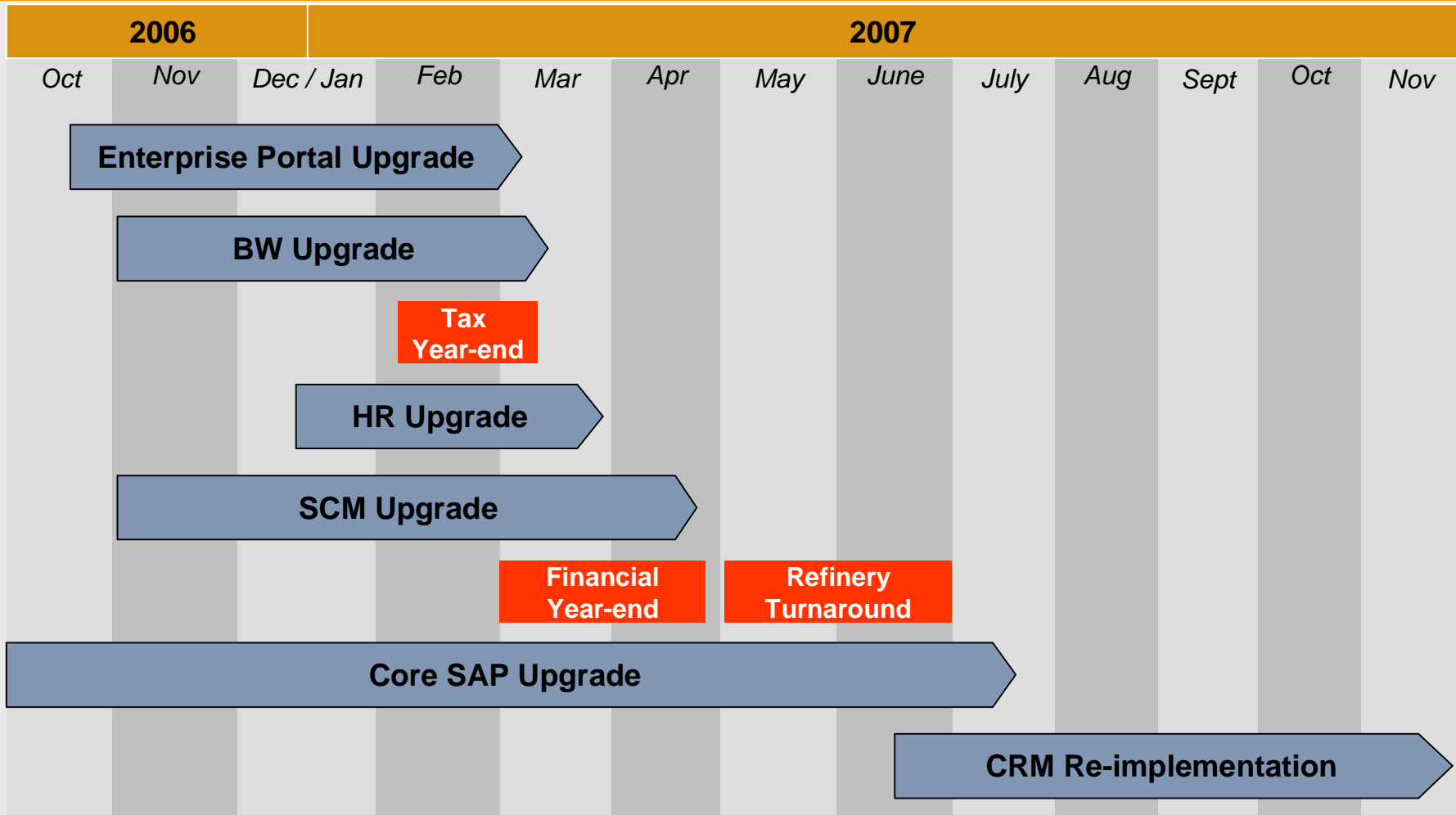
<u>Core</u>	<u>HR</u>	<u>Portal</u>	<u>SCM</u>	<u>BW</u>	<u>CRM</u>
Sponsor PM	Sponsor PM	Sponsor PM	Sponsor PM	Sponsor PM	Sponsor PM
Programme Manager					
Interfaces Team Leader					
Basis Team Leader					
Infrastructure & Desktop Team Leader					
Transformation Team Leader (CM, Auth, Training & Support)					
Programme Sponsor & Chairman					

