DBkit Selling Guide

- **Object-oriented**
- **Database independent**
- **Integrated into full development environment *(no limits!)***
- **DB applications completely consistent with shrink-wrapped applications**

This selling guide contains only 14 pages of information on selling DBkit. The rest is reference material on the competition.

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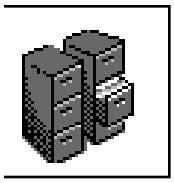
DBkit Selling Guide



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The next step in database application development

The Big Picture

People need to easily access and share data.

To understand their businesses better, corporations gather more and more information. As they do this, they realize that their data becomes a valuable corporate asset. However, the distribution of data is a bottleneck — end users cannot easily get to the information, and MIS faces a growing application backlog. To compete in the nineties, organizations must give users immediate access to data, and to present it in an intuitive way, for better decision making. Already, ***one-third*** of all professional workstations are front ends to databases. With this in mind, NeXT designed DBkit to give institutions flexible access to data, fully integrated with custom applications.

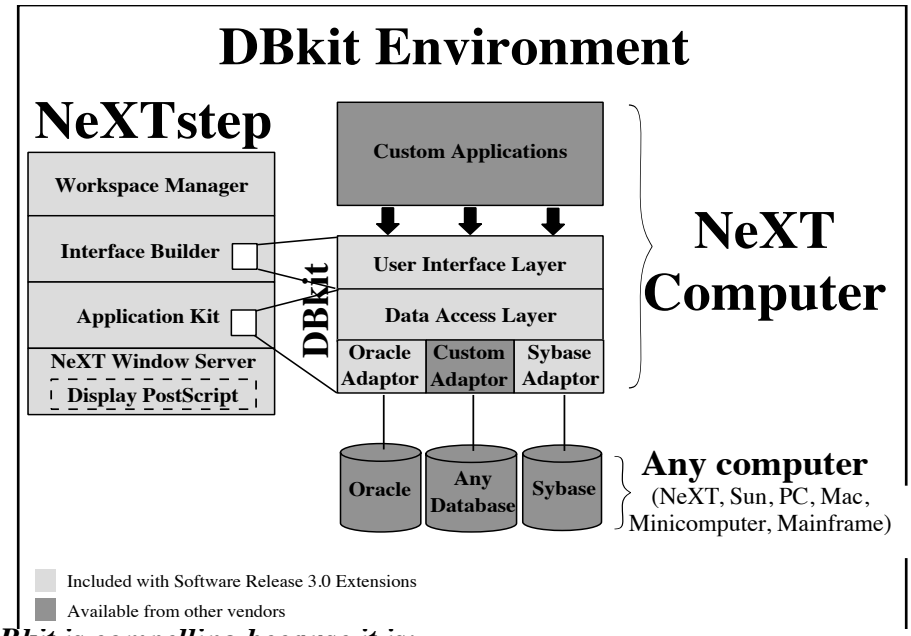
DBkit is for developers, not end users.

DBkit is a set of objects to help ***developers*** create custom database applications. It is neither a database (it *connects* to various database servers) nor a report writer (developers create their own report-writing code or send data to other applications for printing). Instead, it integrates with NeXTstep to provide C developers with an unparalleled environment for rapidly building database applications. In turn, applications built with DBkit enable users to access and manipulate corporate databases stored on workstations, minicomputers and mainframes.

DBkit can connect to any data source.

DBkit is bundled with the Software Release 3.0 Extensions, scheduled to **ship in Q1'92**. (A beta version will be available by the beginning of ***February*** for a limited number of customers -- because DBkit requires the new version of NeXTstep, users will have to rebuild their entire system.) The initial release will connect to Oracle and Sybase. Developers can write their own adaptors to connect to *any* data source, such as DB2, Dow Jones News Retrieval, Digital Librarian and NetInfo — not just relational databases.

For *technical* information on developing applications with DBkit, refer to the forthcoming *DBkit White Paper.*



DBkit is compelling because it is:

- **Object-oriented**
  - OOP makes programs faster to write and maintain
- **Database independent**
  - DBkit applications can connect to any data source
  - DBkit applications can connect to multiple data sources simultaneously
  - DBkit applications can work in either a client-server or file-server environment

Relational and nonrelational databases, data feeds, etc.

- **Integrated into full development environment** ***(no limits on the app)***
  - NeXTstep reduces the time required to build applications, and you can fully exploit the environment with all other Appkit objects and with Interface Builder
- **DB applications completely consistent with shrink-wrapped applications**
  - DBkit and DBkit applications use the intuitive and consistent NeXTstep graphical user interface, and can share data with other shrink-wrapped apps

DBkit and NeXTstep are an integrated solution that transparently accesses corporate data and decreases the time required to build database applications.

Shaded sidebars are for extra info--you can skip them without losing the flow

What is client-server?

The client-server architecture efficiently distributes data processing between the client (or front end) and the server (or back end). Unlike the traditional file-server model, which sends the entire database over the network, the database server transfers only the specific records which the client requested. The benefits are greater performance, increased productivity and reduced costs.

Client
- User interface
- Data manipulation, query tools
- Desktop computers

Server
- Database engine
- Data administration, storage, security
- Desktops, minicomputers, mainframes

Corporations need DBkit to build custom front-end applications rapidly, which exploit the power of client-server computing.

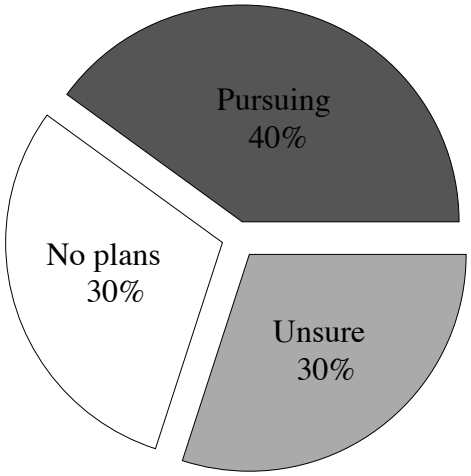
Sales Potential

100,000 new seats in 1992!

The market for front-end tools is a large and emerging market. ***100,000*** of the 300,000 professional workstations that will be sold in 1992 will access databases. The database market is the largest commercial Unix software market, and the U.S. accounts for 75% of the products purchased. Driving the market is the downsizing trend in corporations, with 40% of corporations pursuing client-server technology. (Source: IDC, 1991.)

