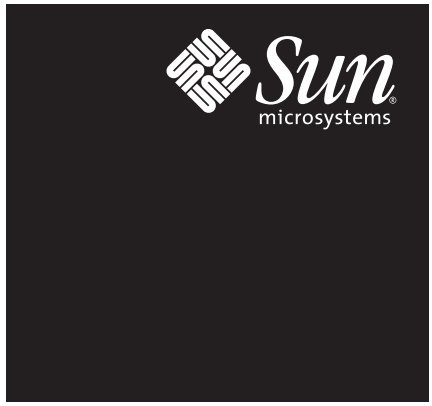
Reducing IT Project Lifecycle Costs: The Sun Java™ Enterprise System

An Executive Brief
June 2005



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Chapter 1

Executive Overview

The business challenges in today's fast changing global marketplace are putting increased pressure on IT executives who are being asked to reduce total cost of ownership, deliver rapid return on investment, and limit risk on IT projects. Having already cut expenses to a bare minimum, many IT executives and IT managers are struggling to satisfy new user demands without letting IT service quality deteriorate. Clearly, a new approach is required.

Sun believes that a focus on the IT infrastructure software holds the key to reducing costs throughout the IT project lifecycle while continuing to deliver high quality. A recent study conducted by Forrester Research and sponsored by Sun Microsystems revealed that IT project lifecycle costs can indeed be impacted by infrastructure software. More specifically, the Forrester study found that *the first IT project* to utilize Sun Java™ Enterprise System can generate savings of up to *16 percent over a five-year IT project lifecycle* involving a typical software implementation[1]. Savings for subsequent projects can be even greater. The study found that the *second, third, and fourth IT project to utilize Java Enterprise System can each generate savings of 33 percent over a 5 year period*. Savings are nearly doubled after the first project due to significant reuse of software artifacts as well as design and deployment patterns.

This paper describes the IT project lifecycle and how the Java Enterprise System can impact each phase.

Problems With Today's Middleware Approach

Traditional middleware implementations, built and managed as a collection of "point products," are a nightmare of cost and complexity. When using a variety of products from a number of vendors to deliver infrastructure services such as directory, e-mail, calendar, identity, and portal services, IT organizations face a host of potential problems, such as:

- *High Acquisition Costs* — Time can be wasted evaluating and acquiring point products from multiple vendors because each component is evaluated, acquired, and delivered independently.
- *Unnecessary Deployment Delays* — IT projects cannot get off the ground until all point products have been evaluated, tested, and deployed. Integration and quality assurance (QA) of middleware can thus delay the start of business application design and deployment.

1. These projected savings only take into consideration the expected savings from features up to Release 3 of the Java Enterprise System. Additional savings are expected from future releases.

- *Hidden Costs and Unpredictable Schedules* — Integrating disparate products not only requires significant effort for the initial deployment, but can also involve extra effort when a new release of a point product is installed. If interdependencies between these middleware components are overlooked, unpredictable project delays and/or increased costs can result. And if hidden problems are not discovered before a business application goes into production, service quality can degrade, or worse, service interruptions can occur.
- *High Cost of Managing Complex Licensing Agreements* — With different types of middleware priced according to different variables, managing license agreements for middleware software can be a complex and often onerous task. Directories may be licensed by the entry, e-mail systems by the mailbox, and portal software by the number of processors. Auditing software licenses in this environment is not only time-consuming and costly, but can also be prone to error, resulting in illegal use of software or overpayment for licenses.
- *High Overhead Cost Due to Complicated Version Control and Release Schedules* — Release schedules for disparate products are not aligned, making upgrading of the IT infrastructure difficult, risky, costly, and time-consuming. This environment also puts the burden on IT staff to meticulously track and control versions of point products that are deployed throughout the enterprise, adding to overhead costs.

Reducing Cost and Complexity With the Java Enterprise System

Sun has listened to the concerns of IT executives and IT managers and has taken a radical new approach to infrastructure software with its Java Enterprise System, designed to help reduce costs throughout the IT project lifecycle from acquisition, through deployment, and on to operation and maintenance. The Java Enterprise System offers a single, comprehensive software system containing all of the critical enterprise infrastructure software components that every business needs to build their own business applications and services. Subsets of the Java Enterprise System components are available as Java System Suites that deliver solutions for common business problems. These Suites include:

- Application Platform Suite
- Identity Management Suite
- Web Infrastructure Suite
- Communications Suite
- Availability Suite

These Suites are engineered to have shared components, common technologies, a consistent system architecture, and a similar user experience across the software system. Each Suite is preintegrated and pretested using real customer deployment scenarios — just as the customers would use it in their own deployment environment.

The Java Enterprise System and Java System Suites are integrated as one fully functional entity and delivered as a single software system based on a new business strategy. Priced at $140 per employee, per year[2] for unlimited use, the Java Enterprise system also comes packaged with support services, maintenance, consulting, training, and education. Each Java System Suite is priced at $50 per employee and comes packaged with support services and maintenance.

The Java Enterprise System is developed using a process that employs regular, predictable release schedules, wherein all components are integrated and tested as a complete software system. The result is a high-quality, reliable product that customers can depend on.

Customers can benefit from the holistic and comprehensive view the Java Enterprise System takes of the IT project lifecycle in many ways. Some key benefits include:

- *Reduced Acquisition Costs* — A single price for all software components, including support services, can simplify acquisition of infrastructure software.

2. Advertised pricing is for customers based in the United States only. For non-U.S. based customers, please refer to a local sales office for local area pricing.

