

Successful Upgrade and Unicode Conversion of SAP Business Suite at Engen Petroleum Limited

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PETRONAS



**Worldwide
Africa
Investments**

80%

20%



ENGEN

45%

Afric Oil 

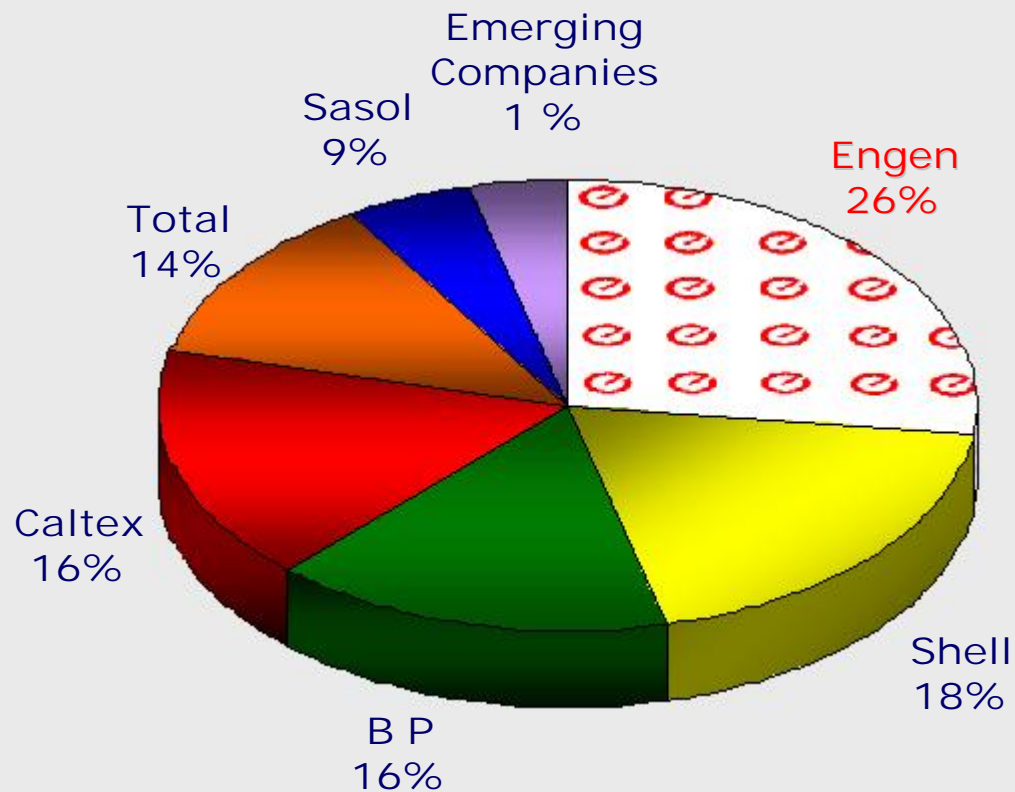


Key facts and figures

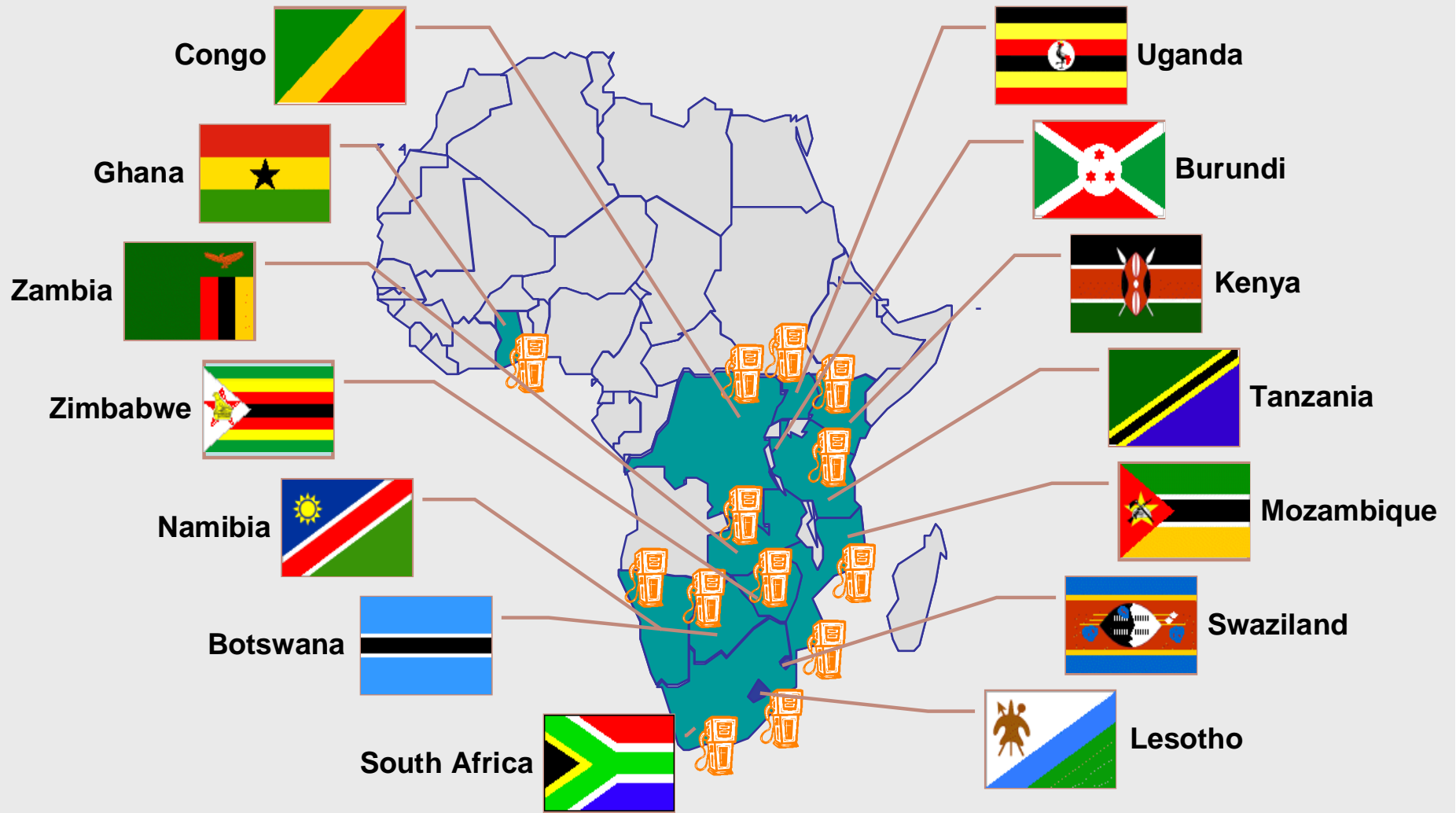
- Turnover ZAR 35 billion (Engen group 2007 excl. duties & levies)
- Volumes 8 billion litres per annum (incl. affiliates & export)
- Refinery capacity of 135,000 barrels per day
- 2790 employees (incl. Contractors & affiliates)
- Market share leader in South Africa – 26%
- Over 1400 service stations (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