DBMS magazine estimates that ***over 65%*** of their readers' companies installed LANs for the main purpose of running database applications!

Corporations Pursuing Client-Server



DBkit will be the focal point for many of your sales!

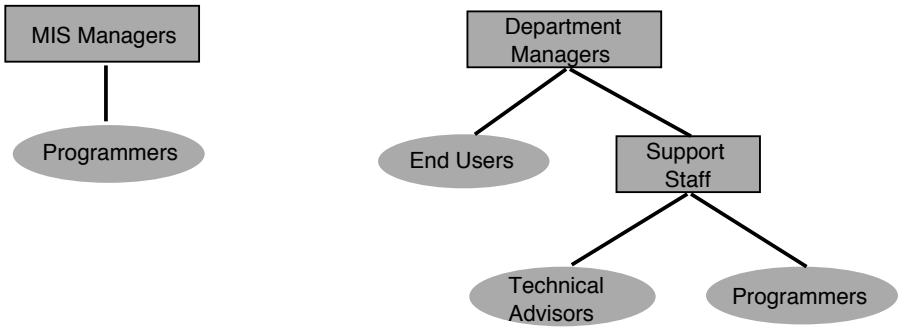
What is SQL?

SQL, pronounced “S-Q-L” or “Sequel”, stands for Structured Query Language, and was invented by IBM in the early 1970s. SQL is the standard language for *querying* databases. The client uses SQL to communicate with the server in order to combine information among desktops and mainframes. SQL is nonprocedural and not a complete programming language; it is generally used in conjunction with front-ends or other languages, such as Objective C, to create applications.

Target Customers: identification

Database applications are found predominately in Fortune 1000 companies, government agencies, and educational institutions -- organizations with numerous and sizable databases, and a combination of mainframes, minicomputers and desktop systems. Many institutions consider their databases to be their most valuable corporate asset.

The players...



Title	Job Description
Department Managers	• Manage non-technical end users in departments such as Accounting, Finance and Customer Service. They sometimes have their own support staff of programmers, independent of MIS.
End Users	• Use custom database applications created by the programmers.
Technical Advisors or Account Executives	• Are the liaison to MIS -- responsible for writing specs for end-user applications, and sharing technical information with other departments.
MIS Managers	• Manage the control and flow of information -- responsible for the data storage, access permission, integrity and security.
Programmers	• Develop custom database applications for end users.

Who are the targets?

Non-technical managers and MIS managers

Focus on the key decision makers in each group. The target customers are department managers of groups using the data. The secondary targets are MIS managers, since they will often have to approve access to the data, even if they will not have to develop or support the applications.

Target	Characteristics
Department Managers	• Users of the data • Corporate pressure to gain a competitive advantage with technology • Impatient -- want immediate access to data, unwillingly to wait for MIS to develop applications, often willing to do it themselves • Want ad hoc information -- not just predefined MIS reports • Pressures from above to become more productive, and from below for better (faster, friendlier, reliable, usable) custom applications • Want standards to reduce end-user retraining • Not price sensitive -- will pay for whatever works
MIS Managers	• Keepers and distributors of the data • Corporate pressure to reduce costs by rightsizing • Risk averse -- unwilling to jeopardize the integrity of corporate data, or to lose control of the data • Pressures from above to reduce the *1-3 year* application backlog, from other departments to produce new apps or modify existing ones, and from below to provide better tools • Tied to the back-end -- unwilling and unable to change databases • Want standards to decrease the number of products they support • Evaluating many different front-end products

Why are corporations downsizing?

Corporations are downsizing their applications from mainframes to workstations, and upsizing from PCs to workstations. Another term for this is “rightsizing” -- using the best computer equipment for the right task at the right location. Corporations are downsizing because of the:

- Increasing need for end users to access corporate data quickly and flexibly
- Escalating mainframe processing and maintenance costs
- Increasing power of workstations
- Lower costs of workstations
- More productive development tools on workstations
  (i.e. GUI, OOP, multitasking, windowing capabilities, etc.)

NeXT is the ideal solution because of DBkit -- DBkit provides transparent access to corporate data, exploits the NeXT price/performance advantage, and reduces the application development cycle.

Key Requirements by Target

	Requirement	NeXT Solution
Enduser Group (Dept. Manager)	**Easy access to data**	• DBkit applications provide transparent and immediate access to data.
	Easy to use applications	• DBkit applications use the friendly and intuitive NeXTstep GUI. Custom apps look just as good as and are consistent with shrink-wrapped apps, which minimizes end-user training and support.
	Powerful applications	• DBkit applications are versatile and support multimedia data types.
	Integration with other apps	• You can integrate (cut, copy, paste) the data from DBkit applications with other NeXTstep apps.
	Low-cost deployment	• There are no royalties for distributing DBkit applications, and NeXT computers are the price/ performance leaders.
Developer (Dept. Manager or MIS Manager)	**Reduced development time**	• DBkit can reduce development time by 50%, and you can distribute applications freely -- there are no licensing fees.
	Easy to use tools	• For developers familiar with C, NeXTstep is the best integrated environment for building applications. It seamlessly manages all communications between DBkit apps and the network.
	Database independence	• DBkit applications are database independent -- they connect to *any* data source.
	Technical support	• NeXTedge offers Support and Service Products, and courses on programming NeXT computers, system administration, and interpersonal computing.
Database Owner (MIS Manager)	**Retain control of data**	• Data security, integrity and administration is maintained by the server; database owners retain complete control of data access.
	No degradation in server performance	• DBkit is designed to work in a true client-server environment, with processing distributed between the client and the server. The result is decreased network traffic and optimal usage of the server's CPU.

DBkit provides fast application development and converts data into information, accessible from anywhere within the organization.

Selling Cycle

Purchase decisions are made by individual departments, or by committees consisting of managers, end users, MIS and programmers. The actual process occurs in three stages, Product Evaluation, Application Production and Application Deployment.