# Planning and Preparation

## Programme Plan verification

- High-level planning – milestones and dependencies alignment
- Additional investigation of other Oil & Gas ramp-up customers (Saudi Aramco)
- mySAP ERP for Managers Sessions
- Due diligence by Implementation partner
- Upgrade Experiences in SAP ECC 5.0 Projects - © SAP AG 2006
- Unicode Conversion complexity
- Business and IS Constraints

# Technical Upgrade Timeline



# Programme Management Office

- Risk, Issue and Decision management
- Scope management
- Monitoring and Status reporting
- Milestone and Dependency management
- Quality Assurance / SAP Safeguarding
- Cutover planning
- Project Closure
- Administrative support

# SAP Safeguarding

Area	Description	Total Effort (MD)
Technical Quality Management	Central Point of Contact for the Safeguarding engagement	25 - 35 MD
SAP (Production)	<ul style="list-style-type: none"> <li>■ Detailed Analysis incl. actionable recommendations</li> <li>■ Identify and assess possible upgrade options for IT landscape / Solution with focus on technical feasibility, cost and efforts.</li> <li>■ Check of technical impacts of an upgrade project on an existing IT landscape/Solution</li> <li>■ Optimize integration test and volume test with focus on performance, stability, consistency and business volume</li> <li>■ Optimize technical upgrade by tuning standard procedures</li> <li>■ Safeguard critical weekend of production Go Live</li> </ul>	50 - 75 MD
Expertise on Demand	Remote experts for critical problems	20 MD
Solution Manager sponsored by SAP	Infrastructure, Set up End to End Monitoring, Root Cause analysis	10 MD

Contact Person to provide / agree on, follow up actions and service plan, and also coordinates SAP resources

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# Project Scope

- HR
  - Technical upgrade from SAP 4.6C to ERP 6
  - Unicode conversion
  - Inclusive of ESS / MSS
  - Bolt-ons (custom developments)
  - BLSN countries
  - Minimal impact to users
  - No upgrade to third party systems
  - Stress Testing

# Project Scope cont...

## Enterprise Portal

- Technical upgrade from EP6 to Netweaver Portal 7.0
- No new business packs – keep „old“ look and feel (minimal user impact)
- <https://>
- SSO from NTLM to SAP Nego
- New folder structure on PCD
- Export all IAC's and iViews currently used
- Import and move to correct folder
- Create pages, worksets and roles
- Stress Testing
- Permissions, user groups, delegated content administration