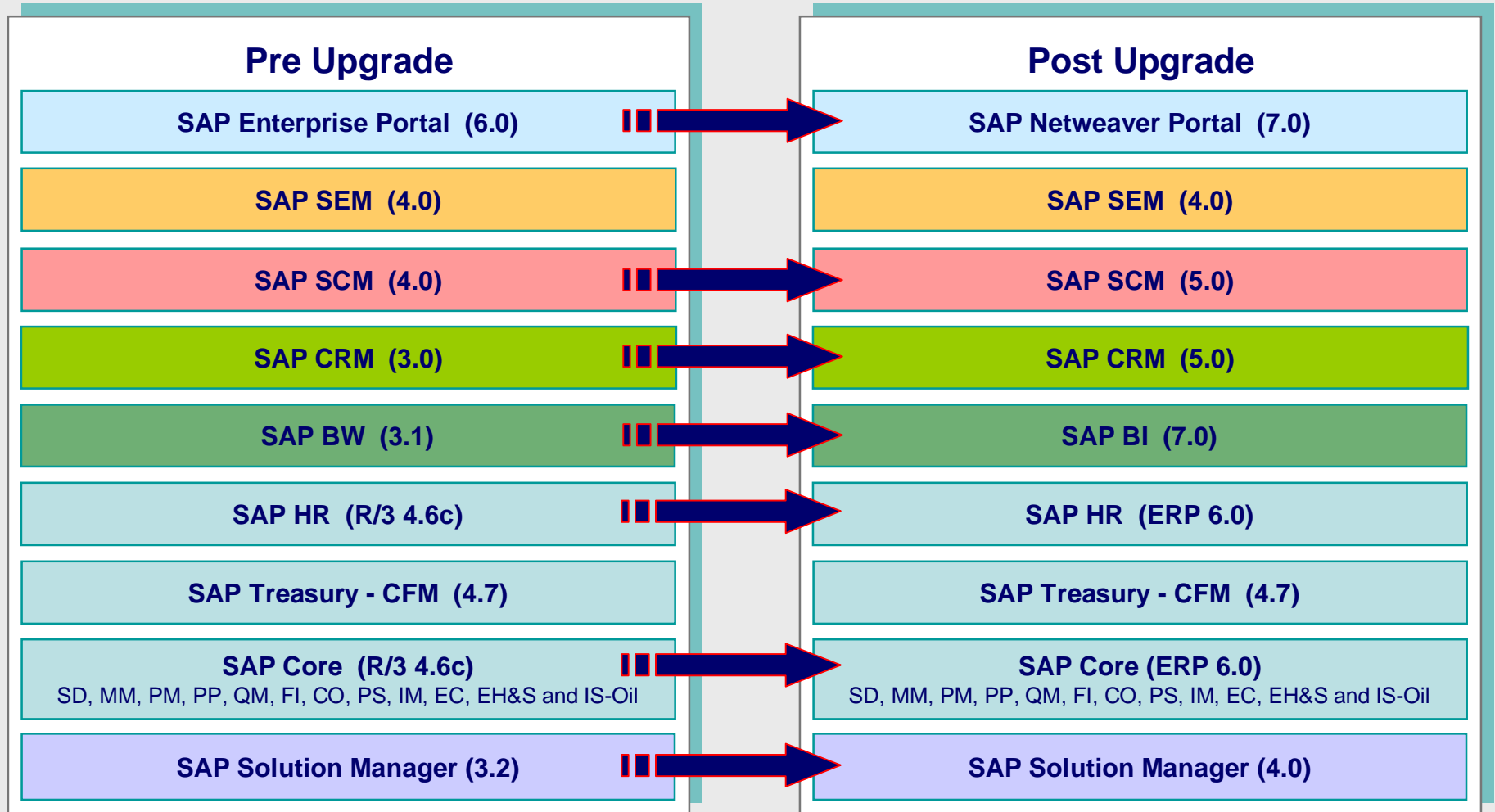
- HCM functional enhancements
- Procurement Improvements
- Credit Improvements
- STO Optimisation
- Manufacturing Improvements
- MIS and Analytics
- Marketing Improvements
- ...