	Evaluation	**Production**	**Deployment**
Decision Makers	Dept & MIS Mgrs	Dept & MIS Mgrs	Department Managers
Purchase Goals	1 per tester (~2 units)	1 per programmer (~12 units)	1 per end user (~100 units)
Purchase Cycle	1-2 months	1-3 months	3-12 months
Focus On	SE produces similar app; 1 day technical evaluation class; loaner if possible	Assist with app; Developer Camp, if possible	Support users; training classes; push 3rd-party products

Solution Definition

DBkit is a set of tools for developers to create custom database applications in the NeXTstep environment.

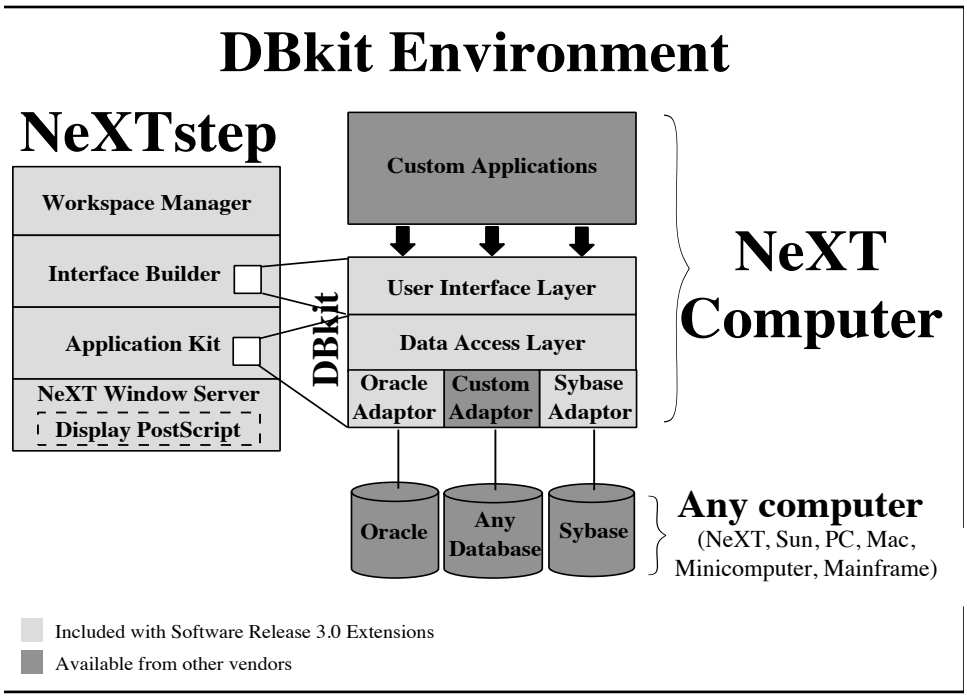
DBkit is a set of tools for *developers* familiar with C to create custom database applications in the NeXTstep environment. It provides an object-oriented framework for rapidly building applications with the NeXTstep graphical user interface. Applications built with DBkit *enable* users to access and manipulate corporate databases stored on workstations, minicomputers and mainframes.

DBkit ***is:***

- A set of development tools
- A product for developers
- Bundled with the Software Release 3.0 Extensions

DBkit is ***not:***

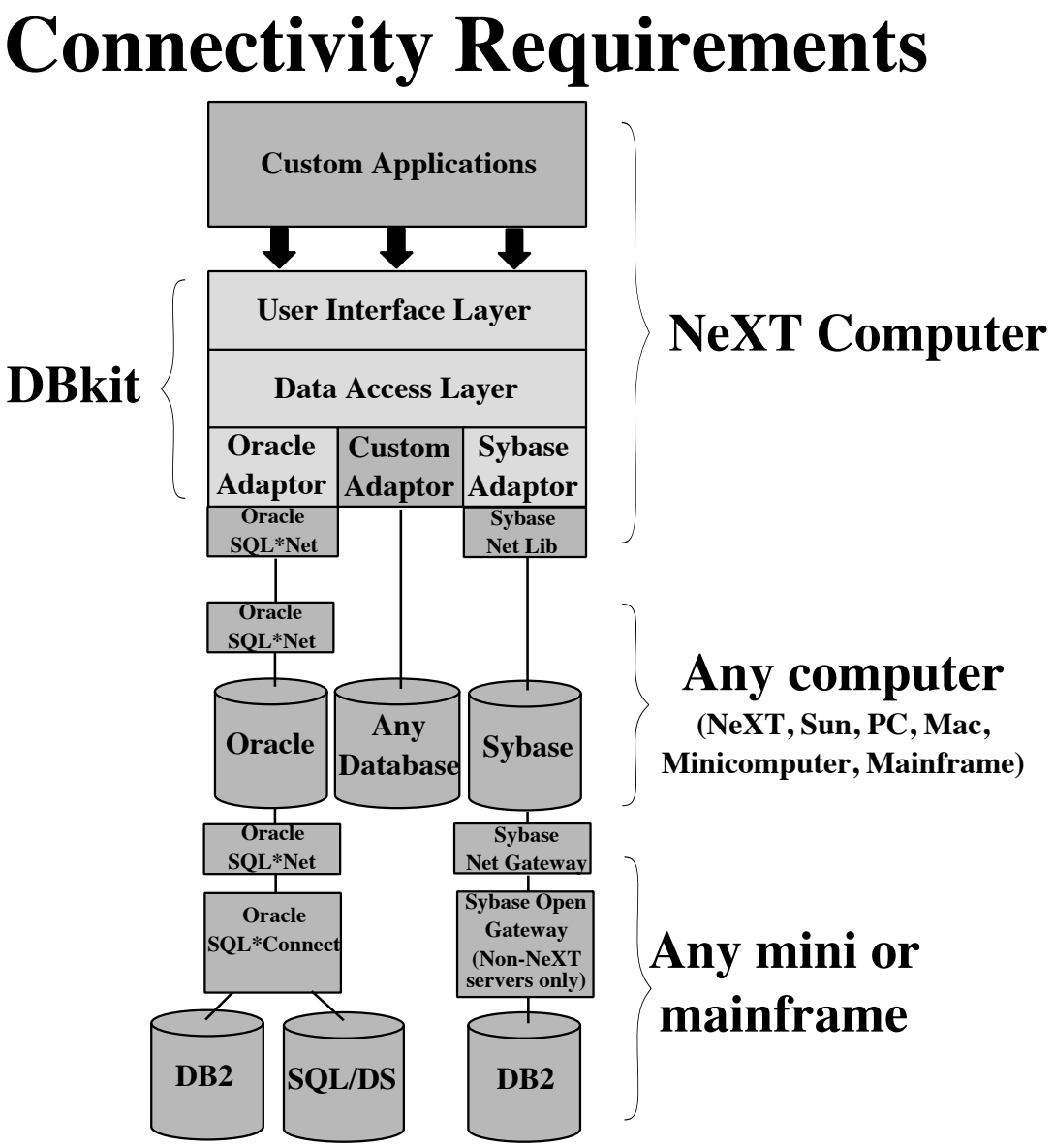
- A DBMS
- A database system administration tool
- A product for end users