# Architecture - HR

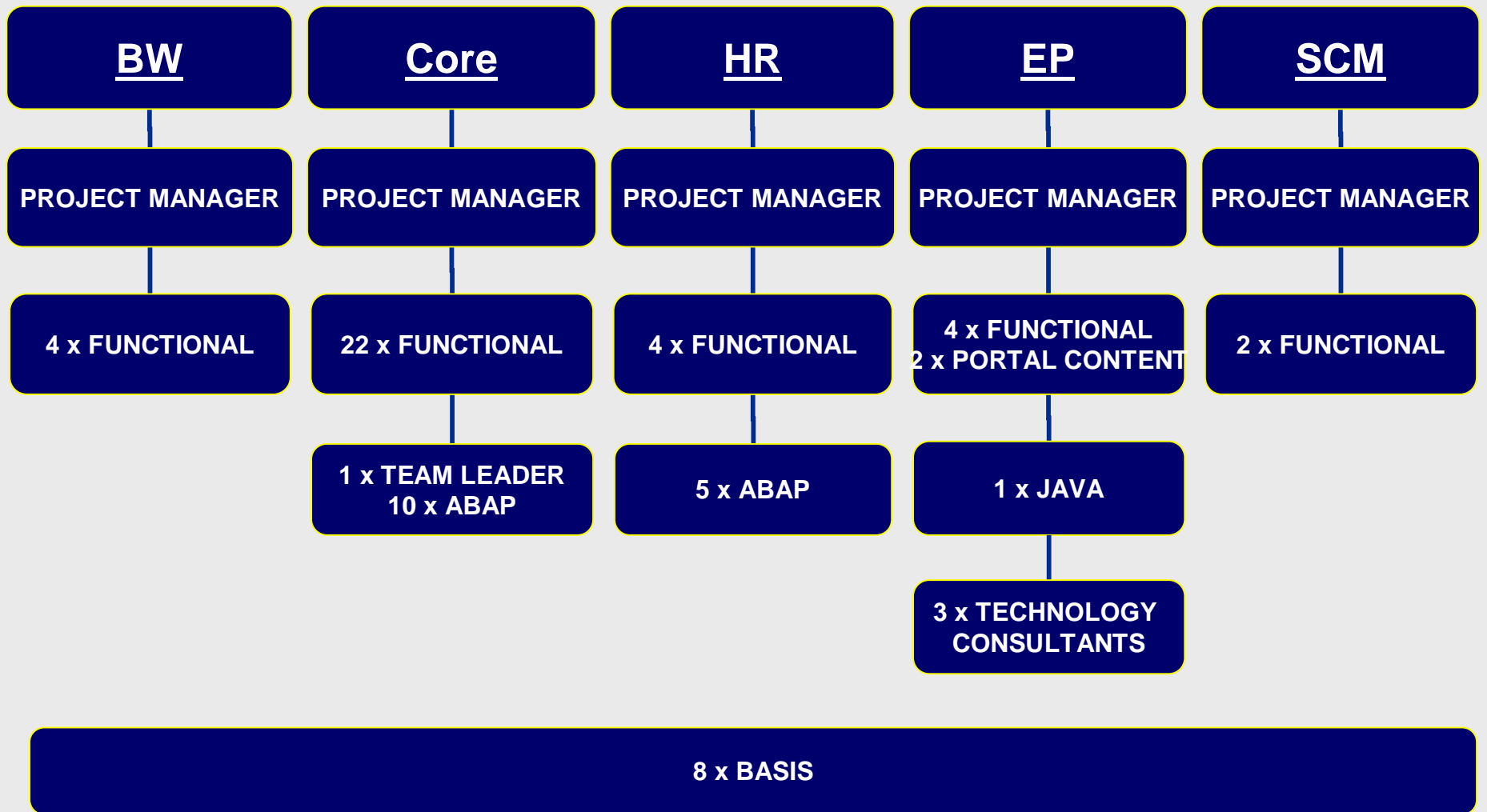
## SAP HR (4.6c)

Platform = Basis 4.6c			OLD HRD	OLD HRQ	OLD TRN	OLD HRP
O.S of App. Server = Windows 2003	Database = MS SQL 2000	O.S of DB Server = Windows 2003				