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

Programme Sponsor & Chairman

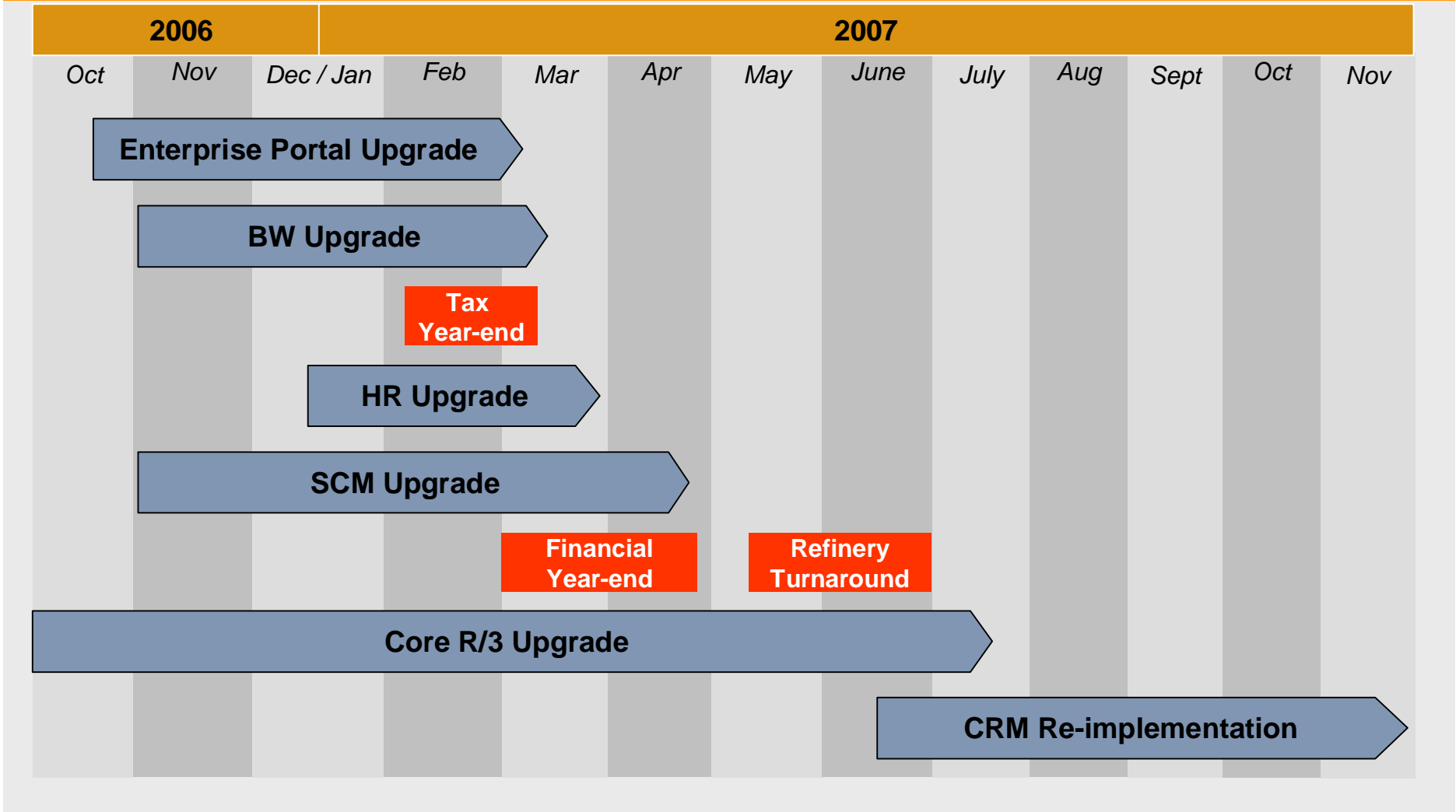


Planning and Preparation

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 Platform Upgrade Timeline



Programme Management Office

- Vendor Management – Implementation Partner
- 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 (Technical)	<ul style="list-style-type: none"> ■ Detailed Analysis incl. actionable recommendations ■ Identify and assess possible upgrade options for IT landscape / Solution with focus on technical feasibility, cost and efforts. ■ Check of technical impacts of an upgrade project on an existing IT landscape/Solution ■ Optimize integration test and volume test with focus on performance, stability, consistency and business volume ■ Optimize technical upgrade by tuning standard procedures 	50 - 75 MD
	<ul style="list-style-type: none"> ■ Safeguard critical weekend of production Go Live 	
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 Strategy