User Interface Layer	Graphically associates display objects with elements in the database.
Data Access Layer	Manages the transfer of data between DBkit and the database, and generates query language (such as SQL) code.
Database Adaptors	Translate the queries into server-specific function calls.
New database objects (Table View, Image View, Query Panel, Reference Well)	Table View displays tabular data. Image View displays bit-mapped images. Query Panel is for ad hoc queries. Reference Well *refers* to selected records in order to get additional information on those same records

Database Connectivity Requirements

DBkit can connect to any data source. The data sourcecan reside on a NeXT computer or any other computer running TCP/IP. The following diagram depicts the requirements for connecting to the relational databases immediately supported.



Features and Benefits

DBkit gives users the flexibility, connectivity and power they need to compete in today's organizational and collaborative environment. The principal features and benefits are:

	Feature	Benefit
Primary	**Object-oriented**	• Increases productivity -- programs are easier to write and maintain. Code reusability lets developers focus on adding new capabilities, instead of having to "reinvent the wheel."
	Database independent	• Connects to any data source, freeing organizations from being "tied" to the back end. The initial release supports Oracle Server and Sybase SQL Server, and developers can write custom adaptors to any data source. • Application easily portable to new back-end server.
	Integrated into full development environment *(no limits!)*	• Reduces development time and costs, by taking full advantage of the NeXTstep development environment. • Apps can take full advantage of NeXTstep—not restricted within a "proprietary" environment or 4GL..
	DB applications completely consistent with shrink-wrapped applications.	• Ease of use and consistency simplifies end-user training and support -- all apps look the same. • Great looking DB apps make development team look good to the end user group.
Secondary	**High level data modeling**	• Allows developers to concentrate on what to do with the data, instead of how to get it.
	Navigational querying	• A more intuitive and productive method, than formally searching for data -- you do not have to know (or understand) the database schema.
	Advanced WYSIWYG multi-table forms	• Displays data from multiple databases, and supports display-only fields -- increases flexibility.
	Unlimited number of simultaneous connections	• Access multiple databases on different platforms simultaneously, without any performance degradation. This eliminates the large overhead of connecting, cursor repositioning and disconnecting, when accessing more than one database.
	Access to all SQL commands	• Extensibility -- developers can embed SQL statements in their DBkit programs.
	Compiled applications	• Greater performance than interpreted applications.

DBkit extends the power of NeXTstep into corporate databases.

Competition

*ACCELL/SQL, Paradox, SimplifySQL, SQL*Forms*

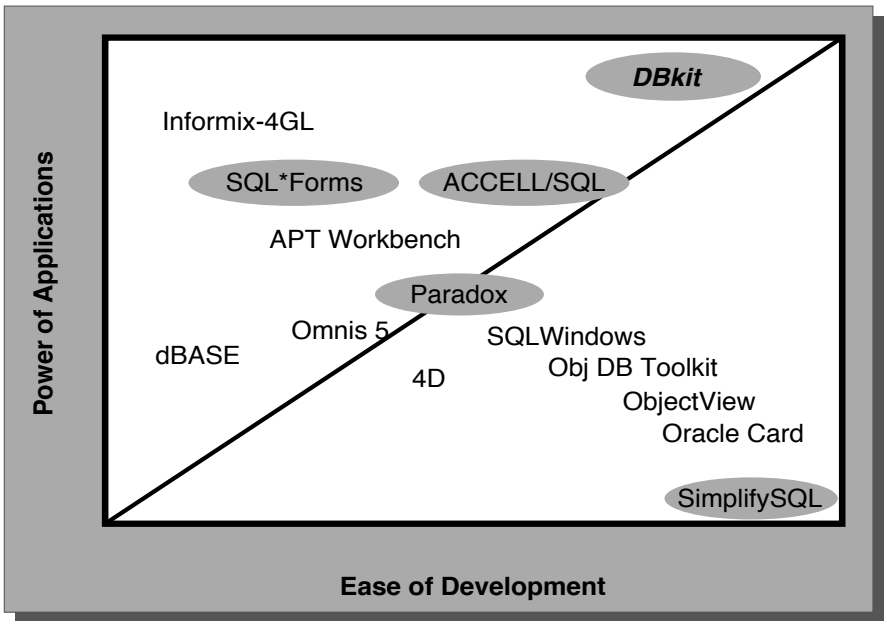
DBkit is the best product for *developers* to build database applications. The following front-end tools are the primary ones that organizations are currently using or are evaluating for future purchases. See Appendix A for a quick reference, and Appendix B for a detailed analysis.

Product	Vendor	Platform
DBkit	NeXT	NeXT
4D SQL Server	Acius	Mac
ACCELL/SQL	Unify	Sun, other workstations, “dumb” terminals
APT Workbench	Sybase	Sun, other workstations, “dumb” terminals
dBASE IV Server Ed	Ashton-Tate	PC
Informix-4GL	Informix	Sun, other workstations, “dumb” terminals
Objective DB Toolkit	PSI	NeXT
ObjectView	Matesys	PC
Omnis 5	Blyth	PC, Mac
Oracle Card	Oracle	PC, Mac
Paradox/SQL Link	Borland	PC
SimplifySQL	Sun	Sun
SQL*Forms	Oracle	NeXT, Sun, PC, workstations, terminals
SQLWindows	Gupta	PC

Product Classification

The following perceptual map graphs power versus ease of development. Power is a combination of performance, versatility, connectivity, portability, creation of user interfaces, and flexibility of the applications that the products generate. The products enclosed in ellipses are the ones with which corporations will most often compare DBkit. The comparisons are based on press reviews and user feedback.

DBkit is the best product for developers to build and maintain database applications.



