GETTING STARTED WITH AN UPGRADE TO SAP® ERP 6.0
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As the business world changes, SAP develops new releases of its enterprise resource planning (ERP) software to accommodate your organization’s evolving business needs and help you remain competitive. SAP has taken extensive measures to simplify the process of upgrading to the latest release of the SAP® ERP application – SAP ERP 6.0. This ERP software upgrade should not be perceived as a necessary evil. Rather, it should be perceived as a valuable opportunity to maximize the value of your SAP investment. To take advantage of this opportunity, all that’s required is appropriate planning and management.

As a Forrester report shows, “Replacing or upgrading applications is an important issue for many firms, ranking as the fifth-highest priority among IT decision makers for 2006, with 18% rating it as a critical priority.”1 Upgrades need to be well integrated within an organization’s overall IT strategy and planning, which is why release and upgrade management for SAP ERP has become a topic of strategic importance, having high visibility among senior managers.

Given the inherent volatility of information technology, an upgrade to SAP ERP 6.0 can be seen as a normal business activity – an investment necessary for maintaining a stable IT environment. The upgrade can also bring significant benefits to your organization by extending the functionality and improving the performance of your ERP software. Far from purely a technical issue that can be left entirely in the hands of IT departments, an ERP software upgrade is vital to the daily business operations of your organization and can bring about significant improvements in business efficiency.

Prompted by the importance of the upgrade topic and the widely divergent understanding of it within the SAP community, SAP has compiled this “getting started” guide. Directed to IT decision makers and project leaders, the guide is designed to help you assess the value potential of upgrading to SAP ERP 6.0. It also summarizes best practices, SAP recommendations, and a range of SAP tools and services that can assist you with the upgrade project across its entire life cycle – from discovery, to evaluation, to implementation (see Figure 1).

This guide answers the following questions:

- How can my organization evaluate and justify an upgrade?
- How can my organization plan an upgrade?
- How can my organization execute an upgrade?

A section at the end of this document (see the “Further Information” section) lists useful resources that detail specific aspects of an upgrade.

**WHY UPDATE YOUR ERP SOFTWARE?**

“ERP upgrades are an essential process that helps organizations derive greater value from their ERP software and prolong the useful life of this very important asset. . . . A key part of the upgrade strategy process is getting a critical mass of employees to understand ERP upgrades are a normal part of the product life cycle.”2

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SAP ERP 6.0 provides SAP customers with a wealth of opportunities for improving their businesses. Based on customer experience during the ramp-up of this new release, SAP has determined that the following business scenarios are the most highly valued in the SAP community:

- Employee self-service
- Manager self-service
- Human resources (HR) administration
- Project management
- Sales-order processing
- E-recruiting
- Treasury risk management
- New general ledger
- Travel and expense management
- Real estate management

In addition, the new software lays a stable technological foundation that covers legal and compliance requirements while giving you the flexibility to innovate. With SAP ERP 6.0, you can meet your particular business needs and implement new functions at your own pace. Combining an upgrade with other IT initiatives – for example, replacing legacy systems, consolidating the system landscape, or reducing the level of software modification and customization – can also help you lower total cost of ownership (TCO).

When justifying an upgrade to SAP ERP 6.0, you need to weigh the software's potential benefits and risks in light of your organization’s specific circumstances. Each SAP customer faces a unique situation in terms of the coverage and maturity of its SAP software. Each is using SAP solutions in very different ways. And each has different needs, goals, and priorities as it works to achieve improvements in operational excellence or equip itself for future business innovation. A good justification does not usually depend upon a single decisive factor or “killer feature” but rather on a combination of interrelated factors that can benefit a wide range of business areas.

Because of the intricacy of an upgrade justification, it is worthwhile assessing the value potential of SAP ERP 6.0 using a clear procedure and methodology. However, a customer survey conducted by SAP in 2006 indicates that only about 9% of SAP customers take the time to do this.

The following six-step approach is considered best practice among SAP customers:

1. **Gathering preliminary information** – The IT department gathers product information on SAP Web sites and participates in SAP events to get a basic understanding about new SAP products.

2. **Involving stakeholders** – The IT department and representatives of the various business units cooperate to assess the value proposition of an upgrade and build consensus. Since an upgrade justification is unique to each customer situation, SAP has developed a solution browser tool for SAP ERP that enables IT organizations to include respective business units in these discussions.

SAP ERP 6.0 provides us with a strong foundation for excellence in our core functions and supports our overall growth strategy.”

**David Franco**, Director of IS Management

**Groupe Canal+ SA**

**Quick Upgrade Analysis Service**

Designed to get you started with an upgrade assessment, this SAP service provides a high-level savings estimate as well as an estimate of the project’s ROI, an assessment of the upgrade complexity (giving specific information on the level of modifications in your solution), an effort estimate for each phase of the upgrade project, and a sample project plan.

**Solution Browser for SAP ERP**

This tool allows you to identify new features and functions and their business benefits in a given release of SAP ERP and enhancement packages. It gives business process experts the opportunity to map current business requirements with the latest functions available in SAP ERP. For more information, go to [www.service.sap.com/upgrade](http://www.service.sap.com/upgrade) ➜ Upgrade Tools ➜ SAP ERP Solution Browser. (Note: All listings that begin with [www.service.sap.com](http://www.service.sap.com) take you to the SAP Service Marketplace extranet. This site requires registration.)
3. Determining the business value of new functions – Business units gather in-depth information about the specific features and functions of SAP ERP that could be useful to them.

4. Organizing delta workshops – IT departments organize delta workshops with SAP software experts, who come from either SAP itself or from a partner organization. These focused delta workshops allow business process experts to assess the value potential of new SAP ERP functions in more detail and also help them understand the possible implications of these functions on business operations.

5. “Test-driving” new functions – The IT department sets up a demo or “sandbox” system for trying out new functions.

6. Finalizing a justification – The business units and the IT department discuss the merits, costs, and risks of an upgrade and produce a justification for the upgrade.

This bottom-up approach helps to quantify in concrete terms the potential gains of upgrading to SAP ERP 6.0.

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**Essentials of an Upgrade Justification**

For an efficient and accurate justification of an upgrade, you should ensure that:

- You have assessed core business processes supported by the existing SAP software landscape
- Complementary and competing projects that might affect the core business processes and connected SAP software systems are transparent
- You have identified the key value drivers for the company’s business model and key improvement opportunities in current business operations
- You are familiar with the functions of SAP ERP 6.0, including the enhancement packages for the software
- You have identified and mapped business requirements to the functions of the new SAP ERP software (Note: This establishes what tangible benefits can be gained from an upgrade and enables the creation of a business case.)

**Reasons for Upgrading**

Each organization has different reasons for considering an upgrade. For a well-oriented justification process, you and other decision makers in your organization should create a detailed summary of what benefits you expect or would like to derive from an upgrade. Some of the most common reasons for considering an upgrade are:

- Business user demand for new functionality to improve operational excellence, enable innovation, and support new business models
- Desire to increase process efficiency and thus reduce TCO, particularly in terms of the total cost of operations – for example, by returning SAP software modifications and custom developments to SAP standard functions
- Requirements from IT, such as planned infrastructure updates and consolidation projects that can be combined beneficially with an upgrade to SAP ERP 6.0
- Vendor’s release schedule or support policies
Figure 2 shows the results of an SAP survey in which customers were asked about what improvements they anticipated from an upgrade to SAP ERP 6.0. The figure shows the level of interest (given as a percentage of those surveyed) in specific benefits.