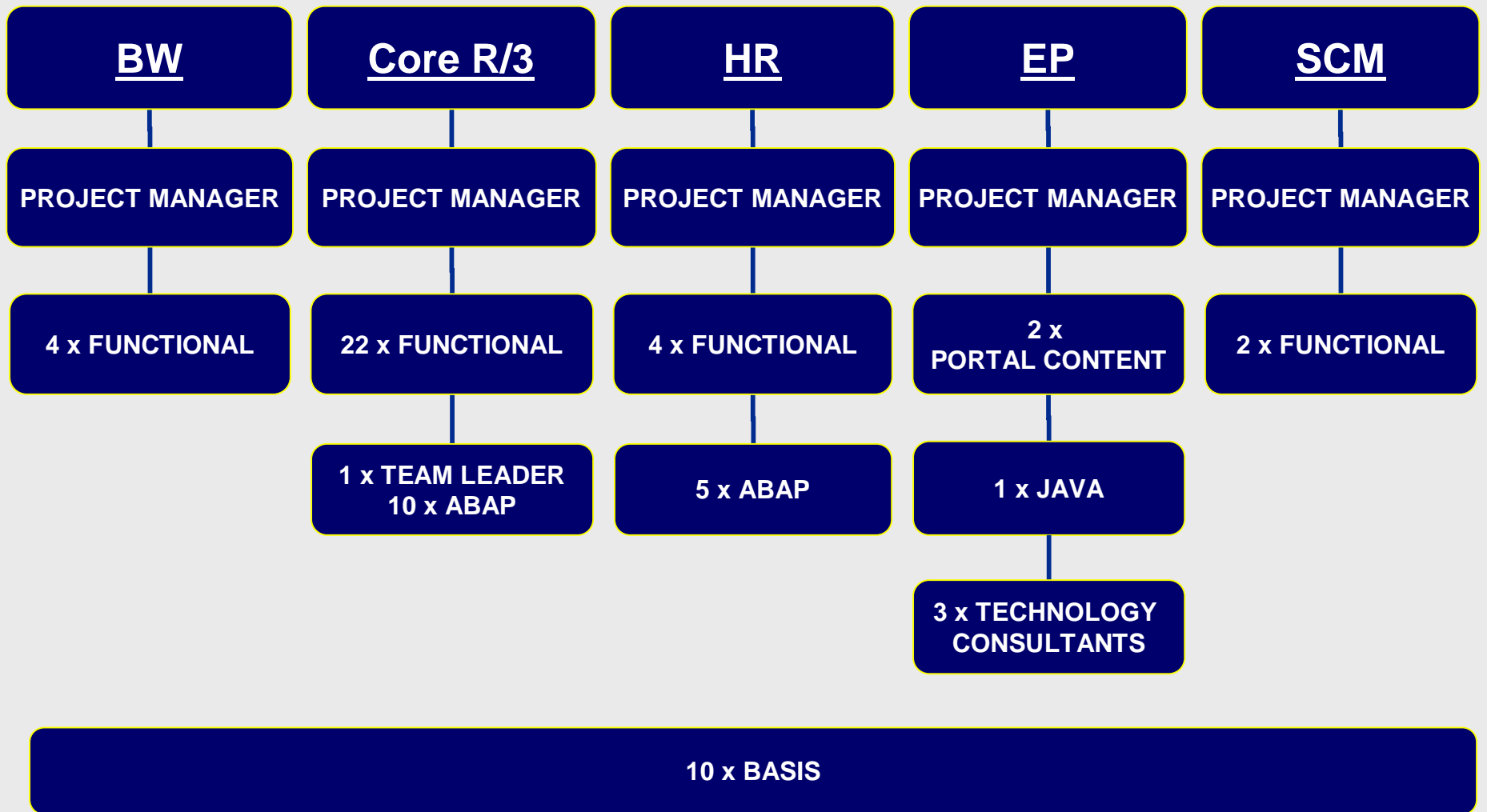
- Dedicated internal resources, supplement where necessary
- Keep project duration within 6 months
- Impose change freeze to minimise duplication of effort
- Downtime Minimise strategy for Production cutover
- Minimise business impact