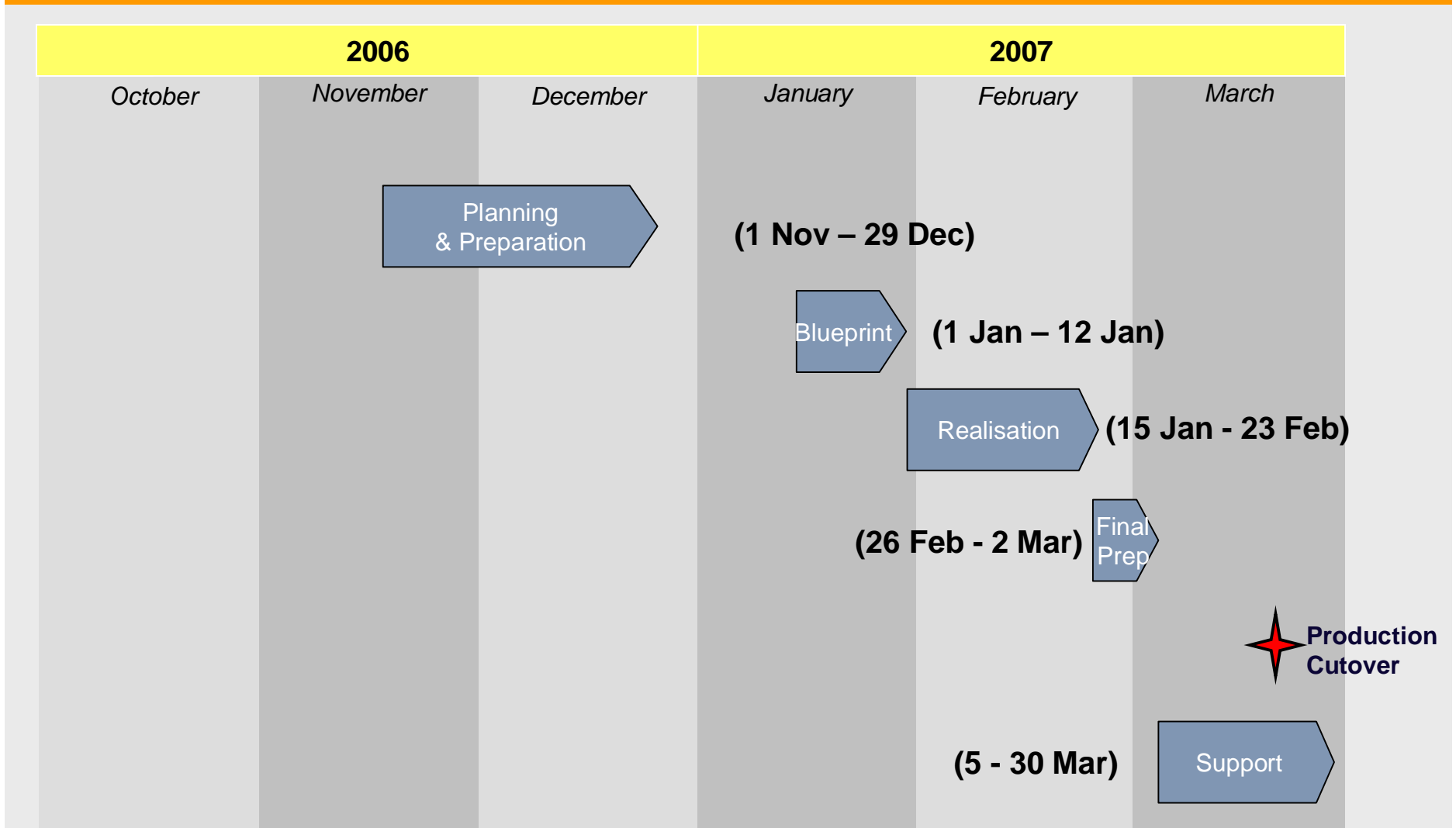
## SAP HR (ERP6)

Platform = Basis 7.00			NEW HRD	NEW HRQ	NEW TRN	NEW HRP
O.S of App. Server = Windows 2003	Database = MS SQL 2000	O.S of DB Server = Windows 2003				