From another perspective, postponing upgrades may expose your company to risk, such as failure to meet legal and compliance requirements; technological obsolescence; or incompatibility of your current hardware, operating systems, and database versions. These risks can be only partially covered by paying extended maintenance fees to software vendors. Minimizing them is an important, though often underappreciated, factor in justifying an ERP software upgrade. Ignoring the risks is unacceptable in the long term. So when considering an upgrade, the question you need to ask is not simply “Should I do it or should I not?” but rather “Should I do it now or later?”

In the following sections, the benefits of upgrading to SAP ERP 6.0 are analyzed in detail from four perspectives: operational excellence, business strategy, sustainability, and total cost of ownership.

**Operational Excellence**
SAP ERP 6.0 provides more than 300 functional enhancements that can improve process efficiency. In addition, it integrates the functions of most SAP industry solutions so that these solutions no longer need to be installed and set up separately. The new software also simplifies daily business tasks through more appealing and integrated user-interface concepts that increase user productivity and satisfaction – for example, by enabling the use of Duet™ software for integrating Microsoft applications.

Because every customer uses a different SAP software landscape, key value drivers and tangible benefits of the new ERP software have to be identified and mapped to business needs on an individual basis. You can use the summary of enhancements shown in the table on the next page to identify the relevance of specific features and functions for your organization and to drive an internal discussion among business units.

Using the following list to help map the specific business requirements and value drivers to the features and functions of SAP ERP 6.0 should help reveal the concrete benefits that contribute significantly to an upgrade justification.
## Business Challenges

### SAP® ERP 6.0: Enhancements

#### Features and Functions

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<td><strong>User productivity</strong></td>
<td>- New application interfaces&lt;br&gt;- Updated role-based access&lt;br&gt;- Greater use of Adobe interactive forms</td>
<td>- Employee self-service&lt;br&gt;- Manager self-service&lt;br&gt;- Employee interaction center</td>
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<td><strong>Reporting and performance management</strong></td>
<td>- Better planning and forecasting tools&lt;br&gt;- Greater ability to account for investments&lt;br&gt;- Improved product costing module</td>
<td>- Express planning&lt;br&gt;- Business consolidation&lt;br&gt;- Product design cost estimate</td>
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<td><strong>Accounting and financial reporting compliance</strong></td>
<td>- Automated allocations and balancing using multiple dimensions&lt;br&gt;- Automatic reporting of segregation-of-duties testing&lt;br&gt;- Enhanced contract accounting and collections</td>
<td>- New general ledger&lt;br&gt;- Management of internal controls&lt;br&gt;- Contract accounting&lt;br&gt;- Financial supply chain management</td>
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<td><strong>Talent attraction and retention</strong></td>
<td>- Improved support for recruiters&lt;br&gt;- Improved online learning resources and support for knowledge management&lt;br&gt;- Enhanced performance management and objective-setting functions</td>
<td>- Recruiting&lt;br&gt;- E-learning&lt;br&gt;- Workforce performance management&lt;br&gt;- Succession management</td>
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<td><strong>Shared services for HR</strong></td>
<td>Improved ability to operate an HR shared-service center</td>
<td>- HR administration&lt;br&gt;- Time management</td>
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<td><strong>Procurement</strong></td>
<td>- Improved purchasing self-services functions&lt;br&gt;- Enhanced services procurement&lt;br&gt;- Streamlined invoice management</td>
<td>- E-procurement&lt;br&gt;- Project self-service</td>
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<td><strong>Sales and order management</strong></td>
<td>- Improved order-entry process&lt;br&gt;- Improved support for Internet sales&lt;br&gt;- Enhanced pricing and configuration</td>
<td>- Order and quotation management&lt;br&gt;- Selling via eBay&lt;br&gt;- Internet pricing configurator</td>
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<td><strong>Travel and expense management</strong></td>
<td>- Improved expense entry process resulting in faster expense reporting&lt;br&gt;- Better travel planning and booking</td>
<td>- Automated credit-card feeds&lt;br&gt;- Integrated mileage calculation&lt;br&gt;- Mobile travel and expense&lt;br&gt;- Travel agency integration</td>
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<td><strong>Corporate real estate management</strong></td>
<td>Predelivered support for managing corporate property and rentals</td>
<td>Real estate management</td>
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<td><strong>Environmental, health, and safety compliance management</strong></td>
<td>- Improved ability to import rules and regulations from third-party providers&lt;br&gt;- Support for occupational health documentation&lt;br&gt;- Enhanced ability to monitor dangerous goods and material</td>
<td>- Occupational health&lt;br&gt;- Waste management&lt;br&gt;- Industrial hygiene&lt;br&gt;- Dangerous-goods management</td>
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Business Strategy
In an increasingly global economy, flexibility has become an increasingly important business success factor. Organizations seek to shorten product innovation cycles, respond more quickly to dynamic market conditions, and continuously adjust their business model to stay ahead of the competition. However, many business applications are embedded in complex software environments that offer limited flexibility and little support for global business transformation. SAP is constantly developing measures to make it easier to manage SAP ERP, to help customers implement future functional enhancements with little disruption and effort, and to facilitate future business innovation.

You can implement selected software innovations from SAP and then activate selected functions and enhancements on demand to meet your business requirements. This unique delivery and deployment method for enterprise software, enabled by the flexibility of enterprise service-oriented architecture (enterprise SOA), lets you access new ERP functions while holding on to your core functions. As a result, you can isolate the impact of software updates and quickly bring new functions online through shortened testing cycles without impeding core business processes.

Figure 3 shows a road map for enhancement packages for SAP ERP 6.0, outlining the most important areas of innovation.

Enhancement Packages
After you upgrade to SAP ERP 6.0, you can enhance the functionality of your application without performing a further upgrade thanks to a new deployment technology – the SAP enhancement package for SAP ERP. The enhancement packages simplify the way you manage and deploy new software functions for SAP ERP. They enable you to take advantage of the latest software innovations while minimizing disruption to ongoing operations.

Enterprise Service-Oriented Architecture
SAP ERP 6.0 uses enterprise SOA, which helps you shorten application innovation life cycles and implement strategic business innovations quickly and with minimal effort by reusing components at the macro level. Enterprise SOA brings simplicity and transparency to your ERP software, enabling you to adapt it to suit the business needs of your organization.

An enterprise service is typically a series of Web services combined with business logic that can be accessed and used repeatedly to support a particular business process. Aggregating Web services into business-level enterprise services provides a more meaningful foundation for the task of automating enterprise-scale business scenarios.
These are some of the potential benefits you gain by using enterprise SOA:

- Ability to flexibly design a business process such as an order-to-cash process
- Potential to implement shared service centers
- More reliable business insight (for example, through corporate performance management)
- Better integration of SAP ERP with additional applications from SAP partners

Although enterprise SOA is not currently considered a primary driver for upgrading to SAP ERP 6.0, its long-term benefits and strategy should be considered as part of the justification for an SAP software upgrade.