Project Scope

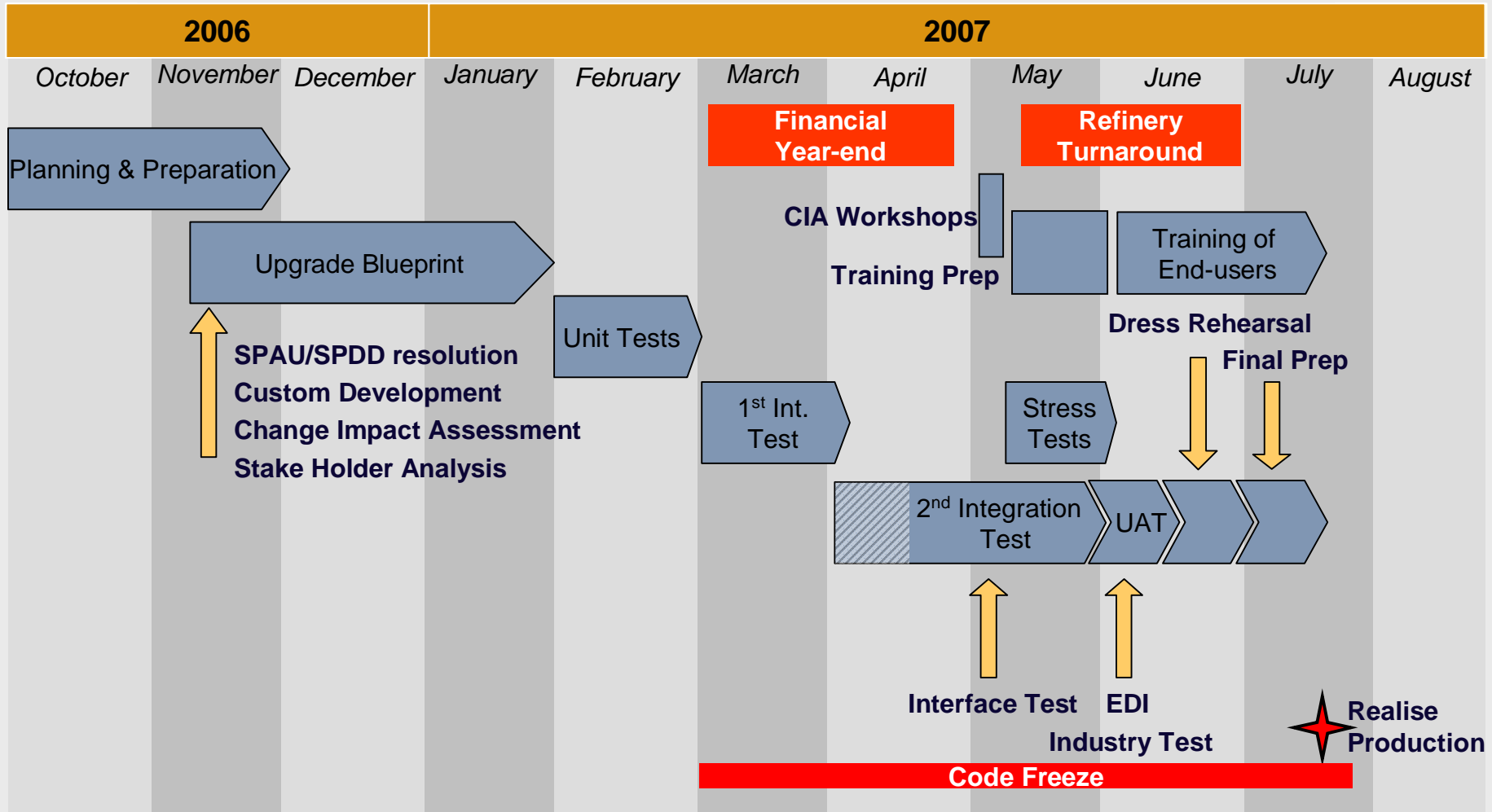
- Core R/3
 - Technical upgrade and Unicode conversion
 - No upgrade to third party systems
 - Upgrade SAP Solution Manager to 4.0 (Unicode)
- BW
 - Technical upgrade and Unicode conversion
 - Migrate hardware from 32bit to 64bit
 - Introduce QA system to environment
- SCM
 - Technical Upgrade and Unicode conversion
 - Migrate hardware from 32bit to 64bit
- HR
 - Technical upgrade and Unicode conversion
- Portal
 - Technical upgrade only



