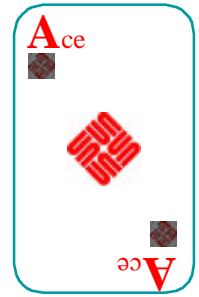


# Project Ace



Direct Specification and then Optimal Generation of Applications

- a Better Way to Build Enterprise Applications -

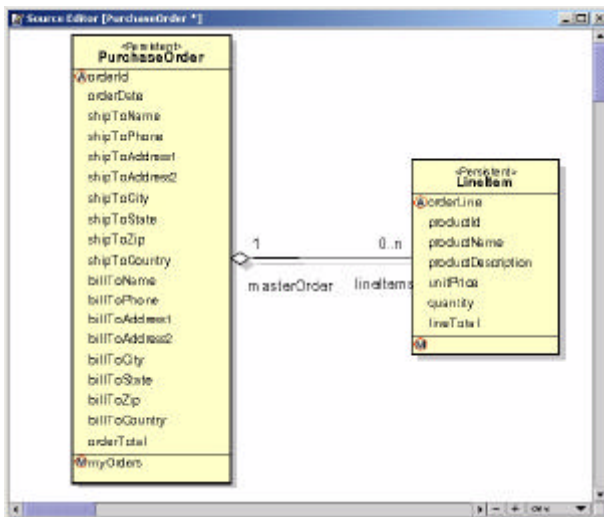
## GOALS

**Project Ace** is Sun Labs research that drastically improves the time-to-market and productivity of the **development** of enterprise applications and runtime **performance** for their implementations. Ace supports a high-level specification of the application's intent from which Ace then automatically generates and deploys its optimized implementation code.

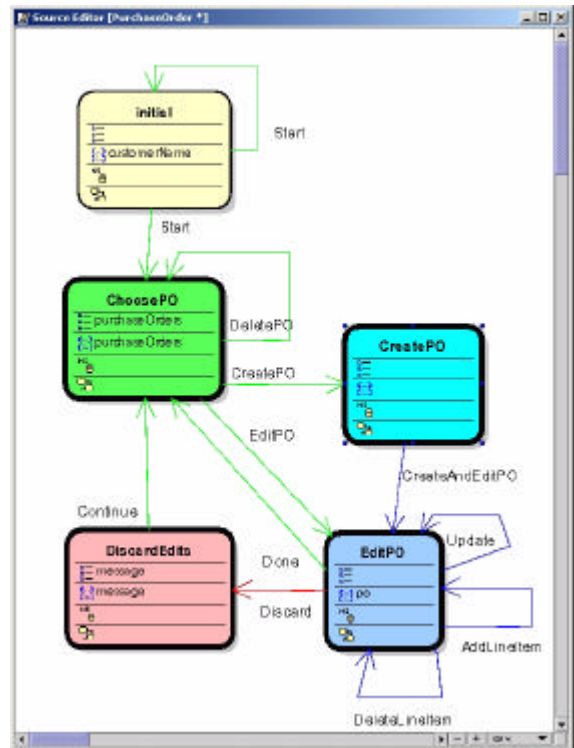
## APP DEVELOPMENT

Ace is a better way to build applications that replaces the slow, expensive, and error-prone hand coding of applications. An Ace developer instead produces a simple, concise high-level specification for their application which is a description of:

1. the data to be manipulated, e.g. its business objects, relationships, queries, and business logic.



2. the business process tasks to be performed, e.g. the sequencing, user interaction, data processing, and transactions of each of its Web pages.



This high-level specification provides enough information so that Ace can automatically generate the application's implementation code.

Even a modest enterprise application requires tens of thousands of lines of code which programmers would otherwise spend months to hand code and debug. Ace's concise application specification allows this to now be accomplished in mere days. This time-to-market benefit can be a significant competitive business advantage.

Because Ace allows development through a direct specification of the application's intent, the programming skills demanded of development

staff are greatly reduced. Ace produces all detailed implementation code, so the developers are also leveraged for maximum productivity. With so many implementation details automated, Ace delivers higher application quality. The Ace app specification is so concise and easily understood that Ace can be used for instant prototyping to increase application effectiveness.

**RESULTS:** *The Java Pet Store reference application for J2EE was developed using Ace. The Ace specification required less than 250 lines of hand written code, compared with the 3,484 lines of C# code claimed by Microsoft. The Ace application took one person only 6 days to develop, compared with the months likely required for Microsoft's .Net.*

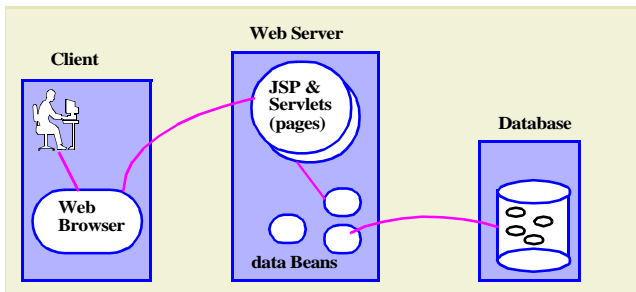
*At JavaOne 2002, Ace was demoed building a real application from scratch in under 5 minutes.*

## ARCHITECTURE CHOICE

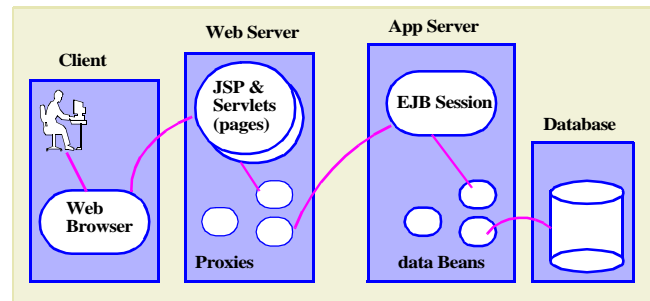
There are several multi-tier architectures and many technologies available for the development of applications. These choices often vary widely in their capability, quality, and performance. New technology arrives frequently, while old technology loses support. With conventional development, these choices are embedded in the hand-written code.

Ace's application specification is very high-level and thus architecture-independent. Therefore, Ace can generate the implementation code for any architecture and technology choice present or future, just like a conventional compiler can generate code for different processors, machines, and OSes.

An Ace developer can generate their application for initial customer usage in a 2-tier architecture because it is simpler to configure, and manage:



As the usage increases, the scalability of this simple architecture might well limit performance. The Ace developer can then simply regenerate their same application for continued usage in a more powerful 3-tier architecture:



With this revolutionary Ace benefit, a developer can now **“Write once, Deploy anywhere”**.

**RESULTS:** *Ace automatically implemented its Java Pet Store application in both a 2-tier (JSP enabled web server with JDO - database) and also a 3-tier (JSP enabled web server - EJB enabled app server - database) architecture.*

## APP PERFORMANCE

Ace captures the expertise and automates the effort that an experienced application programmer would spend to hand code their application for high performance and scalability. Distribution within multi-tier applications is often critical for high performance and scalability. So Ace generates its code to optimize the network traffic by minimizing client/server round-trips.

Sun says *“the Network is the Computer”*, so now we say **“Ace is the optimizing compiler for the Network”**.

## ACE BENEFITS

Ace provides a simple, concise, and architecture-independent specification for building enterprise applications. Ace offers superior time-to-market, developer productivity, architecture migration, and optimized app performance.

For more info on Ace or to request an evaluation copy, please email to [ace-info@sun.com](mailto:ace-info@sun.com) or see <http://sunlabs.eng/projects/ace>.