**Sustainability**

Business applications such as SAP ERP integrate operations with financial and HR processes. They must cover regular changes in legal requirements (such as tax adjustments) as well as newer compliance standards developed to meet the needs of a global economy. These newer standards include those issued by the U.S. Food and Drug Administration and those published in the Sarbanes-Oxley Act and Basel II Accords.

**Covering New Legal and Compliance Requirements**

SAP provides updates for legal changes as part of the mainstream or extended maintenance agreement for SAP ERP (as it does for the SAP R/3 software replaced by SAP ERP). However, with previous releases of SAP R/3, the outdated underlying software technology may impede the implementation of effective solutions for meeting current compliance standards.

Meeting compliance standards can involve a lot of manual, duplicated work and audit costs. An SAP study shows that total spending on compliance has increased from $10.5 billion in 2004 to $27 billion in 2006, with more than 40% of the effort attributable to headcount. With its integrated solutions for governance, risk, and compliance, SAP ERP 6.0 facilitates a unified, cross-company framework that correlates and aligns all activities. Upon investigation, many companies find that SAP ERP offers appreciable benefits in this area—benefits that should be included in the business-case definition of an upgrade.

**Ensuring Business and IT System Stability**

Running a productive business on an SAP software landscape is a major IT commitment. Any disturbance or instability in the landscape can affect the performance of the entire company. Furthermore, the ERP software must remain compliant with your company’s underlying technology, including your operating system, database version, and hardware. Operating systems and database versions usually have shorter maintenance periods than SAP software releases and require more regular upgrades than SAP applications. Thus, older versions of SAP R/3 may not be compatible with newer operating systems and database versions or may not be able to utilize the enhanced functionality and performance of the newer versions. By upgrading to SAP ERP 6.0, you can stay up-to-date with the underlying technology and ensure business continuity and system stability.

**Providing Continuous System Support and Maintenance**

With its 5-1-2 maintenance strategy (five years standard maintenance, extended maintenance for one year with the additional fee of +2% and for a further two years at +4%), SAP has introduced a concept that allows its customers to plan and use an SAP software release for up to eight years—a commitment that is unique in the business-application industry. As part of this concept, customers receive ongoing support, “hot fixes,” and regular support packages. This demonstrates the strength of SAP’s commitment to making SAP ERP 6.0 a long-term solution that offers customers stability and maximizes the value of their investment well beyond 2010.

SAP R/3 4.6C entered the extended maintenance period on January 1, 2007, and SAP customers paying the additional fee are continuously supported until December 31, 2009. However, in the SAP ERP product strategy, SAP ERP 6.0 is expected to be the “go-to” release until at least 2012, providing mainstream maintenance until March 2013 and extended maintenance until 2016. Therefore, the benefit of paying the extended maintenance fees on previous releases of SAP ERP—perhaps to wait for the next major release—is limited. Furthermore, employing internal staff or hiring consultants to maintain outdated releases is very expensive. It’s important to consider these potential cost savings—as well as the operational benefits of SAP ERP 6.0—in your business-case calculation.
Total Cost of Ownership
Market studies show that up to 80% of IT budgets are spent on operations. One of the major contributors to the high cost of operations is a software landscape that is unnecessarily complex. An upgrade to SAP ERP 6.0, when combined with other IT initiatives, can reduce TCO, mainly in terms of operations costs.

Reducing the Level of Modification and Customization
Because the architecture and technology of SAP software is very flexible, some SAP customers invest heavily in modifications of SAP code and in custom developments (customization). While it is possible to continuously adjust your software system to meet new business requirements, the lifecycle management and maintenance of highly modified SAP software systems becomes increasingly expensive and difficult. SAP internal estimates indicate that up to 60% of custom developments are not even being used. According to a customer survey conducted by SAP in 2006, more than 40% of customers take the opportunity of an upgrade to clean up their software systems by eliminating unused modifications and custom developments. The cost savings achieved by reducing these modifications can make a considerable contribution to the upgrade business case.

Consolidating the Software Landscape
Consolidation of your software landscape can provide a good opportunity for upgrading to SAP ERP 6.0, since both projects require a detailed analysis of the landscape and can be implemented simultaneously to minimize disruption. Depending on your IT strategy, you can run centralized or decentralized SAP software systems. While some multinational companies run SAP ERP in a single-client mode, others allow their decentralized IT and business units to run individual software systems. With the increasing pressure to reduce IT expenditure, there is a trend in the SAP community to consolidate SAP software landscapes and replace legacy systems to streamline hardware and server infrastructure and reduce overhead costs. Consolidation projects are usually planned over several years, with the goal of achieving a consolidated landscape on a unified target, usually the latest available release of SAP ERP.

“In the course of the upgrade, we were able to replace around 50% of all of our previous release’s individual modifications with the standard functions offered by mySAP ERP [now SAP ERP]. To us, this clearly indicates that SAP is getting better at thinking along the lines of other companies’ needs and mapping the requirements of industrial processes in its solutions.”

Manfred Schmid, Chief Information Officer, Carl Zeiss Optronics GmbH

... by upgrading to SAP ERP, IT maintenance costs would decrease by up to 22% over the next three years, leading to fast return on investment.”

Fabio Fricano, CIO, Tosinvest Information Technologies
After the discovery and initial evaluation phase, which produces a high-level definition of business and IT requirements as well as a business case, you enter a more detailed evaluation and planning phase.

In a survey conducted by SAP in 2007, 67% of respondents said that project management factors are the major challenges they face during the upgrade planning phase and 57% said that cost and effort estimates are the major challenges. The definition of an upgrade strategy and development of a schedule are also significant challenges during planning and evaluation, especially in large organizations. This section outlines challenges, best practices, and SAP recommendations for these and other important planning factors.

Assessing the Impact of the Upgrade on Your Existing Solution

Even in the planning phase, you should perform an early risk and impact assessment to produce an accurate picture of cost drivers for the project(s). The risk, difficulty, and duration of upgrading to SAP ERP 6.0 vary greatly, depending on the source release and the system landscape. For example, upgrading from SAP R/3 4.6C or higher is considerably easier and involves lower risk because it requires only limited code changes to the central component of your current ERP software – which is the core of the new SAP ERP software. For releases below SAP R/3 4.6C, upgrades to SAP ERP 6.0 involve a higher risk and may require more application adjustments, testing, and user training.

The level of risk and the need for application adjustments and user training also increase with the complexity of the software system landscape and your levels of customization and modification. Good IT housekeeping (archiving, documentation, and regular system maintenance) can also significantly increase the efficiency of an upgrade. And the use of SAP industry solutions based on SAP R/3 may increase the effort involved in the project.

**SAP recommendation:** To achieve a detailed and reliable assessment of the risk and complexity of an upgrade project, you should carry out an impact analysis for at least one typical software system as a reference and as the basis for an initial technical risk assessment.

