Cincom Smalltalk™
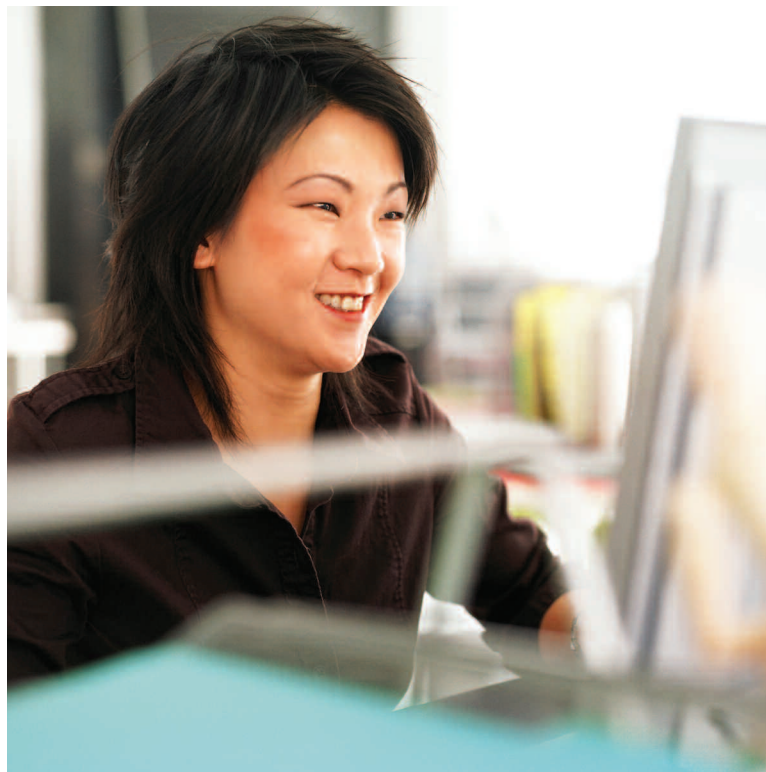# The ObjectStudio® 8 Development Environment

WHITE PAPER
Cincom In-depth Analysis and Review

Cincom

Cincom Smalltalk
The ObjectStudio 8 Development Environment

WHITE PAPER
Cincom In-depth Analysis and Review

Table of Contents

The ObjectStudio 8 Development Environment

ObjectStudio is the premier pure Windows Smalltalk development environment. It is a complete, object-oriented application development suite of tools for designing and assembling customized applications. ObjectStudio promotes a highly productive and interactive development style backed with a powerful architecture and comprehensive toolsets.

Providing complete access to all standard Windows services, ObjectStudio allows developers of native Windows applications to provide a complete solution that fits cleanly into a Microsoft-centric infrastructure.

ObjectStudio 8 offers significant new advantages including integration with Cincom's powerful VisualWorks® object-oriented development environment and high-speed development capabilities.

ObjectStudio simplifies the development process by leveraging the power of component-based technology, enabling developers to:

• Model business objects

• Map business objects to data stores

• Manage objects with a team approach

• Access all standard Windows services

• Incorporate web services and server connectivity via VisualWorks

• Integrate with databases and legacy applications

The ObjectStudio Advantage

The ObjectStudio development environment provides a range of compelling advantages to application developers.

Deep Integration With Windows

ObjectStudio offers deep integration into the Windows platform, leveraging all the features of the operating system. Using ObjectStudio, application programmers can develop any application to behave like a standard Windows application, without any additional effort.

Native GUI

Applications developed in ObjectStudio use the standard Windows GUI elements, including API and events, providing a look and feel like any other Windows application, such as Excel, Word or Outlook.

COM and ActiveX

Developers in ObjectStudio can use Microsoft COM (Component Object Model) technology to communicate with other applications, including putting third-party ActiveX controls in the user interface. COM support is subclassed from Microsoft's Foundation Classes (MFC) and enhanced to talk to Smalltalk, enabling ObjectStudio to deliver a standard implementation of COM, which is compatible with any other Windows application.

DDE

ObjectStudio applications communicate with native applications on the Windows platform via DDE (Dynamic Data Exchange) protocol. ObjectStudio delivers a standard implementation of DDE, which is compatible with any other Windows application.

ODBC

ObjectStudio leverages the Microsoft ODBC (Open Database Connectivity) interface, enabling applications developed in ObjectStudio to access data in database management systems (DBMS) using SQL.

Connectivity With Databases

ObjectStudio supports the native API of all the major databases, automatically integrating into the database and allowing applications developed in ObjectStudio to leverage the latest features of most databases. This capability frees development teams from having to learn complicated database APIs, and provides superior application performance over generic gateways like ODBC.

ObjectStudio's abstract database framework provides an easy, high-level interface to your database. It lets you maintain a high level of source compatibility if you need to change databases, and you can use the built-in internal database for offline prototyping. The framework is also extended for each database to provide access to database-specific features.

ObjectStudio provides connectivity to the following databases:

• Oracle

• IBM

• DB2

• MS SQL Server

• Sybase

• SUPRA® SQL

• Informix

• Adabas

• MS Access

Connectivity With Legacy Systems

ObjectStudio supports many communication standards, and the environment's multiple access and interface capabilities simplify integration with legacy applications and desktop environments. Legacy connectivity within a single development environment streamlines application development.

Connectivity to legacy applications is provided through APPC, an application-to-application protocol used mostly on the mainframe. APPC is used when several applications require access to the same data stored on the mainframe.