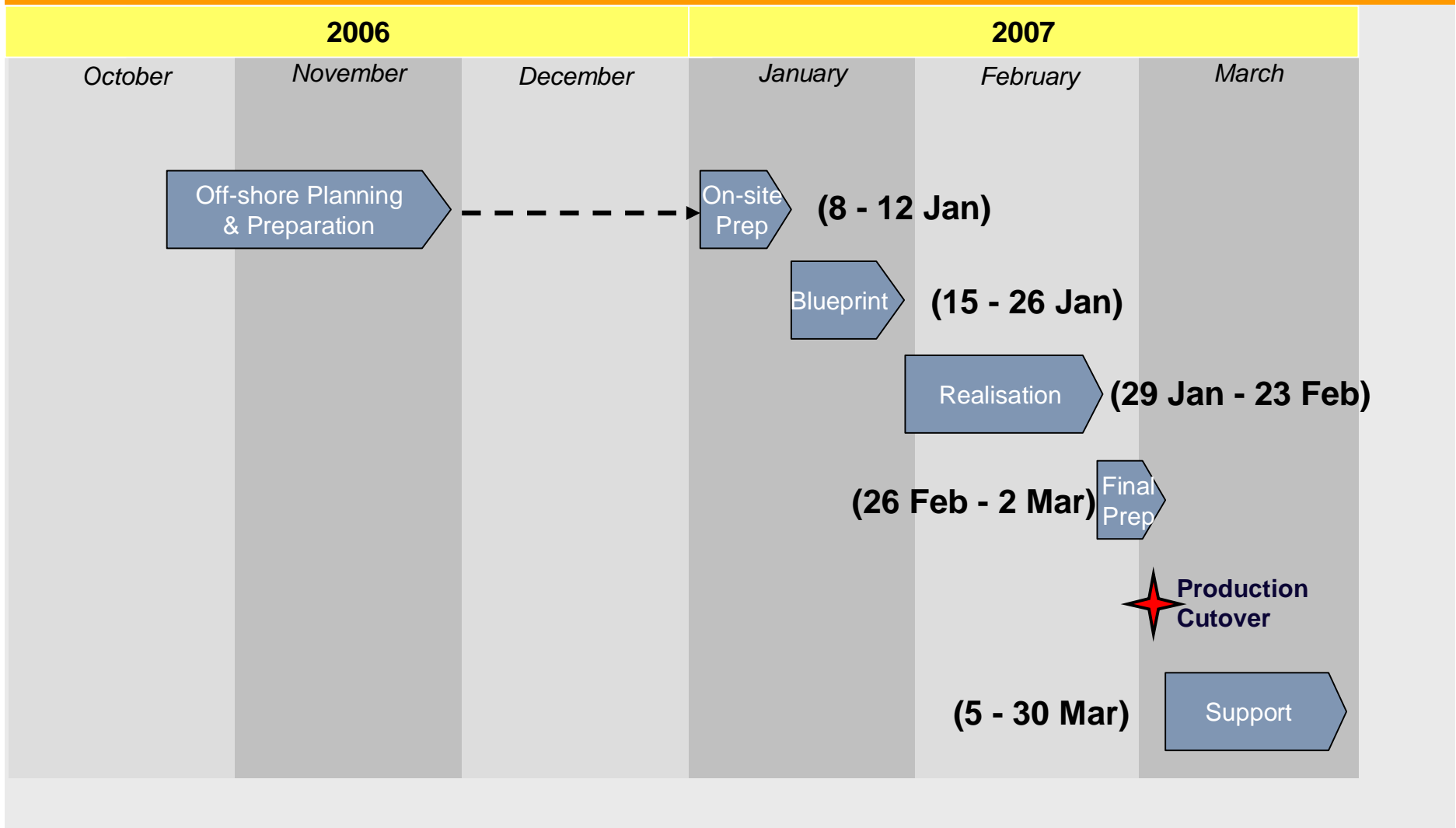
# Project Teams



# ERP2005 Timeline - HR SAP System



# Portal Upgrade Timeline



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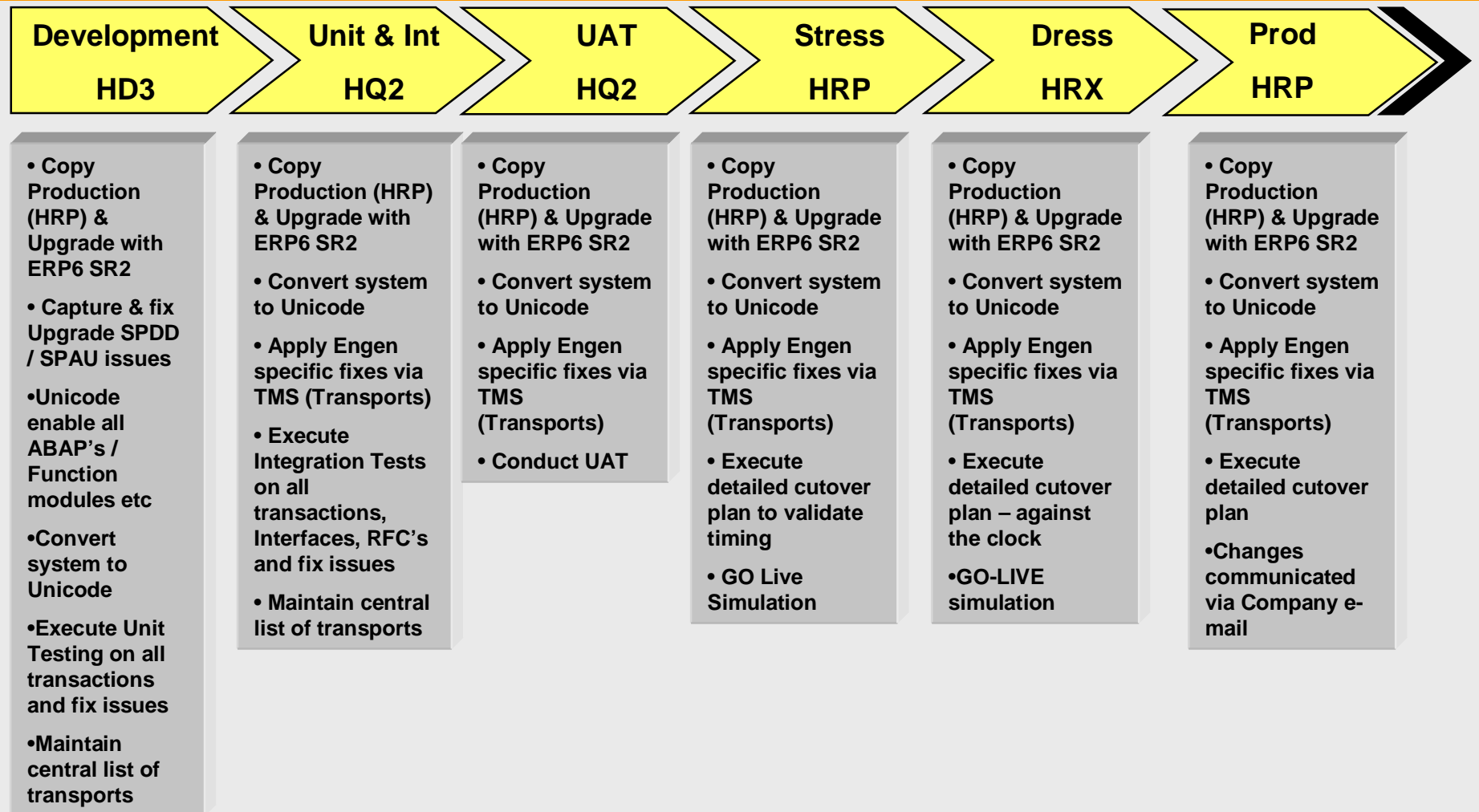
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# HR Upgrade Process



# Portal Upgrade Process - Detail

## New Development Portal

- Built and configure
- Import the iViews
- Create the pages, worksets and roles
- Execute Unit Tests
- Export the content

## New QA Portal

- Built and configure
- Import the content
- Execute Integration Tests
- Execute Stress Tests

## New Production Portal

- Built and configure
- Import the content
- Load the users
- Backup
- Stop old Portal
- Execute detailed cutover plan
- Execute UAT
- Execute Stress tests
- Go-Live.

# HR Cutover steps and duration

Time	Task Name
6 Hours	Pre- Upgrade Activities
14 Hours	Upgrade (Downtime Component)
2 Hours	Pre-Unicode Basis Conversion Activities
40 Hours	Unicode Conversion Parallel Export / Import
7 Hours	Post Unicode Basis Activities
4 Hours	Functional Activities

# Portal Cutover Steps and duration

Time	Task Name
0.5 Hours	Time zone settings and SSO configuration
0.5 Hours	Stop and start HR and Portal
1.5 Hours	Apply patches
0.5 Hours	Stop and start HR and Portal
1.5 Hours	Transports import and check
1 Hour	Publish and check services
0.5 Hours	Stop and start HR and Portal
0.5 Hours	Workflow and UWL configuration
4 Hours	UAT