Products above the diagonal create powerful applications, but require a substantial amount of programming. Products below the diagonal are more for end users or power users (non-developers) building simple applications. DBkit is a *revolutionary* product because it enables developers to build robust applications in a short amount of time.

Only DBkit offers the power and ease of development that corporations need today.

Sales and Distribution Partners

Because DBkit will operate in a multi-vendor environment, and DBkit is not an end-user application, NeXT sales reps will have to work with:

Partner	Benefits
Oracle and Sybase sales reps	• Sales leads • Connectivity requirements • Pricing
Consultants and SIs	• End-user applications • Custom database adaptors • Database publishing products

Even though DBkit will compete with front-end tools from Oracle and Sybase, they are in the business of selling back-end databases, so there should be no conflicts -- because NeXT is pushing their engines, they will want to work with NeXT. NeXT will work closely with the major vendors and developers to implement value-added solutions for DBkit and their database products.

Objections

Objection	Response
"DBkit is not for end users"	•True! DBkit is a powerful tool for rapidly building database applications, but it is not an end-user product. Developers will use DBkit to create applications that offer end users ease of use, power, and integration with their shrink-wrapped apps.
"DBkit has no reporting or graphing features"	• True, DBkit is a tool for building applications, but it is not an end-user application. DBkit apps can easily share data with shrink-wrapped apps, including Improv and WordPerfect. NeXT expects that commercial developers will soon market database publishing products for DBkit apps.

"A DBkit app is really a C app"

- True, although DBkit is easy to use and you can do certain queries without any programming, it is not an end-user product -- DBkit is a tool for developers and requires C programming. However, DBkit and Interface Builder dramatically reduce the amount of code required to complete an application.

"I don't have time to learn OOP"

- Object-oriented programming offers greater flexibility and usability, and reduces development costs. OOP is not that difficult to learn, and 70% of corporations are using or will soon use OOP. (Source: IDC, 1991.) NeXT also teaches courses on Objective C.

OLTP vs. DSS: The two big database application categories

Developers often discuss their app as either a Decision Support System (DSS) or On-line Transaction Processing (OLTP). See the differences below.

Attribute	**OLTP**	**DSS**
Users	Multiple users	Single user
Data	Live data	Historical data
Transactions	Predefined transactions, update intensive	Ad hoc queries, retrieval intensive
Systems	Complex	Simple
Examples	point-of-sales order entry airline reservation systems portfolio management inventory management	manufacturing analysis document tracking human resource management Executive Information Systems
Examples	O'Conner trading apps	LA Sheriff suspect monitoring Northern States Power document tracking

An OLTP example is an international brokerage firm handling numerous trades simultaneously. In the branch offices, traders make currency transactions, based on current quotes, then send the orders to the target exchanges. The traders must be able to capture the foreign exchange quotes in real time. *Performance of the data-entry forms is the overriding issue*.

A DSS example is the California Department of Water Resources, which tracks the level of water resources and the water quality throughout the state. The statewide analysis is performed at the headquarters in Sacramento, using information stored in databases distributed at each of the four water district offices. Each district also analyzes the local data independently. *The user interface of the data entry forms, query forms and reports is the critical issue*.

"To support multiple servers, DBkit must have a least common denominator implementation"	• In addition to its easy links to popular databases, DBkit derives its strengths from its extensibility -- developers can embed SQL within their programs to exploit the full functionality of the database engine, and they can write (and market) their own database adaptors, independent of NeXT.
"Why should I change to DBkit"	• DBkit is a generation ahead of other products with its increased functionality and flexibility. DBkit provides database independence, an object-oriented environment, and rapid application development.

Summary

Corporations are looking at NeXT to become their front-end platform of choice, because of DBkit's:

- **Object-oriented**

  Become more productive!

- **Database independent**

  Connect to any database!

- **Integrated into development environment**

  No limits on the functionality of your applications

- **DB apps consistent with shrink-wrapped applications**

  Great-looking database applications

  DB applications share data with other apps seamlessly

Make powerful connections with DBkit!

Appendix A: Quick Reference Comparison

*Positioning DBkit against SQL*Forms*

SQL*Forms is the most widely used front-end to Oracle, but it only works with Oracle databases -- you are locked into the back end. SQL*Forms originated on a minicomputer, and has been ported to numerous platforms, including NeXT. SQL*Forms still has a character-based user interface for nearly all users, although Oracle is now showing an OpenLook version with a crude GUI. Most analysts are skeptical that database vendors, such as Oracle, can provide good front-end tools.

DBkit is superior to SQL*Forms in every important aspect, except for hardware availability. DBkit provides a better development and user environment, a refined and integrated graphical user interface, and works with all databases, including Oracle.

Positioning DBkit against SimplifySQL

SimplifySQL is strictly an end-user product, and Sun will position SimplifySQL's ease of use against DBkit. However, SimplifySQL lacks the power and flexibility of DBkit, and cannot create applications. While some people may be attracted to SimplifySQL because it is an enduser product, it have extremely limited functionality compared with the flexible robust applications created with DBkit and NeXTstep.

Positioning DBkit against PC products

PC products fall into two categories -- DOS based and Windows based. The DOS products are character-based, but more powerful than their graphical counterparts. The Windows products suffer from poor performance and reliability of the Windows environment.

NeXTstep is far superior to DOS and Windows, and DBkit is more powerful and extensible than the PC products.

Positioning DBkit against Mac products

Mac products have excellent graphical user interfaces, but they are limited in their power and performance. They are more for end users doing simple ad hoc queries. DBkit is unsurpassed in its capabilities, and NeXTstep provides a better multitasking, windowing and networking environment for both developers and end users.