With the SAP Safeguarding for Upgrade portfolio of services, SAP offers a holistic approach for technical risk mitigation in SAP software upgrades since it focuses particularly on the initial technical risk assessment and tailors it to your specific situation (see [www.service.sap.com/safeguardingupgrade](http://www.service.sap.com/safeguardingupgrade)).

According to a survey conducted by SAP in 2006, about 35% of SAP customers claim to have established an in-house procedure for assessing the risk factors and the impact of an upgrade on the existing solution. Such a procedure is essential for calculating required resources and preparing your organization to deal with challenges.

**Technical Prerequisites and Limitations**

To upgrade to SAP ERP 6.0, you may need to:

- Change your hardware, operating system, or database platform
- Perform a Unicode conversion (if a customer uses multiple-display, multiple-processing [MDMP] technology or blended code pages to display languages with different character sets)
When upgrading to SAP ERP 6.0, you may encounter the following limitations:

- Limited availability of country versions or third-party products – archiving tools, for example
- Restricted use of SAP Internet Transaction Server (SAP ITS) (Note: SAP ITS has been integrated into SAP NetWeaver®, providing less functionality. The former stand-alone SAP ITS product is no longer supported by SAP. Customers who have been using advanced features of SAP ITS with their SAP R/3 software and want to continue using them need to perform a migration to the latest version of the SAP NetWeaver Portal component – formerly the SAP Enterprise Portal component – where these features can now be found. Customers who want to continue using the basic features of SAP ITS need to perform a migration to the ITS software that is now part of SAP NetWeaver.)
- Compatibility problems with other SAP applications or third-party products (for example, those not compatible with Unicode)

You can find comprehensive information about the technical limitations of SAP ERP software in SAP Note 852235 and information on SAP ITS in SAP Note 709038. (SAP Notes are available on SAP Service Marketplace at www.service.sap.com. Registration required.)

Unicode Conversion

Customers who want to upgrade to SAP ERP 6.0 and are running SAP R/3 software with MDMP technology or blended code pages must combine their upgrade with a Unicode conversion. The previous SAP technologies have become obsolete for a variety of reasons – for example, they do not enable proper communication with Java-based applications. (See SAP Note 79991.)

A Unicode conversion is only necessary for those using MDMP or blended code pages. However, some organizations may want to perform a Unicode conversion to provide future support for languages with different code pages – for example, for users in Asian or eastern European countries.

More details on procedures for performing a Unicode conversion with an upgrade to the newest SAP ERP software are given in the respective SAP Notes listed at the end of this document (see “Further Information”). And you can find general information about Unicode and SAP ERP 6.0 at www.service.sap.com/globalization.

Scheduling an Upgrade

There are many factors to be considered when you are developing a detailed schedule to meet your specific needs – a schedule with optimal timing and sequencing of the individual upgrade projects. A transition to SAP ERP 6.0 is rarely a single project. It is generally a program that covers several productive SAP software systems over several months or even years. But regardless of the extent of the upgrade, the timing of the upgrade is critical given the effort and downtime it involves. Therefore, an upgrade to SAP ERP 6.0 needs to be coordinated with your IT planning group. The following factors influence the scheduling of an upgrade:

- Complexity of the existing IT landscape and the number of SAP R/3 or SAP ERP software systems to be upgraded
- Schedule and overlap with other IT projects such as global rollouts, ongoing innovation projects, or consolidation projects
- Upgrade strategy and project scope

SAP recommendation: To identify dependencies with other IT projects, you should carry out an inventory on all running projects and ensure that the project timelines are compatible.

In general, you should schedule an upgrade for a period of low business activity and look for favorable windows for the downtime phase.

Determining an Upgrade Strategy

Successfully executing an upgrade to SAP ERP 6.0 requires a well-defined upgrade strategy encompassing an approach and project scope based on the circumstances and aims of your organization. The project strategy has a great effect not only on project duration and effort but also on the immediate ROI of the upgrade. The upgrade strategy usually consists of several stages that progressively expand functionality, increase business value, and prepare the organization for the transition to enterprise SOA while minimizing risk. This process typically lasts three to five years and consists of three distinct phases: the technical upgrade, functional enhancements, and strategic enhancements.
Step 1: Technical Upgrade
This initial phase involves a purely technological upgrade whose major goal is the implementation of the new software release as the foundation for all subsequent improvements. The impact of this phase on your business and business processes is very limited:
- Previously used business functions are retained.
- Modifications and custom developments are reduced (which reduces cost of operations and system complexity).
- Unicode conversion may take place.

The technical upgrade simply creates the basis for functional and strategic enhancements.

Step 2: Functional Enhancements
Directed toward business benefits, this phase focuses on increasing business value by implementing the most valuable functions of the new software and laying the foundation for future business innovation and improved process automation. During this phase, SAP software modifications and custom developments are replaced with (new) standard SAP software functions. Operational excellence is improved by picking and implementing “low-hanging fruit” – functions that offer the greatest business benefit with the least effort. Even though this phase can be combined in a single project with the technical upgrade, statistics show that more than 80% of SAP customers approach this second phase as a separate project, to be conducted after a technical upgrade has been completed and overall stability has been reached.

Step 3: Strategic Enhancements
Phase three involves implementing new and optimized business processes and scenarios that fully exploit new SAP ERP functions and enable enterprise SOA. It may include implementing other software systems or components and is very much dependent on the business needs of your organization. Enterprise SOA enables you to shorten application innovation life cycles and implement strategic business enhancements at your own speed.

Cost and Effort Estimation
Large organizations running multiple upgrade projects usually start with a high-level cost and effort estimation for a company-wide upgrade program. This estimation is based on results from a reference upgrade – usually performed on a copy of a typical productive SAP ERP software system. SAP customers may also include experience from previous upgrade projects and benchmark data from analysts or SAP to detail the upgrade costs in major cost categories. After the high-level estimate, cost and effort factors should be considered in detail. Assuming the project scope is only a technical upgrade, these are some of the indicators and examples used in cost estimation:
- Costs of internal IT and business staff
  - General project and change management aspects (involves about 10% of the total project effort)
  - Time for general project application adjustments (for example, one hour for each simple adjustment of SAP software modifications or custom developments)
  - Testing effort (involves up to 40% of total project effort, depending on the degree of application adjustments and the maturity of existing test procedures)
  - Training effort, if applicable – depends on the number of users affected, the training concept used (classroom versus e-learning), and the extent of functional enhancements (Note: For most technical upgrades involving SAP R/3 4.6C or higher as a start release, training is not necessary.)

SAP Upgrade Experience Database
SAP customers planning an upgrade project often request benchmarking data or project statistics gathered from upgrades completed by other customers. SAP stores this data in a database that includes information about:
- Project duration
- Business downtime
- Reasons for upgrade
- Satisfaction with the upgrade

If you want to share your upgrade experiences with other customers or learn about the experiences of other customers, go to [www.service.sap.com/upgradedb](http://www.service.sap.com/upgradedb).
• Costs for external assistance
• Additional hardware costs, if applicable (Note: For server adjustments – of the CPU, hard disk, or memory – you should calculate a sizing increase of about 10% for each higher release. About 40% of known upgrades to SAP ERP 6.0 do not require any hardware or sizing adjustments.)
• Additional license costs for third-party or SAP software, if applicable (and if the costs are not yet covered by contracts for SAP ERP or the SAP Business Suite family of business applications)

The high-level cost estimation usually results in a basic cost assumption per business user affected. Analyst reports, such as AMR and Forrester studies, offer number ranges as a guideline.