# HR Project statistics

- Person hours +- 6,000
- Project team size – 14 full time / 57 involved
- Number of users – 2500
- Upgrade iterations – 5
- Integration test scenarios – 44
- Number of SPDD (4) /SPAU fixes (355 items)
- Issues resolved – 243
- OSS messages logged – 33
- SPDD / SPAU fixes 359
- Planned cutover downtime – 70 hours
- Cutover Downtime – 63 hours
- Unicode conversion downtime – 49 hoursDB size 39 Gb

# Portal Project Statistics

- Person hours –  $\pm$  4,000
- Project team size – 7
- Number of users – 2000
- Migration iterations – 4
- Integration test scenarios – 30
- Issues resolved – 10
- OSS messages logged – 4
- Cutover Downtime – 6 hours

# Transformation Management

## Communication:

- Due to low impact – company emails were sent to highlight changes
- Education sessions for SAP coordinators and trainers on changes
- Business approval for outage period

## Support:

- Normal support procedures utilised

## Training:

- Change impact analysis (minimal changes)
- Training needs assessment (consultant, training and business coordinator)
- Training Strategy (email)

## User Involvement:

- Utilised Super Users for UAT

## UWL

- Refresh button
- Approval screens – old look and feel no longer supported due to new Integrated ITS.

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# Challenges

- Concurrency of Upgrade projects
  - Milestone and Dependency management
  - Resource constraints – Basis, infrastructure
- Synchronisation of changes from “old” to “new” landscape
  - All Configuration and custom development changes after Production system copy for “new” Development system to be manually recreated

# Technical / Functional Issues

## Problems during export phase of UC conversion

- During export phase of UC conversion we experienced permission problem at DB level
- Problems with install software (SAPINST) – had to be done manually by SAP
- SAP needed to create fixes for us for a distributed installation (SAPINST requires everything on the central instance)

UC conversion adds lots more time to cutover downtime

Do not under estimate time to enable all code

Experienced different problems at each iteration (DEV / QA / DRESS / PROD)

Missing table entries – DBA ran a check on the DB which “rebuild” the tables

DB tables not indexed – workflow tables read sequentially

Transport sequencing – VERY IMPORTANT

No SAP license was created after the SAP installation – can't start system

Case sensitive passwords – system ID's (RFC etc)

Downtime minimise vs Resource minimised approach – decide upfront

Include UC conversion as part of upgrade or not (needs more hardware)

## Technical / Functional Issues cont....

Custom ESS IAC'S – search help, red lines

Custom MSS Java iViews

UWL

- Time zone settings
- Bad magic number

System Performance

- Table Indexes
- Integrated ITS must be on 64bit machine

Workflow regenerate - CATS

Screen resolutions - CATS

Integration testing

- SSO

IE settings - PAM

# Unicode Conversion Considerations

- Unicode conversion increases cutover duration and complexity
- Experienced different problems in Dev / QA / Prod conversions
- Problems with install software (SAPINST) – had to be done manually by SAP (HR)
- SAP needed to create fixes for distributed DB installation (SAPINST requires everything on the central instance) (HR)
- Optimise Export / Import run times to meet down time requirements
- Do not underestimate time to enable all code
- No DB growth experienced, due to ongoing archiving of transactional data as well as DB re-org. during the Unicode conversion

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# Lessons Learnt

## Snakes: (what we would avoid)

- Upgrading Portal and backend at the same time should be avoided
- Distributed team (logistically)
- Should have included architecture design during preparation phase
- Changes to Support Packs/Stacks between iterations
- Bought a turnkey solution for the application, but did not foresee all implications on architecture

## Ladders: (what we would do again)

- Internal Project Management
- Use SAP Safeguarding Service (esp. On-site Support during cutover)
- Introduce code freeze
- Milestone & Dependency Management
- Detailed cutover planning - redefined by various iteration – reduces risks
- Stress testing – performance improvements and problem identification
- Portal upgrade before back end system

# Conclusion

The Upgrade and Unicode conversion can be combined, but

- Don't under-estimate the complexity and effort,
- Identify increased risk early,
- Plan mitigating actions, such as
  - ◆ Multiple iterations and testing
  - ◆ SAP Safeguarding – On-site support
- Source experienced Basis resources “who have done it before”, to help optimise the conversion

It is NOT recommended to upgrade the Portal and the backend systems at the same time

Questions ?