- *Rapid deployment* — Fully integrated Suites with guaranteed interoperability helps reduce on-site integration and setup costs, and improve time to market for new business services.
- *Predictability and Reliability* — Thorough testing and validation in real-world environments helps reduce hidden implementation costs and can improve predictability in project schedules.
- *Reduced Cost of Ownership* — Unlimited use of the software system throughout the enterprise for a single annual fee virtually eliminates the need to track and manage software usage and software licenses.
- *Reduced Complexity* — A simplified, predictable release schedule, wherein all components are released together as a pretested software system, can simplify installation and management, taking the complexity out of maintaining the infrastructure software and making upgrades easy.
- *Lower Operating Costs* — Administration and maintenance of the software system are simplified though a single management console, fewer system components to manage, and regular patch updates that address the entire software system instead of patching individually point products.

The remainder of this document provides an overview of the IT project lifecycle and explores the significant cost savings that the Java Enterprise System can offer. Chapter 3 provides analysis of the projected savings for the first IT project to utilize Java Enterprise System and Chapter 4 describes projected savings for the second, third, and fourth projects.

Notes About Research Data and Total Savings

The summary data presented in this paper is based on research results from Forrester Research dated February 2005. The content of this paper supersedes all previously released information regarding projected savings for a 5 year IT project based on Java Enterprise System.

Since the initial research was done by Forrester, Sun has also added some additional products to the Java Enterprise System[3]. Implementing any of the following recently added products may result in additional savings beyond the savings reflected in this paper:

- N1™ Service Provisioning System
- Sun Java™ System Identity Manager
- Sun Java System Directory Server Enterprise Edition
- Sun Java System Portal Server Mobile Access Server
- Sun Java™ Studio Enterprise software
- Sun Java Studio Creator

About Forrester Research

As an independent technology research company, Forrester provides pragmatic and forward-thinking advice about technology's impact on business. After a February 2003 acquisition of Giga Information Group, Forrester Research became the world's second largest IT analysis and advisory firm.

About Sun Microsystems, Inc.

Since its inception in 1982, customers have continually turned to Sun to help them grow their business, lower their costs, and gain competitive advantage. Sun is a leading provider of industrial-strength hardware, software, services, and technologies that make the Net work.

3. The increased value of these additional products in Release 3 of the Java Enterprise System is reflected in the pricing which was increased to $140 per employee, per year. Earlier releases were priced at $100 per employee, per year.

Chapter 2

The IT Project Lifecycle

Sun Microsystems and Forrester Research have worked to build a nine-phase model that defines the IT project lifecycle and apportions a typical percentage cost to each phase. The purpose of the model is to establish a baseline for measuring any IT Project.

The model originated from discussions with Sun customers through Sun's Voice of the Customer program, a program designed to provide direct feedback to Sun on key issues and requirements of IT executives and IT managers. After validation about the legitimacy of the key phases of the model from Sun customers and industry contacts, Sun decided to engage Forrester Research to take the idea from an initial concept to a generic IT project lifecycle model. Once established, this model could be used to measure the impact of the Java Enterprise System on the whole IT project lifecycle and estimate the potential cost savings that the Java Enterprise System could bring.

Whereas many software development models today focus on planning, software design, and development, this model is more comprehensive in scope, extending to phases that include provisioning, operations, and retirement. The model also identifies specific business applications and infrastructure software phases.

The Nine Phases of the IT Project Lifecycle

Forrester's research showed that virtually all IT projects include the nine phases defined in their model as is shown in Figure 1.

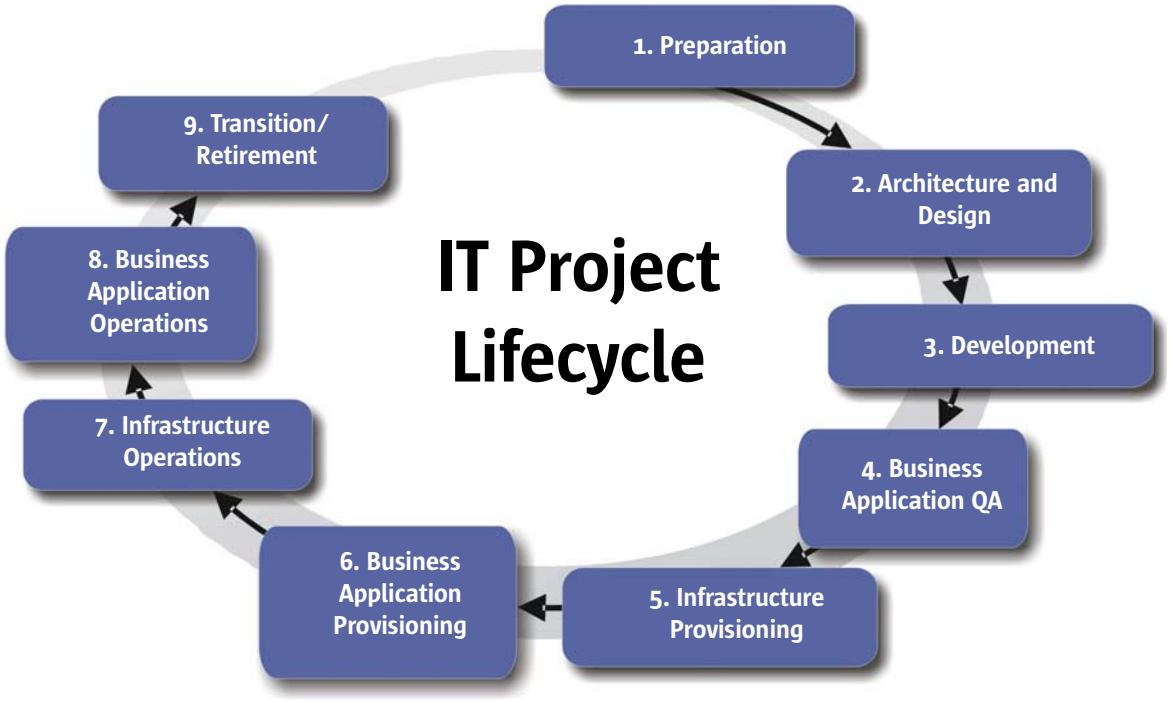

Figure 1. The IT project lifecycle consists of nine major phases.