SAP recommendation: For a detailed cost and effort estimation, the results of a test upgrade and an in-depth system analysis of the level of complexity are recommended best practices. The individual conditions of each system to be upgraded, specific risk factors, and technical limitations may become potential cost drivers. Therefore, you should establish assumptions for significant cost drivers and apply them to the specific conditions of your existing solution.

Project and Risk Management

Once the detailed project-specific cost and effort estimation is completed and approved, you need to determine a governance structure and then allocate the necessary resources. At the end of this preparation phase, you can set up a project kickoff meeting during which the team can agree on other standards, procedures, and milestones. In subsequent project phases, a project manager should conduct progress tracking, budget monitoring, capacity and resource management, efficient escalation management, and communication and change management as well as coordinate the application and technical teams.

Success Factors
These factors are critical to the successful management of an upgrade to SAP ERP 6.0:

- Appropriate governance structure and top management commitment, which ensure involvement of IT and business units, fast escalation and issue-resolution procedures, alignment with other IT initiatives, required resources, and so forth
- Sufficient capacity
- Project team with suitable skill set
- Adherence to project standards and guidelines

Standards and Procedures
To ensure the efficiency and transparency of the critical project tasks and overall progress of the project, these comprehensive standards and procedures are necessary:

- Standards for project documentation, problem solving, progress tracking, and procedures for escalation
- Project approach and scope (for example, technical upgrade only)
- Roles and responsibilities of the internal and external resources involved
- Setup of project landscape and code-freeze procedures
- Guidelines and procedures for testing and training strategy

SAP Solution Manager and the SAP Upgrade Road Map content can help you define standards and procedures and ensure they are adhered to.

Project Duration and Sequencing
As shown on the SAP upgrade experience database, the average duration of a technical upgrade to SAP ERP 6.0 is about three to five months. Figure 4 outlines the SAP recommendation on how to divide the upgrade effort into different phases for a four-month upgrade project.
SAP recommendation: There are various strategies for sequencing the activities involved in an upgrade to SAP ERP 6.0. To ensure the best possible maintenance (such as corrections and code changes) of your productive SAP software landscape, SAP recommends you take the following approach:

- As part of your early planning, set up a reference system (a copy of a representative productive software system) to obtain information for more detailed planning, cost and effort estimations, and impact analysis.
- For each productive software system, perform another test upgrade by building up a “project system” from a copy of the software system. Working with a project system allows you to test-drive the majority of project tasks, such as application adjustments and unit testing, before the actual project landscape (including development and quality assurance systems) is upgraded.

This risk-minimized approach also reduces the code-freeze period.

Upgrade Management Tools and Assistance

To keep your upgrade on track, take advantage of SAP Solution Manager, SAP Upgrade Road Map, and – when needed – expert outside assistance.

SAP Solution Manager
You can use this application management solution to:
- Manage project documentation efficiently
- Document business processes affected by the upgrade
- Leverage integrated testing and user training functions

SAP Upgrade Road Map
The SAP Upgrade Road Map content is delivered with SAP Solution Manager. It provides a standard methodology including best practices for all project management, technical, and business aspects of a technical upgrade project. With its checklists, templates, and how-to descriptions, the road map aims to provide guidelines to the project manager and the application and technical teams to help them accelerate and optimize primary project activities.

“Thanks to great support from SAP and SAP Consulting, we were able to move our entire business from SAP R/3 4.6C to mySAP ERP 2005 [now SAP ERP 6.0] within 120 days and with zero unexpected downtime. The upgrade lays the foundation for us to implement new functionalities that will enhance our business processes and operations.”

Torsten Kästel, IT Director, Technische Werke Ludwigshafen AG

Usage Guide: How to Use SAP Solution Manager in Upgrade Projects

This document (available at www.service.sap.com/upgraderoadmap) helps you decide how the SAP Solution Manager application management solution can be beneficial during an upgrade of SAP software. The guide details all functions that support upgrades.
The road map (see Figure 5) is structured in five phases and provides access to further tools, such as the solution browser and the application-specific upgrade (ASU) toolbox from SAP.

For offline use, the SAP Upgrade Road Map is also available in HTML format. You can download it from www.service.sap.com/upgraderoadmap.

External Assistance
If your internal resources are limited, or if your staff lacks the skills required for an upgrade to SAP ERP 6.0, there are coaching or specialized services available to help you avoid surprises and ensure that your project stays on time and within budget. SAP surveys indicate that most SAP ERP customers rely on some external assistance to ensure the best outcome for their upgrade projects. Figure 6 shows the proportion of customers who use external assistance in the various areas of an upgrade.

SAP supports its customers with tailored expert services. It also provides holistic engagement concepts such as the SAP Safeguarding for Upgrade portfolio of services or upgrade coach services. With the coach services, an SAP coach experienced in all aspects of project management and technology assists you with your upgrade.
The improved technology that SAP has used since the upgrade to SAP R/3 Enterprise makes upgrading considerably easier. According to recent results from the SAP upgrade experience database, current upgrade procedures for the technical execution meet or exceed customers’ expectations in 86% of the upgrades to SAP ERP 6.0. Nevertheless, you and your organization need to be prepared for challenges in each project phase to ensure your upgrade runs smoothly.

A survey conducted by SAP in 2007 reveals which areas are perceived to be major challenges during the upgrade implementation phase and what percentage of survey participants found these areas particularly challenging:
- IT infrastructure adjustment (44%)
- Technical deployment and downtime minimization (66%)
- Application and modification adjustments (35%)
- Efficient testing (68%)
- User training (44%)

This section provides details, best practices, and SAP recommendations for each of these areas.

**IT Infrastructure Adjustments**

The SAP upgrade experience database shows that 40% of SAP customers do not need to adjust their hardware configuration for an upgrade to SAP ERP 6.0. However, in most cases they do find it necessary to make adjustments to their IT infrastructure. These adjustments may include resizing the application server, deploying new front-end components, making network adjustments to maintain system performance, upgrading or migrating your operating system and database platform, and converting to Unicode.

**Resizing the Application Server**

As a rule of thumb, with each new release of SAP ERP the demands on hardware for the application server increase about 10%. Upgrading to SAP ERP 6.0 from start release SAP R/3 4.6C increases the demands on application server memory by 55% and on the application server CPU by 22%. For each new release of SAP ERP, SAP provides more details on delta sizing requirements in the respective SAP Notes listed in the “Further Information” section at the end of this document. SAP provides a free “quick-sizer” tool to help you get an initial sizing assessment.

**Deploying New SAP Front-End Components**

SAP recommends you use and deploy the latest version of its graphical user interface (GUI), which is downwards compatible with previous SAP applications. To run the latest GUI, you may need to upgrade hardware or the operating system of user PCs. More tips and tricks on the cost-efficient deployment of the SAP front end are contained in the SAP front-end deployment strategy document (see “Further Information”).