Project Teams



ERP 6.0 Timeline - Core R/3 System



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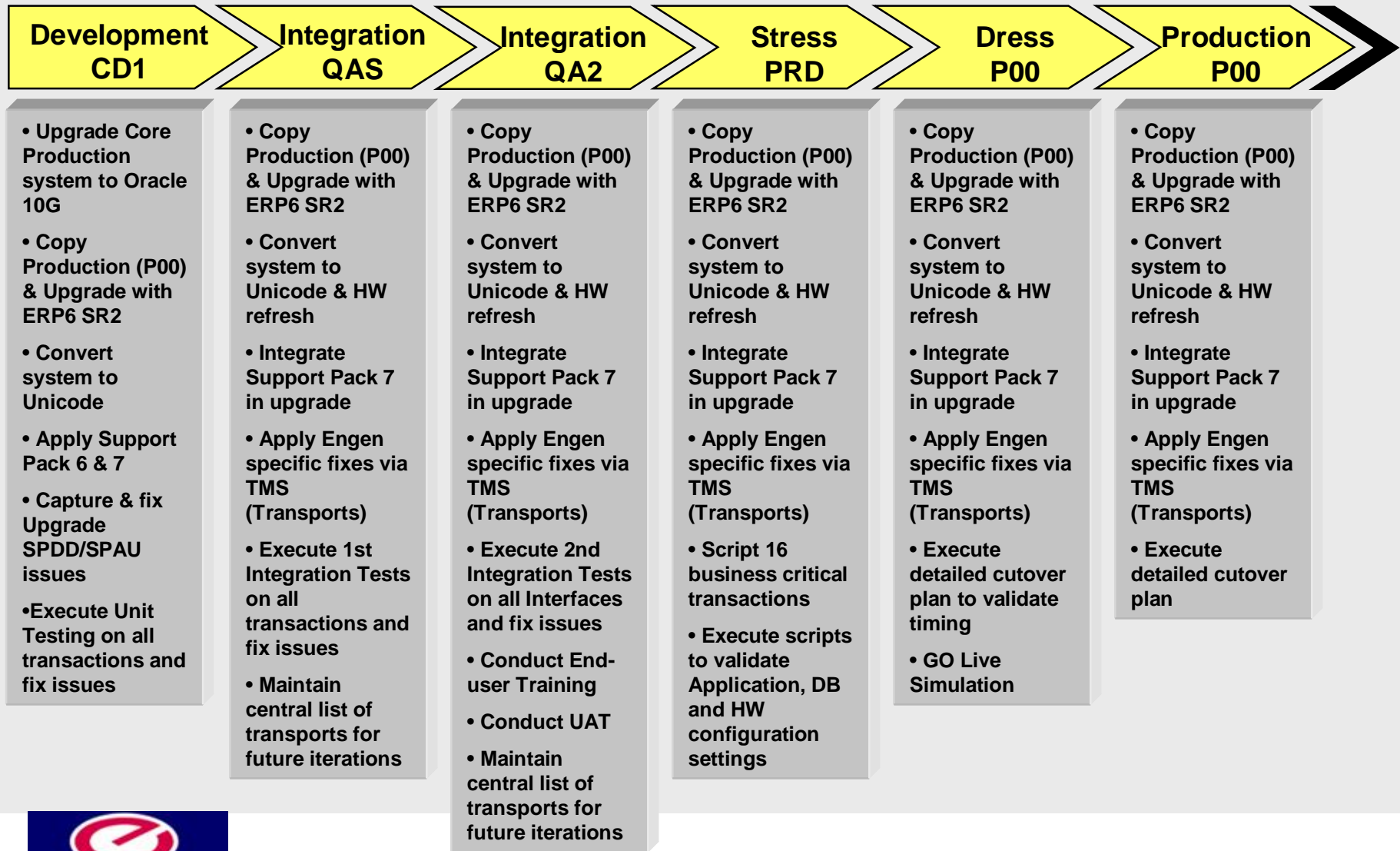
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Core R/3 Upgrade Process



Core R/3 Cutover Steps and Timing

Time	Task Name
6 Hours	Pre- Upgrade Activities
8 Hours	Prepare Production System – Upgrade Uptime
2 Hours	Day End Jobs & Clearing of BDC's
4 Hours	System copy to staging environment
8 Hours	Apply pre-Unicode conversion transports (SPAU etc.) Technical Upgrade – Upgrade Downtime
4 Hours	System Back-up
10 Hours	Unicode Conversion
22 Hours	Unicode Conversion Parallel Export/Import of Data Base & Post Unicode conversion Transports
4 Hours	Back-up
4 Hours	Post Unicode Activities
6 Hours	Capture Sample Backlog, Interface Backlog, Manual Backlog etc.