Connectivity to legacy applications is also provided through EHLLAPI, a screen-grabbing mechanism used to display mainframe screens. EHLLAPI is used when a current mainframe application must keep running inside a Windows application.

Ease-of-Use

ObjectStudio provides several capabilities that simplify, automate and expedite application development.

Object Modeling

The ObjectStudio modeling tool provides a high-level interface that delivers user-friendly tools for working with objects. The object modeling tool supports case analysis, event diagramming, CRC cards and notations, including UML and Coad/Yourdon.

Automated Code Generation

In ObjectStudio, application development moves much faster than with traditional tools. The ObjectStudio modeling tool can modify and maintain applications more quickly and easily because class hierarchies and object relationships can be arranged graphically, without coding. Developers simply make changes to the model and let the modeling tool generate the code automatically.

Object Mapping

The ObjectStudio mapping tool provides visual drag-and-drop tools for linking objects to databases. The Object Relational Mapper uses the resulting object mapping definitions to make application connections to an object database, without requiring any SQL code written into the application. This allows the developer to concentrate on objects without having to deal with the details of the database implementation, which is completed automatically.

Round-Trip Engineering

With ObjectStudio, any changes to the model are automatically reflected in the code, so access is always available to the current business model of the application. With this easy-to-understand model, business analysts, training and support teams, and IT staff can better understand complex enterprise applications and be more productive in less time.

The Added Value of ObjectStudio 8

ObjectStudio 8 is the next generation of ObjectStudio, based on Cincom's popular VisualWorks development environment. This powerful combination of application development technologies allows users to leverage the range of valuable VisualWorks capabilities while still enjoying state-of-the-art ObjectStudio features.

Despite the addition of new capabilities, ObjectStudio 8 maintains the same look and feel as the original ObjectStudio and all of the highly prized features, such as Windows integration and connectivity with databases and legacy applications. Source code developed in ObjectStudio can be used in ObjectStudio 8 with a few minor modifications, and users with existing ObjectStudio applications can make modifications in ObjectStudio 8 using all of the Cincom Smalltalk VisualWorks functionality. Conversely, VisualWorks users now have access to ObjectStudio advantages such as the connectivity and Windows GUI.

The Smalltalk engine enables developers to see and test applications instantly, make changes, and then test changes.

Leveraging VisualWorks Components

ObjectStudio 8 is the integration of two leading development platforms, enabling ObjectStudio to run on the VisualWorks virtual machine. This breakthrough in application development technology allows programmers to leverage a variety of VisualWorks capabilities to streamline and expedite application development, as well as fortify application quality.

Web Services

ObjectStudio 8 allows developers to use VisualWorks Web Services frameworks in application development. Web services enable applications to communicate across networks or the internet in a platform-independent way. VisualWorks Web Services include full support for XML, SOAP, WSDL and UDDI and provide interoperability with .NET-based services and J2EE web services.

Web Toolkit

ObjectStudio 8 users can build websites using the VisualWorks Web Toolkit, which incorporates the latest in web development tools.

Opentalk

Opentalk is the distribution framework that allows rapid implementation of distributed protocols such as Smalltalk-to-Smalltalk. Opentalk serves as the basis of VisualWorks Web Services and Web Toolkit implementations. All features of Opentalk, such as Opentalk-SOAP, are available in ObjectStudio 8.

Security

The VisualWorks Security Library offers ObjectStudio 8 users a wide range of cryptography and related security components implemented within the environment. This enables developers to quickly and easily incorporate a variety of security capabilities into their applications. Components include secret key encryption, public key encryption, hash algorithms, digital signatures, password-based cryptography and support for SSL protocol and HTTPS.

Debugger

ObjectStudio 8 utilizes the robust VisualWorks debugger. Using the debugger, the execution of a process is completely visible and can be dynamically manipulated, providing complete control over the code at all times.

Refactoring Browser

ObjectStudio 8 uses the VisualWorks refactoring browser, an enhanced class browser that allows the programmer to browse and edit the hierarchical structure of the code to update and revise software.

Parcels

VisualWorks parcels and packages provide easy distribution of fixes and patches, without the need to deliver source to clients. In ObjectStudio 8, VisualWorks parcels replace ObjectStudio's ObjectStorageStreams, allowing for substantially faster loading and much more robust operation. The parcels do not have to be regenerated every time a new version of the application is deployed, saving significant development time, and they are flexible enough to be loaded into a changed environment.

High-Performance Smalltalk Engine

One of the most important advancements in ObjectStudio is the integration with VisualWorks' high-performance Smalltalk engine, dramatically increasing execution speed up to 100 times faster than ObjectStudio. The new engine is a just-in-time (JIT) compiler that compiles the Smalltalk intermediate code into native executable code, eliminating the need for ObjectStudio's much slower interpreter loop.

The Smalltalk engine enables developers to see and test applications instantly, make changes, and then test changes. Working seamlessly with the VisualWorks debugger, developers in ObjectStudio 8 can fix bugs inside the debugger and resend right away, without leaving the debugging mode, to see data flowing through the application in real time.

Developers working in ObjectStudio 8 also benefit from the VisualWorks high performance Garbage Collect mechanism for automating memory management.

Splitting Software

ObjectStudio 8 provides a standards-based framework (ANSI Smalltalk Standard) that enables easy portability from ObjectStudio 8 to VisualWorks. This level of integration allows developers to split software into client-server and application-server and execute them on different platforms, even across the internet. Splitting software allows users to make better use of resources.

World Headquarters • Cincinnati, OH USA • US 1-800-2CINCOM
Fax 1-513-612-2000 • International 1-513-612-2769
E-mail info@cincom.com • http://www.cincom.com