**Making Network Adjustments to Maintain System Performance**

To avoid performance bottlenecks after an upgrade to SAP ERP 6.0 and ensure your system performs the same as or better than it did before, SAP offers a white paper (SAP Network Sizing) summarizing key recommendations for an optimized network configuration. It is available at www.service.sap.com/erp-inst.

**Upgrading or Migrating Your Operating System and Database Platform**

This is a potential prerequisite for performing a technical upgrade. Furthermore, some customers see the upgrade project as an opportunity to change their operating-system or database vendor to reduce their cost of operations.
Converting to Unicode
If you are converting to Unicode with the going-live phase of the upgrade project, you need to consider additional sizing requirements such as those described in the dedicated SAP Notes (see “Further Information”). The notes also explain the reasons for a Unicode conversion.

Technical Deployment
With the upgrade to SAP R/3 Enterprise software in 2003, SAP significantly improved its upgrade procedures by introducing system switch technology. Today this technology is used consistently for all SAP applications based on the ABAP™ programming language. It is also used for Java-based applications.

Benefits of System Switch Technology
With this technology, you can “switch” one release of SAP ERP (for example, an older release of SAP R/3) to a target release level (for example, SAP ERP 6.0) in a one-step procedure. In contrast to migration techniques, the switch technology (applicable for source releases from SAP R/3 3.1l onward) adjusts the new SAP software, the underlying database, and related data structure in an “in-place” procedure without moving data outside the database. Compared to the previous upgrade technology (used to upgrade to SAP ERP 4.6C software, for example), system switch technology moves major activities from the downtime to the uptime phase. This reduces the average “technical downtime” of an upgrade to SAP ERP 6.0 (which averages about eight hours) by more than 50% compared to previous upgrades from releases of SAP R/3 to SAP R/3 4.6C.

Because the central component of SAP ERP remains stable, the technical upgrade is also much more predictable and simpler than upgrades to previous SAP R/3 releases.

Minimizing Downtime
Total downtime is divided into technical downtime and business downtime. Technical downtime is the time during which the software system cannot be used productively. It does not include time for data backup, testing, and so on. Business downtime is the time (planned and unplanned) that the software system or solution is not available to users. It includes technical downtime plus the time necessary for the data backup and final tests.

You can reduce technical downtime by:
- Choosing the “downtime-minimized” instead of the “resource-minimized” strategy (For details, see information on the upgrade master guide, listed in the table titled “Performing the Technical Deployment,” which can be found in the “Further Information” section at the end of this paper.)
- Doing a preupgrade cleanup of database tables affected by data conversion activities during the downtime
- Using incremental table conversion during uptime for tables with an altered structure in SAP ERP 6.0
- Upgrading after hardware infrastructure has been reconfigured, enhanced, or resized (if you are performing any of these tasks), which increases the speed of database-related activities in particular
- Ensuring you always use the latest patch of the upgrade tool

The size of the database has no direct impact on the duration of technical downtime.

Total business downtime can be influenced by additional factors such as:
- Backup strategy – Depending on the amount of time available, an online backup instead of an offline backup strategy is an option that can further reduce total downtime, while technologies such as split-mirror backup can reduce backup downtime to zero.
- Postupgrade activities – The time required to prepare the system for release to users can be increased depending on the languages installed, the other transports you want included in the system, and the duration of user acceptance testing. The ASU toolbox can help you with all postupgrade activities.

Each SAP software system is highly individual in terms of its configuration and application data. Therefore, an accurate forecast of total duration of the upgrade and downtime is only possible after you have analyzed the results of a test upgrade with a representative hardware configuration and a volume of data.

Application and Modification Adjustments
Using a project system (a test-drive system), you can readily identify all relevant SAP software modifications and necessary adjustments. As a result, you can minimize the time it takes to do the actual adjustments to the development system.
Application adjustments for a technical upgrade involve four major areas: adjustments to SAP software modifications, adjustments to custom developments, upgrade (delta) customizing for existing business processes and standard SAP software functions, and adjustments to interfaces or connected SAP applications and third-party products.

Adjustments to SAP Software Modifications
The upgrade process replaces modified SAP objects with standard SAP objects. Modifications that are still needed after the upgrade have to be adjusted. You can readily identify and handle all relevant SAP software modifications as well as related database and data structure changes by using the tools SAP provides for modification adjustment.

Adjustments to Custom Developments
In contrast to modified SAP objects, custom software developments are not directly affected by the technical upgrade process. However, since these custom developments are embedded in other SAP objects and often reference standard objects that might have changed during the upgrade, they also require adjustment activities. SAP release notes are the primary information source for identifying if and how much custom code needs to be changed to remain compliant with the standard functions provided in SAP ERP 6.0. These adjustments can be done using the standard SAP development tools. Furthermore, SAP offers a custom development optimization package to help you handle custom developments effectively during an upgrade and over the entire solution life cycle.

SAP recommendation: If SAP software modifications and custom developments are no longer in use, you should eliminate them as part of the application adjustment activities in the development system to decrease future maintenance costs. SAP statistics show that many custom developments and reports are not used in any case. SAP uses standardized tools (as part of the quick upgrade evaluation service, for example) to analyze system-specific conditions. This helps you assess the impact of the upgrade and provides a reliable foundation for a cost and effort estimation.

Upgrade Customizing for Existing Business Processes
In most cases, there is no need to change customizing settings for existing business processes after an upgrade. However, in certain areas, specific customizing adjustments may need to be performed to ensure existing business processes and standard SAP functions are running properly. In this case, the necessary customizing adjustments can be highlighted in the implementation guide for upgrade (delta) customizing (see the "Further Information" section).

With the upgrade, some transactions may become obsolete, replaced by new functionality. Information about further application adjustment requirements is collected and delivered to SAP customers via the ASU toolbox.

Adjustments to Interfaces or Connected Applications
Since certain business processes run across systems or use third-party products, it is important to ensure that all interfaces are documented properly prior to the upgrade so they can be checked effectively during the upgrade project.

With its stable central component, SAP ERP 6.0 significantly reduces the need for application adjustments, especially for customers upgrading from SAP R/3 4.6C or higher. Consult the respective upgrade guides on SAP Service Marketplace for details (see the section "Further Information"). This online resource also contains information on how to implement SAP industry solutions.

In the future, enhancement packages are expected to minimize the need for application adjustments, since new functions can be selectively activated with very limited impact on the application in use.

Testing
Thorough testing is critical to minimizing the risk of business disruption in any SAP project, even in purely technical upgrade projects. Based on a survey conducted by SAP in 2007, 68% of SAP customers claim testing is a major cost driver and challenge in upgrade projects.

The need for and the effort involved in testing is determined by the level of application adjustments and the functional scope of the project. The effort can be reduced through organization
“We opted for the ‘one-stop’ SAP solution because we liked the package SAP offered, consisting of SAP expert knowledge, professional project management, training expertise, and automated test tools.”