Testing Approach

Unit & Integration Testing

- All custom objects and interfaces verified for Unicode enablement
- All integration tests conducted according to business processes
- Test environments available for 3rd party and other SAP systems
- Dedicated test cycle for interface testing and Unicode compliance
- Tests conducted with external business partners

User Acceptance Testing

- Involved key business stakeholders to test Acceptance Testing scenarios

Stress Testing to verify System Performance

- Scripted critical business transactions,
- Performed 12 stress tests,
- simulating over 500 users with 85 000 dialogues per hour
- In addition we pushed the load to over 330 000 dialogues per hour
- The current peak load is 75 000 dialogues per hour

Dress Rehearsals

- Rehearsal verified timing, sequence, and completeness of cutover plan



Transformation Management

Training:

- Change impact analysis (minimal changes)
- Training needs assessment with training / business coordinators
- Training Strategy (classroom or email/ job aids)

Cutover:

- Change Managers (business ownership)
- Business approval for outage period
- Cutover Plan (with contingency for delayed go-live)
- Manual forms and procedures in place
- Communication driven by business to internal and external customers

Communication:

- Communication plan developed
- Education sessions for SAP coordinators and trainers on changes
- UAT communication to coordinators and their managers
- Small changes where no training required were communicated to users

Support:

- Existing support process utilised - Coordinators & trainers first line of support



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Project Facts

	Core R/3	HR	Portal	BW	SCM
Team size (FTE's) (excl. Basis, Infra., OCM, PMO)	34	10	7	5	3
Effort (hours) (all resources)	± 21,000	± 6,000	± 4,000	± 4,600	± 2,000
Number of Users	1,200	2,500	2,000	1,200	4
Upgrade / conversion iterations	8 (incl. 2 full DR)	5	4	4	3
Integration test scenarios	642	44	30	102	12
SPDD/SPAU fixes	90	359	-	-	1
Issues resolved	418	243	10	23	10
Planned Cutover Downtime	66 hrs	70 hrs	6 hrs	70 hrs	69 hrs
Actual Cutover Downtime	55 hrs	63 hrs	6 hrs	70 hrs	49 hrs
Unicode Conversion Downtime (Pre, import/export, post activities)	36 hrs	49 hrs	n/a	36 hrs	15 hrs
Database size	760 Gb	39 Gb	-	900 Gb	14 Gb

Infrastructure provided: 69 Servers and 34 Terabytes storage



Programme 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

Ensure sufficient Hardware to support Multiple Landscape requirements



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



Technical Issues

- System Performance
 - Hardware technology change incorporated in the upgrade project (change from HP PA-Risc to HP IA64 & introduction of MS-Windows based Application Servers)
 - Estimated +/- 30% more CPU, double RAM
- Required to upgrade the SAP Archive system from IXOS to LiveLink
- Required additional round of integration testing for Windows Application Server differences



Lessons Learnt

Snakes: (what we would avoid)

- Heterogeneous Hardware landscape
- Changes to Support Packs/Stacks between iterations (BW)
- Implementation of multiple concurrent projects– greater risk

Ladders: (what we would do again)

- Transparent approach thru Programme: tracking Milestones & Dependencies, risks, issues and successes
- Internal Project Management
- Dedicated internal resources, supplemented where required
- Detailed cutover planning - refined by iterations with final dress rehearsal – reduces cutover risk
- Use SAP Safeguarding Service (esp. On-site Support during cutover)
- Stress testing – performance improvements and problem identification
- Early hardware requirements planning



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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





Questions