There are many paths that can be taken through these nine phases. Differing projects, even within the same IT organization, may traverse through these lifecycle phases in different orders. The reader will also note that phases that relate to business applications (phases 4, 6, and 8) have been separated from phases aimed at planning, producing, and operating infrastructure software. This distinction allows a clear delineation between the impact on business applications and the impact on the IT infrastructure.

The phases of the IT project lifecycle as illustrated in Figure 1 are described further in Table 1. Along with the model phase name, the first column of the table also shows the industry average cost of each phase expressed as a percentage of the total cost of the IT project over a five-year period.

Model Phase and Estimated Percentage of IT Project Lifecycle Costs	**Description**
Preparation — 2.2%	The preparation phase covers activities required to define the business case for an IT project and the steps required to organize for deployment of an appropriate IT solution. It includes detailed requirements gathering, project planning, and evaluation of technologies and vendor solutions to meet the business requirements.
Architecture and Design — 1.2%	The architecture and design phase includes activities required to design the IT system to meet the business needs. This includes the architectural design as well as detail design of the application logic, database schema and data structures, user interface, integration with other systems, and physical layout of the hardware and network infrastructure. The design phase also includes vendor and technology selection to identify specific technologies that are best suited to implement the design.

Model Phase and Estimated Percentage of IT Project Lifecycle Costs	Description
Development — 26.6%	The development phase includes the steps needed to establish the development and QA environment and then execute the development activities. The first activity is to procure the hardware and software needed for the development and QA environments and to install and configure those environments as designed. Development may also include some training for developers to learn new languages, platforms, or development and management tools. The elements of the design are implemented and tested according to the planned architecture and design. This generally includes implementation of the database design and coding for business logic, user interface, and infrastructure components. It also may include integration with other systems.
Business Application Quality Assurance (QA) — 1.8%	The business application QA phase covers activities required to test and debug the business application code. This phase isolates testing activities for the business application code from those of the infrastructure services. The first step is to define the test criteria. Customized testing software, if required, may be developed or purchased. The output of this phase is a set of test results that will be fed back to development in some fashion. Some approaches to development incorporate testing into the development process, meaning that the Development and QA phases are tightly integrated.
Infrastructure Provisioning — 4.6%	The infrastructure provisioning phase covers activities required to acquire, configure, test, and debug the hardware, software, network, and storage systems that provide the production environment upon which the business application code will run. In this activity, the operations and development staff create the system image for the first server to be deployed to the production environment, taking into consideration requirements for features such as scalability, performance, and availability. Provisioning of production images to other servers and user systems is also part of this provisioning phase. Some training of operations staff may also be required.
Business Application Provisioning — 6.0%	The business application provisioning phase covers activities required to put the application code portion of the IT system into production. These activities, although separate from the infrastructure provisioning phase, are sometimes performed at the same time as the infrastructure provisioning activities. The system image for the first server is installed and deployed with the appropriate files, directories, and access controls for an optimized configuration of the business application. Provisioning of this production image to other servers and client systems is also part of this provisioning phase. Some training of operations staff may also be required.
Infrastructure Operations — 17.6%	The infrastructure operations phase covers activities required to manage the operations of the IT system as it relates to infrastructure software. This can include managing and monitoring the health of the system, managing and tracking problem reports, supporting users, and maintaining the system through patch installations and minor software updates.
Business Application Operations — 37.0%	The business application operations phase covers activities required to manage the operations of the IT system as it relates to business application software. This includes the same types of task as in the infrastructure operations phase, except that the focus here is on managing and maintaining business applications instead of infrastructure software.
Transition/Retirement — 3.0%	Transition and retirement activities cover both infrastructure and business applications, and include analysis of the impact of major new releases, transition planning, and business continuity planning. If it involves deployment of a new release, it may include testing and user training and may also include contract or license modifications.

Table 1. Descriptions of major model phases.

Assumptions When Applying the Java Enterprise System to the Model

The IT project lifecycle model was designed around industry averages that were based on Forrester data and their in-depth interactions with more than 3,000 companies ranging from brokerage, transportation, telecommunications, and high-tech manufacturing industries to mainstream users in retail, state and local government, utilities, and insurance.

For the purposes of analyzing the Java Enterprise System using the IT project lifecycle model, the assumptions about the IT project scenario included:

- The project would include a custom-built Internet application of moderate size. Moderate size was defined as 1000 to 2000 users, 50 to 100 display screens, 100 to 200 transactions per second, and 2 million to 4 million master records in the database.
- The project would span a five year lifecycle in which the implementation was completed in the first year, and a major upgrade was started and completed in the fourth year.
- Project costs included new hardware and software required for the project as well as the labor costs for internal IT personnel, and services from third parties.
- New hardware and software purchases for the project would account for ten percent of the overall project budget.
- The model analyzed and projected results for both Release 1 and Release 3 of the Java Enterprise System. However, this document focuses on the analysis and benefits of Release 3 features only.

The next chapter describes projected cost savings that can potentially be realized by using the Java Enterprise System on an IT project that maps to the assumptions described above. Cost savings are based on analysis of the impact that the Java Enterprise System can have on a single IT project at each phase of the IT project lifecycle model. The fourth chapter provides additional analysis and projected cost savings for a second, third, or fourth IT project that utilizes the Java Enterprise System infrastructure after it has already been used on an initial project.

Chapter 3

Projected Cost Savings With the Java Enterprise System — First IT Project

The Java Enterprise System

The Java Enterprise System is designed to dramatically simplify acquisition, deployment, and maintenance of enterprise infrastructure software by offering a single, comprehensive software system containing all of the critical enterprise network services that businesses need — at a price that makes sense. It is packaged with support services, maintenance, consulting, training, and education, and is delivered at regular, predictable intervals.