Lothar Hafner, Lead Project Manager, INVISTA

and preparation. The focus of testing in upgrade projects should be on core business processes including interfaces, forms, authorizations, and developments. The manual effort and user involvement in testing can be reduced by developing comprehensive procedures and ensuring the transparency of existing business processes. However, reducing by too much the time and money spent on testing – or neglecting to implement adequate testing standards and procedures – can jeopardize critical business processes. Often, insufficient transparency of critical processes or an incomplete test catalog prevents SAP customers from performing accurate testing.

SAP provides tools for planning and executing tests in a streamlined and cost-efficient manner to help you strike the balance between high-quality testing and affordable effort. SAP Solution Manager provides integrated access to a test organizer and extended computer-aided test tools. For example, it can help organize test cases and provide transparency on available manual or automated test cases by documenting the cases according to major business processes. These test cases can be used for unit tests and to define test plans for regression and integration testing in the upgrade project. SAP Solution Manager can also reduce manual testing effort considerably and help guarantee high-quality testing results and transparent test progress even beyond the SAP software upgrade. Test automation, especially for regression testing (which is also relevant when applying support packages for SAP applications), can be a significant testing accelerator and contributor, reducing manual testing effort by up to 40%.

**SAP recommendation:** For SAP software upgrades of about four months’ project duration, at least three weeks should be dedicated to regression and final integration testing.

If you need to build up test systems or other nonproductive systems more often, the SAP Test Data Migration Server software can ensure consistent and high-quality test systems by minimizing hardware investment. In addition, partner tools and dedicated SAP service offerings can help optimize the entire test management process. (Go to [www.service.sap.com/upgradeservices](http://www.service.sap.com/upgradeservices) for details.)

**User Training**

As with testing, the user training effort very much depends on the upgrade’s functional scope and the extent of application adjustments. The effort involved also depends on your company’s organizational readiness to deal with this topic (for example, by using accurate and complete training material).

A purely technical upgrade has limited impact on the interfaces employees are using. Where the start release is SAP R/3 4.6C or higher, an upgrade will barely affect users, since SAP ERP 6.0 employs the same user interface. For releases below SAP R/3 4.6C, the impact could be considerably higher, because some crucial SAP transactions were redesigned in SAP R/3 4.6C.

**SAP recommendation:** For a cost-effective execution of delta training for users, SAP suggests investigating alternatives to standard classroom training – for example, employing a train-the-trainer concept to multiply knowledge provided to users via business process experts in a cascading process. If there are only limited user-interface changes but a high number of users across the globe who need training, e-learning concepts could also enable a more streamlined training approach. An upgrade course finder at [www.sap.com/services/education/catalog/erp/coursefinder.epx](http://www.sap.com/services/education/catalog/erp/coursefinder.epx) helps you locate courses that train your project team to introduce employees to SAP ERP. And SAP offers e-learning solutions and a documentation tool integrated with SAP Solution Manager to provide methodology support and expert guidance to suit your specific needs.
SAP ERP 6.0 provides great potential for improving your current business operations, expanding your current functionality, and helping you innovate to meet changing business requirements. As the go-to release beyond 2010, it also ensures a stable, long-term IT platform that minimizes risk and maintenance, enabling your organization to keep up in a dynamic and competitive business world.

Satisfaction with SAP software upgrades has increased significantly over the past 10 years thanks to the robustness and stability of the core application, improvements in SAP upgrade technology, and the assistance SAP provides in all areas of an upgrade. Sensitivity to the potential challenges of an SAP software upgrade and knowledge of how to master these challenges by using best practices and establishing standards and procedures should make the transition to SAP ERP 6.0 smooth and straightforward. Thus, there is little reason to postpone your upgrade. Now is the time to start maximizing the benefits of your SAP R/3 investment.

**Key Messages for IT Decision Makers**

An upgrade to SAP ERP 6.0 offers significant advantages for your organization in several areas if you prepare for it appropriately:

- **Wide-ranging benefits** – The new ERP software provides a stable, flexible foundation with a wealth of new features and functions that maximize your existing SAP investment. However, do not expect to find a single decisive factor to justify the upgrade.
- **Business-driven justification** – Identify your crucial business requirements and the aspects of your business model that could change or be improved, and then map your needs to the functions available in SAP ERP 6.0. A solution browser tool can help you identify the concrete benefits of the upgrade.
- **Inclusive evaluation process** – There is potential for both business units and IT departments to derive great value from SAP ERP. Ensure cooperation and consultation between these areas, and weigh opportunities against potential risks.
- **Coordination with IT strategy** – Executing SAP software upgrades has become much more straightforward and predictable in recent years. However, you should make sure the upgrade fits your overall IT strategy and does not conflict with other IT projects.

**Key Messages for Project Managers and Technical Project Leaders**

The following are key messages for project managers and technical project leaders involved in an upgrade:

- **Take upgrades seriously** – Plan and manage upgrades to SAP ERP 6.0 as carefully as you do other SAP projects, for example, by establishing comprehensive project standards and procedures. SAP Solution Manager can help you plan and manage the upgrade.
- **Prepare your system(s)** – Cleaning up modifications and performing selective archiving can reduce the effort of an upgrade considerably.
- **Test the upgrade** – Get prepared by doing at least one test upgrade in the early planning phase to identify potential risks, technical challenges and limitations, and cost drivers.
- **Take a multistep approach** – Perform a technical upgrade first, and then implement new functions or business innovations in subsequent projects.
Leverage improved upgrade technology – Upgrading from SAP R/3 4.6C (or higher releases of ERP software) to SAP ERP 6.0 involves significantly lower impact, less effort, and shorter downtime than upgrades to previous releases of SAP R/3 software.

Reduce downtime – Average downtime during an upgrade has decreased significantly, such that the vast majority of SAP customers go live on a normal weekend.

Plan comprehensive testing – Do not underestimate the effort involved in testing. Testing effort will be determined mainly by the need for application adjustment and the functional scope of the upgrade.

Train users – The need for user training depends on how much new functionality is implemented. Training effort is generally lower than for upgrades to previous releases of SAP R/3. Consider using alternative training concepts such as e-learning or a train-the-trainer approach.

Ask for expert help as needed – Consider using external assistance (including offerings from SAP) to complement your internal resources in specific areas (for example, for a Unicode conversion) rather than endanger the project.

“The move to SAP ERP 6.0 provides us with the newest functionality, which is closer to our business processes and [to the] primary process of grantor management. We completed our ERP upgrade on time and within budget and are now up and running with a robust application and technology that helps improve our business processes and enhance visibility for our managers. The new architecture of SAP ERP allows us to collaborate more effectively and operate more flexibly at a lower overall cost.”

Derk Riesthuis, Program Manager, Provincie Noord-Holland
The resources outlined in this section provide more specific or detailed information on upgrading to SAP ERP 6.0. In the following tables, most of the online resources listed take you to the SAP Service Marketplace extranet (some do not), which requires registration. SAP Notes are also published on SAP Service Marketplace, which can be accessed at www.service.sap.com.