	<---------- NeXT ---------->		<---------- Sun ---------->				
	NeXT DBkit	**PSI Objective DB Toolkit**	**Oracle SQL*Forms**	**Informix 4GL**	**Sun SimplifySQL**	**Sybase APT Workbench**	**Unify ACCELL/SQL**
Ease of development	3+	3	3	3	x	3	3
Language	Objective C	SQL	PL/SQL	Informix	SQL	APT-SQL	ACCELL/SQL
Power of applications	3+	3	3+	3+	3-	3+	3
GUI	3+	3+	x	x	3	x	x
Forms	3+	3	3	3-	3	3	3
Reports	x	x	x	3-	3	x	x
DB independence	3	x	x	x	3+	x	3+
H/W availability	x	x	3+	3+	x	3	3+
Support	3	3-	3	3	3+	3	3
Single developer	Free	$995	$960	$2150	$995	$1880	$5890
Ten developers	Free	$9950	$9600	$4360	$5000	$9420	$9430
100 unit deployment	Free	Free	$96,000	$4720	$50,000	$13,030	$6780
Best feature	NeXTstep	NeXTstep	availability	4GL	end-user tool	availability	DB independent
Worst feature		DB dependent	DB dependent	DB dependent	can't create apps	DB dependent	user interface

		<---------- PC ---------->						
	NeXT DBkit	**Ashton-Tate dBASE Srv Ed**	**Blyth Omnis 5**	**Borland Paradox/SQL**	**Gupta SQLWindows**	**Matesys ObjectView**	**Oracle Card**	**Oracle SQL*Forms**
Ease of dev	3+	3	3	3	3	3	x	3
Language	Objective C	dBASE	Omnis	PAL	SAL	BASIC, C	Oracle Talk	PL/SQL
Power of apps	3+	3	3	3	3	3	3	3+
GUI	3+	x	3+	x	3	3+	3+	x
Forms	3+	3-	3	3	3	3+	3	3
Reports	x	3-	3	3	3	3+	3	x
DB independence	3	x	3+	3+	3+	3	x	x
H/W availability	x	x	3	x	x	x	3	3+
Support	3	3-	3-	3+	3-	3-	3	3
Single developer	Free	$1295	$1000	$1290	$1295	$995	$448	$899
Ten developers	Free	$5180	$3700	$5270	$12,950	$9950	$4480	$8990
100 unit deploy	Free	$99,500	$20,000	$21,190	$11,500	$19,500	$44,800	$89,900
Best feature	NeXTstep	installed base	DB independent	DB independent	DB independent	GUI	end-user tool	availability
Worst feature		difficult to use	difficult to use	developer tools	4GL	reliability	slow; limited	user interface

<---------- Mac ---------->

	NeXT DBkit	Acius 4D SQL Server	Blyth Omnis 5	Oracle Card
Ease of development	3+	3	3	**X**
Language	Objective C	4D	Omnis	Oracle Talk
Power of applications	3+	3	3	3
GUI	3+	3+	3+	3+
Forms	3+	3	3	3
Reports	**X**	3	3	3
DB independence	3	3	3+	**X**
H/W availability	**X**	**X**	3	3
Support	3	3-	3-	3
Single developer	Free	$6795	$1000	$448
Ten developers	Free	$13,950	$3700	$4480
100 unit deployment	Free	$42,500	$20,000	$44,800
Best feature	NeXTstep	user interface	DB independent	end-user tool
Worst feature		limited power	difficult to use	slow; limited

Appendix B: Competitive Analysis

This appendix analyzes the following products:

Product	Vendor	Availability
DBkit	NeXT	NeXT
4D SQL Server	Acius	Mac
ACCELL/SQL	Unify	Sun, other workstations, “dumb” terminals
APT Workbench	Sybase	Sun, other workstations, “dumb” terminals
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Oracle Card	Oracle	PC, Mac
Paradox/SQL Link	Borland	PC
SimplifySQL	Sun	Sun
SQL*Forms	Oracle	NeXT, Sun, PC, workstations, terminals
SQLWindows	Gupta	PC

Throughout this appendix, power is a combination of performance, versatility, connectivity, portability, creation of user interfaces, and flexibility of the applications that the products generate. The comparisons are based on press reviews and user feedback.

What is Apple's Data Access Language (DAL)?

DAL, previously called CL/1, is a framework for Macs to access data on a wide range of hardware. DAL is based on SQL. Applications access a generic DAL server, which translates the SQL code to fit the specific system; developers do not have to modify their code to access different servers. Conceptually, DAL is similar to DBkit, but DAL translations occur on both the client and the server, which drastically decreases performance, whereas DBkit provides a direct link to the database for optimum performance.

What is IBM's Information Warehouse?

IBM is promoting its “Information Warehouse” concept to provide access to databases, regardless of format (i.e. relational and nonrelational), type or geographic location. IBM and third-party vendors will deliver the tools over the next three years.

DBkit

NeXT

NeXT Computer, Inc.
900 Chesapeake Drive
Redwood City, CA 94063
(800) 848-NeXT

Servers: Oracle Server
Sybase SQL Server

Pricing: 1 developer: Free
10 developers: Free
License fee: Free

Summary

DBkit is a set of object-oriented tools for developers to build database applications in the NeXTstep environment. Of the products compared, DBkit provides the best user interface, the best development environment, and the quickest application development cycle. Moreover, it is free -- it is bundled with Software Release 3.0 Extensions. Applications which simply retrieve data require no programming, but building robust applications requires programming in Objective C.

Why should corporations select DBkit? (See page 10 for Features and Benefits.)

- Object-oriented framework
- Database independence
- Advanced development environment
- NeXTstep GUI
- Integration with NeXTstep apps
- High level data modeling
- Navigational querying
- Advanced multi-table forms
- Database objects: Table View, Image View, Query Panel, Reference Well
- Unlimited number of simultaneous connections
- Access to all SQL commands
- Compiled applications

Why would corporations not select DBkit? (See page 13 for Objections and Responses.)

- DBkit only runs on NeXT computers
- DBkit is not a product for end users
- DBkit has no reporting or graphing features
- DBkit does not support a particular database
- DBkit requires programming in Objective C
- Database creation/restructuring requires programming

4D SQL Server

Mac

Acius, Inc.
10351 Bubb Road
Cupertino, CA 95014
(408) 252-4444

Servers: Sybase SQL Server

Pricing: 1 developer: $6795
10 developers: $13,950
License fee: $425/user

Summary

4D is a RDBMS with built-in application development tools. 4D is the most powerful database for the Mac, but it cannot build robust systems, and is more for end-users or power users (not developers). Acius is working on 4D DAL which will allow 4D to communicate with DAL servers on a wide variety of platforms. Acius can also communicate with Oracle thru Oracle for 4th Dimension and Techgnosis SequeLink. Note: 4D SQL Server is not a SQL database server; it consists of the 4D database and an API which lets 4D connect to Sybase.