The Java Enterprise System signals a revolution in the software industry with three potentially industry-changing breakthroughs:

- *A New Software System* — The software system is set of open, industry-leading infrastructure network services delivered as a complete, preintegrated software system that uses shared components, common technologies, a consistent system architecture, and a similar user experience. These shared network services comprise all of the software that is typically deployed in the data center, such as mail and calendar services, Web and application services, network identity and directory services. The Java Enterprise System delivers a complete software system that comprises a core set of network services that an enterprise needs to develop and deploy business applications.
- *A New Systematic Approach* — The systematic approach refers to the changes Sun is making internally to deliver the software system. To do this, Sun is moving away from the traditional industry norm of delivering independent software products for each infrastructure network service component. Instead, Sun is applying the principles that it successfully used in its 20 year history of developing and managing releases of the Solaris™ Operating System to produce an integrated set of infrastructure network services that work together as a single entity. This means using procedures and policies for software development that result in predictable release schedules, tested integration between components, and a high-quality, reliable product that customers can depend on.
- *A New Business Model* — Sun is offering a new unobtrusive pricing structure that dramatically simplifies software licensing and eradicates the complexity of multiple pricing structures, which significantly reduces the time to market for an enterprise. The software license provides unlimited use for business needs at a single price, virtually eliminating the need to track software usage or manage software licenses. This not only reduces business

overhead, but can also help enterprises avoid overpaying for software licenses. And because the license is based on annual employee count with a cap on the price of renewals, the budget process is greatly simplified. Short-term and long-term spending for software licenses is easy to predict.

These three industry-changing breakthroughs defined by the Java Enterprise System can help bring simplicity, predictability, and affordability to enterprise infrastructure software:

- *Simplicity* — Reduced complexity in acquiring, deploying, and operating infrastructure software
- *Predictability* — Improved control over variables such as licensing, planning, and deployment
- *Affordability* — Lower cost of acquisition and operation of core software assets and services

Features Available as of Release 3 of the Java Enterprise System

Cost savings and reduced complexity that can result from using the Java Enterprise System are based on efficiencies generated by the features that are available up through Release 3 of the Java Enterprise System[4]. Examples of some of these features and their resulting benefits are listed in Table 2.

Java Enterprise System Feature	Anticipated Business Benefit
Pretesting of components as a complete software system	Reduces testing requirements at the customer site
Delivered as a complete software system	Reduces infrastructure software integration requirements
Common directory schema and common software system components	Common directory schema enhances performance and centralizes administration while the use of common components helps reduce overall operational costs by reducing the number of components that must be installed and managed
Common administrative and management environment	Simplifies management of the infrastructure software through a common and consistent process, resulting in higher efficiency for installation, setup, and ongoing operations
Regular release of the software system with backward compatibility	Provides a predictable maintenance and upgrade path for customers, reducing the customer's need to manage complex upgrades and the interdependencies between infrastructure software components
Single part number and single unit price for the entire software system	Greatly simplifies acquisition and tracking of infrastructure software licenses and software media
Online service for centralized management of patches and software system updates	Greatly simplifies software management and enables communication with Sun to help keep installed infrastructure software at appropriate release levels
Online service for application and configuration monitoring	Provides access to current Sun knowledge and the information needed to manage software for optimal performance, resulting in increased stability and predictability
Common deployment and tuning guides and other integrated documentation	Creates efficiency in deployment and provisioning of the infrastructure software as well as helping to minimize staff skill training requirements

Table 2. Java Enterprise System Release 3 features and benefits.

4. These projected cost savings are based on features that were expected to be in Release 3 of the Java Enterprise System at the time that this analysis was prepared. However, Sun has since included more functionality in Release 3 as noted in the section entitled, “Notes About Research Data and Total Savings” on page 3 of this document. These additional capabilities not anticipated in the original analysis may yield additional savings.

Projected Cost Savings for First IT Project — 16.4-Percent Total

Forrester's estimates of cost savings due to the use of the Java Enterprise System were based on a mapping of Java Enterprise System Release 3 features and characteristics against the activities within the IT project lifecycle phases. The following sections identify how the Java Enterprise System was estimated to save time and money within each phase of the IT project lifecycle for the first IT project that utilizes the Java Enterprise System.

Estimates of the savings for each phase are expressed as a percentage reduction in costs over a five-year IT project. The total projected cost savings across all phases of a five year project is 16.4 percent.

Preparation — 25.9-Percent Savings

Forrester estimates a savings of 25.9% in the preparation phase, which defines the business case for the IT project and includes requirements definition. The expected savings can be realized through:

- Simplified organizational planning due to the tightly integrated software system, which provides a clear target for development skills, thereby simplifying creation of the project organization
- Reduction in time spent evaluating separate point products for the infrastructure
- Reduced need for budget analysis due to the simplified pricing model

Architecture and Design — 19.3-Percent Savings

In the architecture and design phase, where both high-level architecture and detail system designs are formulated, Forrester estimates a potential savings of 19.3 percent over a five-year period. These savings result from:

- Reduction of time and effort spent designing infrastructure software and application architectures that incorporate multiple products from multiple vendors
- Reduced need for prototypes and/or proof-of-concept projects to integrate disparate point products
- Simplified vendor and technology selection in the preparation phase because point products are not evaluated independently of each other
- Potential to reduce logical design, integration design, and physical design due primarily to the integrated software system and the related Sun reference deployments

Development — 18.7-Percent Savings

The development phase establishes the development and QA environments, including purchasing necessary systems and software, and all activities that are required for the delivery of a working system. Forrester estimates a potential savings of 18.7 percent in the development phase as a result of:

- Reduced effort to code business logic and process flow due primarily to the efficiencies provided by the development framework, which includes process flows as well as conventional business logic
- Savings in the provisioning of the development environment due to the integrated framework
- Potential reduction in development of the user interface due to the integration of Java Enterprise System network services
- Reduction in provisioning the development environment because purchasing cycles and contract management are greatly simplified, especially after the first implementation when the unlimited use license is already in place