**Identifying the Value Proposition and Justifying the Upgrade**

**Understanding the Release Strategy for SAP® ERP and Determining the Value Proposition**

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| Overview of newest release of SAP ERP            | ▪ Overview of SAP ERP: www.service.sap.com/erp  
▪ “SAP ERP Application, Strategy, and Road Map”: SAP standard presentation  
▪ “SAP ERP, Life Cycle of Enhancement Packages”: SAP standard presentation  
▪ Enhancement packages for SAP ERP: www.service.sap.com/erp-ehp  
▪ SAP ERP business maps |
| Value proposition for the newest release of SAP ERP | “The Value of SAP ERP”: SAP standard presentation |
| How SAP ERP covers current market trends and typical business requirements | SAP Accelerated Value Assessment: Service brief |
| Detailed value analysis of the latest SAP ERP release: | ▪ Solution browser tool from SAP: www.solutionbrowser.exp.sap  fmppmedia.com  
▪ Delta training offerings for SAP ERP |
▪ Delta functionality
▪ Delta training and workshops
▪ “Test-driving” the new release with demo or “sandbox” system |

**Defining a Business Case**

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Planning an Upgrade to SAP ERP 6.0

Assessing the Impact on Your Existing ERP Solution

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<td>• SAP Note 852235</td>
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<td>Limitations for the former product SAP Internet Transaction Server</td>
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| Obsolete SAP transactions                                            | List of obsolete SAP transactions: [www.service.sap.com/upgrade-erp](http://www.service.sap.com/upgrade-erp)  
(→ SAP R/3 Enterprise)                                               |
| Test upgrade and detailed analysis of the impact of an upgrade on an | SAP upgrade tools (including “PREPARE,” a specific method for upgrade preparation, and “SAPUP,” a specific program for the technical execution of an SAP upgrade) are included as part of the upgrade assistant, delivered with the upgrade CDs of the respective solution – for example, the upgrade CDs for SAP ERP 6.0. They are installed and handled by the system administrator. |
| existing SAP solution                                                |                                                                                               |

Estimating Costs and Effort

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## Managing Upgrade Projects Successfully

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<th>Further Information Sources</th>
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</thead>
<tbody>
<tr>
<td>Project plan, standards, and guidelines</td>
<td>SAP® Upgrade Road Map content: <a href="www.service.sap.com/upgraderoadmap">www.service.sap.com/upgraderoadmap</a></td>
</tr>
<tr>
<td>SAP Solution Manager application management tool and advanced life-cycle management platform</td>
<td>SAP Solution Manager: <a href="www.service.sap.com/upgraderoadmap">Usage guide about SAP Solution Manager in upgrade projects</a></td>
</tr>
<tr>
<td>External assistance (including SAP offerings) to cover need for expert knowledge, to fill resource gaps, and so on</td>
<td>SAP upgrade service offerings: <a href="www.service.sap.com/upgradeservices">www.service.sap.com/upgradeservices</a></td>
</tr>
</tbody>
</table>

## Executing an Upgrade to SAP ERP 6.0

### Determining the Need for IT Infrastructure Adjustments

<table>
<thead>
<tr>
<th>Topic</th>
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<tbody>
<tr>
<td>Updating desktop PCs because of new SAP® graphical user interface</td>
<td>Front-end deployment strategy: [SAP Front-End Deployment Strategy](SAP Front-End Deployment Strategy)</td>
</tr>
<tr>
<td>Requirements for and impact on network bandwidth</td>
<td>Bandwidth requirements: [SAP Network Sizing guide](SAP Network Sizing guide)</td>
</tr>
</tbody>
</table>
| Application server resizing                                | As a rule of thumb, servers need to be resized about 10% for each higher release. See these SAP Notes on delta sizing for previous releases of ERP software:  
  - 113795 (source release 4.0B)  
  - 178616 (source release 4.5B)  
  - 323263 (source release 4.6B)  
  - 517085 (source release 4.6C)  
  - 752532 (source release Enterprise 1.10)  
  - 778774 (source release Enterprise 2.00)  
  - 901070 (source release ECC 5.00)  
  Also see information on quick-sizer tool: [www.service.sap.com/sizing](www.service.sap.com/sizing) |
| Unicode conversion and related impact on sizing            | SAP Note 79991                                                                               |
| Implications for operating system and database             | Product availability matrix: [www.service.sap.com/pam](www.service.sap.com/pam)             |
Performing the Technical Deployment

<table>
<thead>
<tr>
<th>Topic</th>
<th>Further Information Sources</th>
</tr>
</thead>
</table>
| Upgrade master guide and component upgrade guides as key guidelines | ✓ Upgrade Master Guide  
✓ Guides for upgrading: Component upgrade guides |
| Industry solution specifics in industry guides | Industry guides: Industry-specific upgrade guides |

Handling Other Technical Considerations

<table>
<thead>
<tr>
<th>Topic</th>
<th>Further Information Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical prerequisites for using the SAP® Solution Manager application management solution for generating the installation key for setting up an actual application solution landscape</td>
<td>SAP Note 805390</td>
</tr>
</tbody>
</table>
| Combining an upgrade and Unicode conversion | SAP Note 928729: Combined Unicode conversion and upgrade  
✓ SAP Note 959698: Twin upgrade and Unicode conversion  
✓ General information about Unicode and SAP ERP 6.0: www.service.sap.com/globalization |
| Unicode-related downtime optimization | SAP Notes 784118 and 857081 |
### Performing Efficient Application Adjustments, Testing, and User Training

<table>
<thead>
<tr>
<th>Topic</th>
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</thead>
</table>
| Analyzing and adjusting SAP® software modifications and custom developments | - Quick upgrade analysis service and quick upgrade evaluation service:  
  www.service.sap.com/upgradeservices  
- SAP software release notes:  
  www.service.sap.com/releasenotes                                                                                                      |
| Application adjustments and upgrade customizing                      | Use the SAP implementation guide – upgrade customizing (Note: This is not a document but a system tool that is installed and handled by the system administrator.) |
| Additional application adjustments                                   | SAP Note 623723: Application-specific update toolbox from SAP                                                                                           |
| Creation of multiple nonproductive systems and functionality of the SAP Test Data Migration Server software | Details on SAP Test Data Migration Server:  
  www.service.sap.com/upgradetools                                                                                                       |
| Using the SAP Solution Manager application management solution to increase efficiency of business-related upgrade aspects such as testing or user training | SAP Solution Manager:  
  Usage guide about SAP Solution Manager in upgrade projects                                                                           |
| Course finder for use in upgrades to the SAP ERP application         | www.sap.com/services/education  
/catalog/erp/coursefinder.epx                                                                                                               |
Public Information Sources

The analyst reports below are available on the Internet, as is the article from RAAD Studie. The SAP presentations can be accessed online at SAP Service Marketplace, www.service.sap.com. This site requires registration.

Analyst reports:
- AMR Research: “Reduce the Pain of ERP Upgrades with Better Planning,” June 2007
- Ventana Research: “Leverage ERP,” 2004

SAP presentations:
- SAP: “SAP ERP Value Proposition” presentation, June 2007
- SAP: “SAP Upgrade Experience Database” presentation, June 2007
- SAP: “SAP Transition and Upgrade” presentation, April 2007
- SAP: “SAP Upgrade Offerings” presentation, April 2007