Strengths	Weaknesses
• Good Mac GUI integration • Good end-user support: forms, reports, graphs • Powerful object-oriented editor for forms layout • Apps can link to assembler, C and Pascal routines • Interactive symbolic debugger • Programming in listing or flow chart mode • Support for embedded SQL	• Difficult to program • Slow performance • Unable to enter data in multiple windows • Poor technical support

Why should corporations select DBkit over 4D SQL Server?

- DBkit's object-oriented development environment creates applications faster
- DBkit is database independent
- DBkit has a better GUI
- DBkit is more powerful and faster -- Mac OS is too slow
- DBkit allows multiple simultaneous connections to any data source

Why would corporations select 4D SQL Server over DBkit?

- DBkit does not run on Macs

  NeXT computers have a more productive and intuitive development environment, with better windowing, multitasking and networking than Macs.

- DBkit is not an end-user product and does not have a report writer

  DBkit is a tool for developers, not end users. Developers will use DBkit to rapidly build applications for end users with the same interactive features found in 4D SQL Server.

ACCELL/SQL

Sun, terminals

Unify Corporation
3870 Rosin Court
Sacramento, CA 95834
(800) 328-0073

Servers: Informix
Oracle Server
SCO Integra
Sybase SQL Server
Unify 2000

Pricing: 1 developer: $5890
10 developers: $9430
License fee: $2950/user
2-8 users: $3780
9-16 users: $4720
17-24 users: $6780

Summary

ACCELL/SQL is a strong developer tool, and includes an interactive application generator, an event-driven 4GL, and a "cooperative processing option" to support different GUIs, but it uses a character-based windowing system. ACCELL/SQL is very portable, but only runs on Unix machines. Unify is concentrating on distributing tools, rather than its database, across different computing environments.

Strengths	Weaknesses
• Good multi-window user interface • Support for many databases and UIs • Portable to minicomputers and mainframes • QBE is automatically included in any form • Apps automatically adopt the native machine's UI • WYSIWYG form generator • Report writers available • Compile by exception only recompiles 4GL scripts that have been modified	• Not GUI: character-based UI • Does not have complete SQL support

Why should corporations select DBkit over ACCELL/SQL?

- DBkit's object-oriented development environment creates applications faster
- DBkit is database independent -- you are not dependent on the vendor to write database adaptors
- DBkit has a better GUI -- ACCELL/SQL is character-based windows
- DBkit allows multiple simultaneous connections to any data source

Why would corporations select ACCELL/SQL over DBkit?

- DBkit does not run on Sun computers -- ACCELL/SQL is portable to many platforms

  NeXT computers have a more productive and intuitive development environment, with better windowing, multitasking and networking than Sun computers.

- DBkit does not connect to the same servers

  DBkit is database independent, allowing developers to add adaptors for any database.

APT Workbench

Sun, terminals

Sybase, Inc.
6475 Christie Avenue
Emeryville, CA 94608
(800) 8-SYBASE

Servers: Sybase SQL Server

Pricing:

1 developer:	$1880
10 developers:	$9420
License fee:	$940/user
9-16 users:	$4710
17-32 users:	$7510
33-48 users:	$10,310
Unlimited:	$13,030

Summary

APT Workbench is a tool for developers to build OLTP systems on a variety of machines. It is very well integrated with SQL Server. APT Workbench is a part of Sybase's SQL Toolset, which also includes Data Workbench (for interactive queries, reports, data entry and data administration) and Client/Server Interfaces (which contain APIs for non-Sybase products and data). These products are available separately. Sybase will release a version with a new look and feel by the end of 1991. A GUI, object-oriented version is due by the first half of 1992.

Strengths

- Good integrated environment: easy to use and build complex OLTP systems
- Good event-driven forms implementation
- Apps automatically adopt the native machine's UI
- Portable to minicomputers and mainframes
- Single-vendor solution: tight integration
- A secure version is available

Weaknesses

- Database dependent: only connects to Sybase
- Not GUI: character-based windows
- Lots of programming required

Why should corporations select DBkit over APT Workbench?

- DBkit's object-oriented development environment creates applications faster
- DBkit is database independent
- DBkit has a better GUI -- APT Workbench is character-based windows
- DBkit allows multiple simultaneous connections to any data source

Why would corporations select APT Workbench over DBkit?

- DBkit does not run on Sun computers-- APT Workbench is portable to many platforms

  NeXT computers have a more productive and intuitive development environment, with better windowing, multitasking and networking than Sun computers.

- DBkit is not optimized for OLTP

  Developers can embed SQL code within their DBkit programs to take full advantage of server specific functionality.

- Sybase is a single-vendor solution of tools and database

  DBkit is database independent, allowing developers to add adaptors for any database.

dBASE IV Server Edition

PC

Ashton-Tate
20101 Hamilton Avenue
Torrance, CA 90509
(213) 538-7000

Servers: Microsoft SQL Server

Pricing: 1 developer: $1295
10 developers: $5180
License fee: $995/user

Summary

dBASE is a RDBMS with built-in application development tools. It is a strong language, but difficult to learn and use. Moreover, there are incompatibilities due to dBASE's record-oriented approach and SQL which is set-oriented. The Borland acquisition of Ashton-Tate will revive interest in dBASE, and dBASE Windows is expected within the first half of 1992.

Strengths	Weaknesses
• Robust language, embedded SQL support • Runs under Windows • Includes a database system administration facility • Huge installed base of dBASE users and developers	• Database dependent: only connects to Microsoft • Difficult to learn and use: character-based UI, all user interaction thru “dot” prompt • No interactive browse, forms, reports, app gen abilities -- requires programming • Incompatibilities with dBASE and server data types and functions • Poor technical support

Why should corporations select DBkit over dBASE IV Server Edition?

- DBkit's object-oriented development environment creates applications faster
- DBkit is database independent
- DBkit has a better GUI -- dBASE is character-based and only in a single window
- DBkit allows multiple simultaneous connections to any data source

Why would corporations select dBASE IV Server Edition over DBkit?

- DBkit does not run on PCs

  NeXT computers have a more productive and intuitive development environment, with better windowing, multitasking and networking than PCs. Moreover, DBkit is database independent, allowing developers to add adaptors for any database.