Business Application QA — 22.8-Percent Savings

In the business application QA phase, which includes testing and debugging of the business application code, Forrester estimates a potential savings of 22.8 percent. The savings in this phase is expected to accelerate over time, and results from:

- Reduction in effort required to define testing criteria and design tests to deal with a varied, custom-integrated, and incompletely documented set of point products
- Reduction in effort required to run regression, integration, and workload tests to account for integration of multiple middleware products from multiple vendors

Infrastructure Provisioning — 47.0-Percent Savings

The infrastructure provisioning phase includes activities required to acquire, configure, test, and debug the complete production environment, including hardware, software, network, and storage systems. Forrester estimates a potential savings of 47.0 percent in this phase resulting from:

- Reduced number of vendor contracts and purchasing cycles for deployment software
- Reduced infrastructure testing and integration versus traditional “best-of-breed” middleware approaches
- Savings on the creation of the first server image as a result of the preintegrated and pretested software system
- Potential to automate and standardize software image provisioning
- Savings on operations staff training when compared to a “best-of-breed” approach

Business Application Provisioning — 4.1-Percent Savings

The Java Enterprise System is expected to have a small impact on business application provisioning, which includes the activities to put the application code portion of the IT system into production. Forrester estimates a 4.1-percent savings in this phase resulting from the enhanced stability of the software infrastructure upon which the applications would be provisioned.

Infrastructure Operations — 19.0-Percent Savings

The infrastructure operations phase includes activities required to manage the operations of the IT system as it pertains to the infrastructure software. Forrester estimates a potential savings of 19.0 percent in this phase as a result of:

- A common management environment in the Java Enterprise System that helps reduce the cost of monitoring the complete software system
- Savings on update installations arising from Sun's consistent release management for the entire software system and standardized patches as well as patch management tools

Business Application Operations — 12.1-Percent Savings

In the business application operations phase, which includes the activities for managing the operations of the business application software, Forrester estimates a potential savings of 12.1 percent resulting from:

- Savings in application bug fixes resulting from Sun's support documentation covering the entire software system, as well as Sun's commitment to compatibility between releases, reducing the effort required to find and fix bugs in the application code and to perform regression testing on the infrastructure software aimed at determining the impact of changes in the application code
- Savings in release planning and implementation resulting from the expected consistent and integrated releases of the Java Enterprise System

Transition/Retirement — Savings Not Calculated

Transition/retirement of an IT project was not considered in Forrester's estimates for savings throughout the IT project lifecycle.

Summary of Results for First IT Project

Table 3 shows estimated total savings across all phases of the IT project lifecycle when the Java Enterprise System is applied. Forrester's analysis shows that the Java Enterprise System could yield a substantial savings of 16 percent across the IT project lifecycle for the first IT project that utilized the Java Enterprise System.

Project Phase	Projected Percent Savings in Phase	Estimated Phase Costs as a Percent of Total Lifecycle Costs	Percent Savings Relative to Total Lifecycle (Col. 2 * Col. 3)
Preparation	25.9%	2.2%	0.6%
Architecture and Design	19.3%	1.2%	0.2%
Development	18.7%	26.6%	5.0%
Business Application QA	22.8%	1.8%	0.4%
Infrastructure Provisioning	47.0%	4.6%	2.2%
Business Application Provisioning	4.1%	6.0%	0.2%
Infrastructure Operations	19.0%	17.6%	3.3%
Business Application Operations	12.1%	37.0%	4.5%
Transition/Retirement	0.0%	3.0%	0.0%
Total		100.0%	16.4%

Table 3. The impact of savings in each phase can be summed to estimate the savings for the entire project.

Column 4 shows total savings as a percentage of the total spending over the five-year IT project lifecycle. The numbers in column 4 were obtained by multiplying the projected savings for each phase (column 2) times the estimated percentage of spending attributed to that phase (column 3). Thus, column 4 represents an estimate of the total five-year IT budget that could be saved within each phase. The sum of all of the figures in this last column, 16.4 percent, represents the total projected savings across the five-year IT project lifecycle for the first project that utilizes the Java Enterprise System.

An interesting observation from Forrester's analysis was that the impact of the Java Enterprise System was not limited to infrastructure. An impact on infrastructure phases was expected because the Java Enterprise System is directly associated with infrastructure elements. The impact on business applications phases is less direct than the impact on infrastructure aspects of the IT project lifecycle, but still significant (Figure 2).

The three phases that relate specifically to business applications (Business Application QA, Business Application Provisioning, and Business Application Operations) showed a combined savings of 11 percent while the remaining six phases that relate to infrastructure showed a combined savings of 20 percent. The conclusion to be drawn from this is that the Java Enterprise System can have a significant impact on the entire IT project lifecycle.

Summary of Spending and Savings For First IT Project

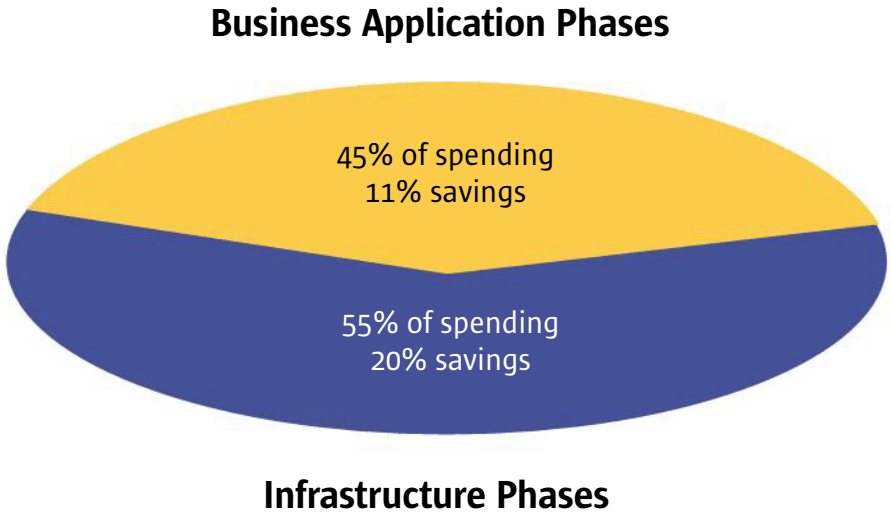

Figure 2. Spending and savings for business application and infrastructure phases in first IT project.

Additional Savings Potential in Subsequent Projects

For simplicity sake, the model addresses the return on investment (ROI) for a single IT project and this chapter has specifically addressed the first IT project to utilize Java Enterprise System. However, if multiple projects are undertaken, additional savings would result, yielding an even better ROI. For example, the first project would include the cost of purchasing a Java Enterprise System software license for the entire business. These costs would not be necessary in the second or subsequent projects. The following potential savings that are not considered in the first IT project are explored in the next chapter which addresses the second, third, and fourth IT projects:

- Revenue and cost impact from faster time to value of project implementation
- Economies from multiple projects that utilize the Java Enterprise System
- Improved project quality and reduced risk due to preintegrated infrastructure software and simplified release schedules
- Reduced cost of managing and auditing a single infrastructure software license
- Impact of future Java Enterprise System enhancements beyond the features contained in Release 3

Although the model is primarily oriented toward custom-built software systems, the basic trends of the results can also be applied to packaged software implementations. And since every business situation is unique, results for individual businesses could vary from these projected results.

Examples of Total Savings for the First IT Project

The bottom line is that the Java Enterprise System could have significant impact and cost savings across the IT project lifecycle. The savings could be reinvested in business applications or other projects that could generate even greater return on investment for the business.

According to Forrester's research, the amount of the savings will depend on the scale of IT project. Table 4 shows some examples of the projected savings for various size projects.

IT Project Budget Over 5 Year Period	Estimated Savings
$1M budget	$164K savings
$5M budget	$820K savings
$10M budget	$1.6M savings
$25M budget	$4.1M savings

Table 4. Examples of estimated total savings using the Java Enterprise System.

Chapter 4

Projected Cost Savings With the Java Enterprise System — Second IT Project

This chapter includes the projected cost savings for a subsequent IT project that utilizes the Java Enterprise System infrastructure after it has already been used on an initial project. When Forrester analyzed the impact of using Java Enterprise System in a second, third, and fourth IT project, they concluded that substantial additional savings could be realized. The total projected cost savings for the second IT project is 33.4 percent. The third and forth IT projects are also expected to achieve the same savings as the second.

Projected Cost Savings for Second IT Project — 33.4-Percent Total

As with the first project, Forrester's estimates of cost savings due to the use of the Java Enterprise System were based on a mapping of Java Enterprise System Release 3 features and characteristics against the activities within the IT project lifecycle phases[5].

The following sections identify sources of additional savings within each phase of the IT project lifecycle over the course of a five year project. Savings estimates for each phase are expressed as a percentage reduction in costs. The savings are primarily due to reuse of components such as software licenses, architectural designs, and code artifacts that were created for another project that utilizes Java Enterprise System. In some cases, an investment is required in order to obtain the full measure of savings through reuse. The projected cost savings described in this chapter already reflect these expected investments for enabling reuse.

Preparation — 38.6-Percent Savings

Forrester estimates a savings of 38.6 percent in the preparation phase for the second IT project as compared to a savings of 25.9 percent for this phase in the first project. The additional expected savings are primarily due to

5. These projected cost savings are based on features that were expected to be in Release 3 of the Java Enterprise System at the time that this analysis was prepared. However, Sun has since included more functionality in Release 3 as noted in the section entitled, “Notes About Research Data and Total Savings” on page 3 of this document. These additional capabilities not anticipated in the original analysis may yield additional savings.

the following factors:

- No new infrastructure software licenses are needed, so the cost of contract negotiations to support licenses for both new applications and scaled-up applications is reduced and possibly eliminated
- The cost of project planning and budgeting is reduced because no new infrastructure software licenses are required

Architecture and Design — 40.0-Percent Savings

In the architecture and design phase, Forrester estimates a potential savings of 40.0 percent over a five-year period for the second project. This compares to a savings of 19.3 percent in this phase for the first project. The additional expected savings for design of the second project are substantially more because there is good opportunity for reuse of design patterns in conjunction with Java Enterprise System. The cost of design and review can be reduced throughout many phases of design including architectural design, integration design, user interface design, and others. The offsetting investment to reuse designs from the first project are also reflected in these estimated savings.

Development — 41.0-Percent Savings

At 41.0 percent, the expected savings in the development phase for the second project are more than double the expected savings of 18.7 percent for the first project. Forrester attributes their estimate of additional savings to the following factors:

- Reuse of development and QA environments for the first project can reduce, if not completely eliminate, the cost of provisioning the development and QA environment for subsequent projects
- The common directory and security schema within Java Enterprise System can be reused, reducing the time and effort required for developing a database of user profiles and access controls
- Development staff can learn one consistent environment and set of development tools, helping to reduce the training required for the second project and beyond

Business Application QA — 49.1-Percent Savings

In the business application QA phase, which includes testing and debugging of the business application code, Forrester estimates a potential savings of 49.1 percent versus a savings of 22.8 percent in the first project. The savings in this phase are expected to accelerate over time and become even more substantial after the first project because:

- Reuse of testing software components from the first project can reduce the time and cost of designing and implementing the business application QA environment in subsequent projects
- Reuse of deployment patterns developed during the first project can reduce, if not eliminate, time and effort required for testing the integration of software components
- Testing tools and infrastructure installed for the first project can be reused

Infrastructure Provisioning — 80.7-Percent Savings

Forrester estimates a potential savings of 80.7 percent for the infrastructure provisioning phase of a second, third, or fourth project as compared to a savings of 47.0 percent for this phase in the first project. The substantial additional expected savings result from:

- New purchasing and vendor contracts will likely not be required since software licenses are reused
- Time and effort required for acquisition and testing of infrastructure components is virtually eliminated

- Provisioning of production software images to servers can potentially be reduced through standardized processes for software image provisioning
- Operations staff learn one consistent environment and administration toolset, reducing the training required for administrators for the second project and beyond

Business Application Provisioning — 36.8-Percent Savings

The second project and beyond will benefit from significant reuse in the provisioning of business applications, allowing the savings in these subsequent projects to exceed that of the first project by a large margin. Forrester estimates a 36.8 percent savings for the second, third, or fourth projects as compared to a 4.1-percent savings in this phase for the first project. The additional expected savings result from:

- Time and effort required for installation and configuration of the business application code can be reduced through reuse of code artifacts from the first project
- Operations staff learn one consistent environment and administration toolset, reducing the training required for administrators for the second project and beyond
- User and operator training can be reduced due to the consistent environment in which the business application is delivered to users

Infrastructure Operations — 24.0-Percent Savings

Forrester estimates a potential savings of 24.0 percent in the infrastructure operations phase for the second, third, or fourth project. This compares to a savings of 19.0 percent for the first project. The additional expected savings are the result of:

- Knowledge gained by the operations staff working with the first project can help reduce the cost of monitoring and managing the IT infrastructure for subsequent projects
- The common administration and management console and agents in Java Enterprise System coupled with common patch management features can result in operational savings due to reduced effort required for managing and updating infrastructure servers such as application servers

Business Application Operations — 15.7-Percent Savings

Forrester projects a savings of 15.7 percent for the second third, and fourth projects, whereas they project a savings of 12.1 percent for the first project. The increase in savings results from:

- Additional savings in release and upgrade planning due to consistent environments between projects
- Operational efficiencies and labor savings due to consistent environments, centralized policies, and reuse of deployment and operations patterns

Transition/Retirement — 54.0-Percent Savings

Transition/retirement of an IT project was not considered in Forrester's estimates for savings of the first IT project that utilizes Java Enterprise System, but is expected to have a significant impact on the second, third, and fourth projects. Forrester estimates a savings of 54.0 percent for these subsequent projects due primarily to:

- Java Enterprise System releases are backward compatible, saving time and effort on impact analysis during transitions which involve upgrades to new releases of Java Enterprise System software
- Since there are no new Java Enterprise System licenses required to add servers or users to an existing application, time can be saved in some types of project transitions

- The common directory and security schema reduce time and effort for impact analysis and continuity planning, testing, and deployment when migrating users to a new application or during a major transition
- Reuse of deployment patterns developed during the first project can reduce the time and effort required for deployment of new releases and for new projects.

Summary of Results for Second IT Project

Table 5 shows estimated total savings across all phases of the second, third, and fourth IT project when the Java Enterprise System is applied. Forrester's analysis shows that the Java Enterprise System could yield a substantial savings of 33.4 percent in each of these IT projects.

Project Phase	Projected Percent Savings in Phase	Estimated Phase Costs as a Percent of Total Lifecycle Costs	Percent Savings Relative to Total Lifecycle (Col. 2 * Col. 3)
Preparation	38.6%	3.6%	1.4%
Architecture and Design	40.0%	5.0%	2.0%
Development	41.0%	21.0%	8.6%
Business Application QA	49.1%	9.6%	4.7%
Infrastructure Provisioning	80.7%	5.2%	4.2%
Business Application Provisioning	36.8%	3.6%	1.3%
Infrastructure Operations	24.0%	17.6%	4.2%
Business Application Operations	15.7%	30.4%	4.8%
Transition/Retirement	54.0%	4.0%	2.2%
Total		100.0%	33.4%

Table 5. The impact of savings in each phase can be summed to estimate the savings for the entire project.

Column 4 shows total savings as a percentage of the total spending over the five-year IT project lifecycle. The numbers in column 4 were obtained by multiplying the projected savings for each phase (column 2) times the estimated percentage of spending attributed to that phase (column 3). Thus, column 4 represents an estimate of the total five-year IT budget that could be saved within each phase. The sum of all of the figures in this last column, 33.4 percent, represents the total projected savings across the five-year IT project lifecycle.

Further analysis breaks down the projected spending and savings according to business application phases (Business Application QA, Business Application Provisioning, and Business Application Operations) versus infrastructure phases. Forrester projects the combined savings for all business applications phases to rise to 25 percent for subsequent projects (second through fourth) as shown in Figure 3. This is more than double the projected savings for these phases in the first project (11 percent). The infrastructure phases are projected to provide a combined savings of 40 percent, also double the projected savings for infrastructure phases in the first project (20 percent). The increase in savings for both business applications phases and infrastructure phases is significant because the reuse of software artifacts and design/deployment patterns affects both areas.

Summary of Spending and Savings For Second IT Project

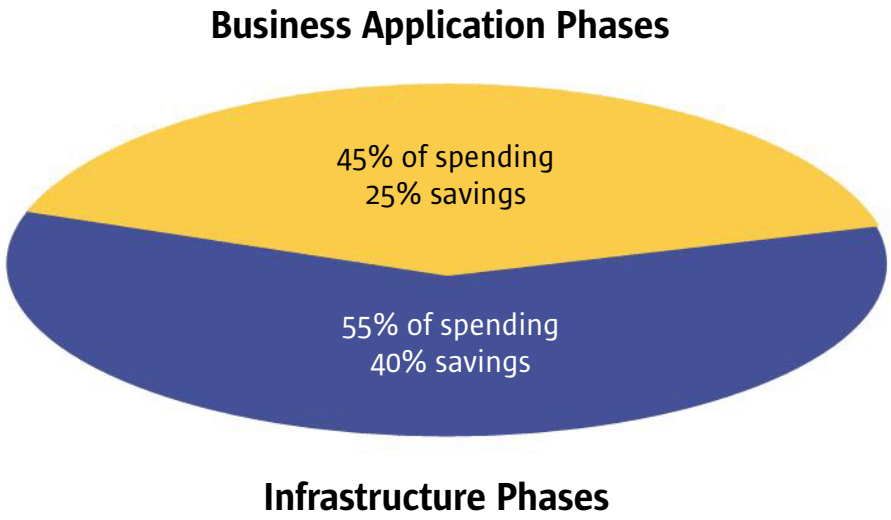

Figure 3. Spending and savings for business application and infrastructure phases in second IT project.

Examples of Total Savings for the Second IT Project

As has been shown, the Java Enterprise System could have an even greater impact and cost savings for the second and subsequent IT project. Since Forrester estimates that the amount of the savings will depend on the scale of IT project, Table 6 shows some examples of the projected savings for various size projects.

IT Project Budget Over 5 Year Period	Estimated Savings
$1M budget	$334K savings
$5M budget	$1.67M savings
$10M budget	$3.34M savings
$25M budget	$8.35M savings

Table 6. Examples of estimated total savings using the Java Enterprise System in the second IT project

Chapter 5

Conclusion

Today's middleware approach to infrastructure software is seriously impeding business agility and productivity. Realizing the high cost and complexity of integrating point products that address individual aspects of the IT infrastructure, IT executives are eager to invest in technologies that can simplify their environment and reduce costs throughout the IT project lifecycle. Sun's new and radical approach with the Java Enterprise System can help reduce cost and complexity, and greatly simplify many aspects of the IT project lifecycle.

The comprehensive approach of the Java Enterprise System can bring many key benefits:

- *Simplified acquisition* through a single pricing model and a single vendor solution that addresses key business requirements
- *Reduced integration and testing costs* through the use of shared components, common technologies, a consistent system architecture, and a similar user experience across the software system
- *Lower total cost of ownership* through unlimited software use for a single price that virtually eliminates the need to track and manage infrastructure software usage
- *Reduced maintenance costs* through predictable release schedules and integrated software system components, taking the complexity out of maintaining and upgrading the IT infrastructure
- *Flexibility* through an integrated software system that is systematically updated through regular releases, helping to ensure that the infrastructure software is current
- *Potential for increased investment in business applications* by redirecting investments that would otherwise have been required for integration of middleware point products
- *Improved IT planning* through straightforward pricing and licensing policies that simplify forecasting and budgeting and through predictable delivery that can help reduce the risk of schedule delays and hidden implementation costs
- *Increased customer satisfaction* through fast, accelerated deployment of Web services that results in less business disruption and an ability to focus on the needs of the customer

These business benefits can ultimately generate increased revenue and profitability through better relationships with customers and an agile business environment. The savings as described in this paper are not only significant for the first IT project, but are even better in subsequent IT projects as shown in Figure 4.

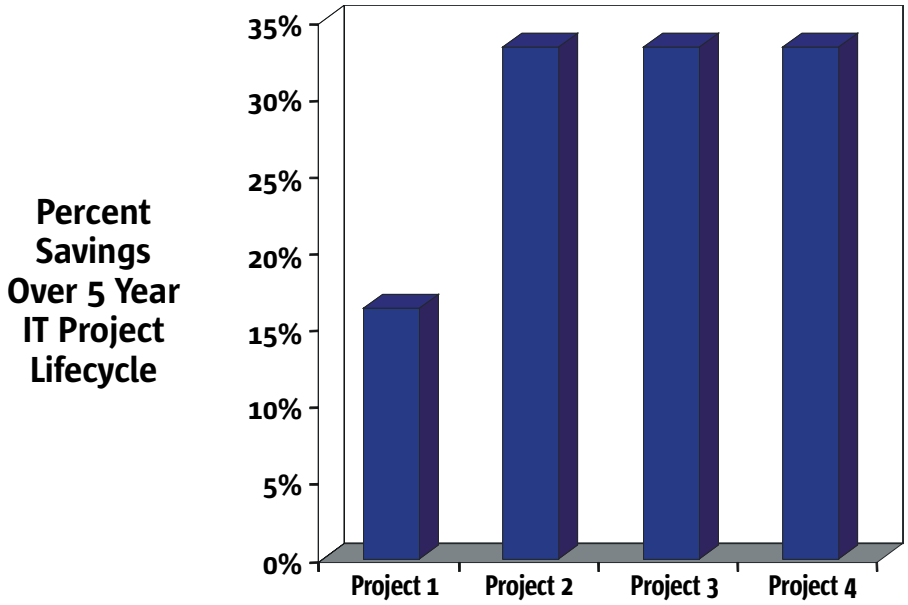

Figure 4. Significant savings are generated for each IT project deployed with the Java Enterprise System.

Total Cost of Ownership Analysis

Contact your local Sun sales representative for a free analysis of your IT environment or use the online Total Cost of Ownership (TCO) tool at *sun.com/javaenterprisesystem (*click on "Calculate Acquisition Cost"), and find out how your future IT projects can be improved by using the Java Enterprise System.

For More Information

Additional information about the Java Enterprise System and Forrester Research is available at the Web links listed in Table 7.

Web Site URL	Description
sun.com/software/javaenterprisesystem	Sun Java Enterprise System
sun.com/software/javaenterprisesystem (click on "Calculate Acquisition Cost")	Total cost of acquisition calculator
sun.com/service/products/software/javaenterprisesystem	Sun Services offerings relating to the Java Enterprise System
sun.com/software/javaenterprisesystem/licensing/index.html	Licensing terms for Java Enterprise System
forrester.com	Forrester Research home page

Table 7. Web links for additional information.

Sun Microsystems, Inc. 4150 Network Circle, Santa Clara, CA 95054 USA **Phone** 1-650-960-1300 or 1-800-555-9SUN **Web** sun.com

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