- dBASE has a huge installed base -- there is no retraining

  To develop client-server applications with dBASE requires substantial training. dBASE is incompatible with SQL data types, functions and set-oriented model. (Note: to develop traditional dBASE file-server applications, which do not connect to SQL Server and are less efficient, requires no retraining.)

Informix-4GL

Sun, PC, terminals

Informix Software, Inc.
4100 Bohannon Drive
Menlo Park, CA 94025
(415) 926-6300

Servers: Informix

Pricing: 1 developer: $2150
10 developers: $4360
License fee:
1-16 users: $1440
17-32 users: $2680
33-64 users: $4720

Summary

Informix-4GL is a complete development environment, capable of building complex systems. Informix is targeted at developers, and provides a very strong 4GL. However, everything must be programmed, including menus, forms and reports. Informix also markets Informix-SQL (simple application development environment), Informix-QuickStep (report writer), Informix-4GL (code generator), and Informix-ESQL (embedded SQL).

Strengths	Weaknesses
• Can build complex applications • Strong and flexible 4GL • Multiple windows support • Good interactive debugger • Apps are compiled for performance • Portable to more than 450 machines • Single-vendor solution: tight integration	• Difficult to learn and use • No screen painter: must program data-entry forms • Character-based UI • Database dependent: only supports Informix • Lengthy compilation times: 4GL compiled into C, then compiled into machine code

Why should corporations select DBkit over Informix-4GL?

- DBkit's object-oriented development environment creates applications faster -- Informix requires programming for forms and queries
- DBkit is database independent
- DBkit has a better GUI --Informix-4GL is character-based windows
- DBkit allows multiple simultaneous connections to any data source

Why would corporations select Informix-4GL over DBkit?

- DBkit does not run on Sun computers and PCs

  NeXT computers have a more productive and intuitive development environment, with better windowing, multitasking and networking than Sun computers and PCs.

- DBkit does not connect to Informix

  DBkit is database independent, allowing developers to add adaptors for any database.

Objective DB Toolkit

NeXT

Professional Software, Inc.
599 North Avenue, Suite 7
Wakefield, MA 01880
(617) 246-2425

Servers: Sybase SQL Server

Pricing: 1 developer: $995
10 developers: $9950
License fee: Free

Summary

Objective DB Toolkit is a library of objects for Interface Builder, which enables developers to access Sybase without resorting to 3GL coding. It includes two dedicated palettes and their associated inspectors. Its primary strength is derived from the capabilities of Interface Builder, and its weaknesses are that it requires SQL programming to access Sybase, and it is not portable. PSI is a small company which may not have adequate resources to support major corporations. A version to support Oracle Server is currently in development.

Strengths	Weaknesses
• Fully integrated with NeXTstep • Familiarity for NeXT developer • Power of NeXTstep • Data can be cut and pasted into other applications • No need to program in Objective-C	• Difficult to use: all database access requires programming in SQL • Only supports Sybase • Available only on NeXT computers • Poor technical support

Why should corporations select DBkit over Objective DB Toolkit?

- DBkit provides more database tools, and creates applications faster
- DBkit is database independent
- DBkit supports embedded SQL in Objective C programs -- Objective DB Toolkit does not support Objective C
- DBkit allows multiple simultaneous connections to any data source

Why would corporations select Objective DB Toolkit over DBkit?

- DBkit is not available today -- Objective DB Toolkit is shipping

  Objective DB Toolkit only supports Sybase -- DBkit is database independent, allowing developers to add adaptors for any database.

- DBkit does not include a report writer

  DBkit is a tool for developers, not end users. Developers will use DBkit to build applications for end users with complete reporting capabilities.

- DBkit requires programming in Objective C -- Objective DB Toolkit requires programming in SQL

  Objective C is a much more powerful and flexible language than SQL.

ObjectView

PC

Matesys Corporation
900 Larkspur Landing Circle
Larkspur, CA 94939
(415) 925-2900

Servers: Microsoft SQL Server
Oracle Server

Pricing: 1 developer: $995
10 developers: $9950
License fee: $195/user

Summary

ObjectView is a good product for quickly building simple SQL applications with a graphical user interface. It is easy to learn and to use. However, it is incomplete as a developer's tool, and requires substantial coding for complex applications. As with all Windows products, there are serious concerns about the reliability of Windows, data integrity and performance. Vendor stability may also be an issue, because Matesys is a startup company.

Strengths	Weaknesses
• Good presentation: GUI, runs under Windows • Simple and immediate apps without programming • Good graphical QBE • WYSIWYG forms and reports • Good visual programming tools • DDE integration with other Windows apps • Choice of BASIC or C for the language	• First generation product: not robust • Substantial coding required for complex multitable apps • Difficult to use report generator • Insufficient documentation • Poor technical support

Why should corporations select DBkit over ObjectView?

- DBkit provides more database tools, and creates applications faster
- DBkit is database independent -- you are not dependent on the vendor to write database adaptors
- DBkit has a better GUI
- DBkit is more stable and reliable
- DBkit allows multiple simultaneous connections to any data source

Why would corporations select ObjectView over DBkit?

- DBkit does not run on PCs

  NeXT computers have a more productive and intuitive development environment, with better windowing, multitasking and networking than PCs. Moreover, DBkit is database independent, allowing developers to create adaptors for any database.

- DBkit is not an end-user product and does not have a report writer

  DBkit is a tool for developers, not end users. Developers will use DBkit to rapidly build applications for end users with the same interactive features found in ObjectView.

Omnis 5

PC, Mac

Blyth Software, Inc.
1065 East Hillsdale Blvd, Suite 300
Foster City, CA 94404
(800) 346-6647

Servers: Apple DAL Server
Microsoft SQL Server
Oracle Server
Sybase SQL Server
Techgnosis SequeLink

Pricing: 1 developer: $1000
10 developers: $3700
License fee: $200/user

Summary

Omnis 5 is for developers who need to develop applications for both PCs and Macs. Omnis 5 is difficult to use because it forces you to program through selecting commands from menus. Blyth has a license agreement with Apple to develop DAL Client Toolkits for DOS, Windows and OS/2. As with all Windows products, there are serious concerns about the reliability of Windows, data integrity and performance.

Strengths	Weaknesses
• GUI, multiple windows, PC & Mac portability	• Forced to choose program commands from menus: reduces errors, but you cannot enter code directly
• Object-oriented development environment	• No debugger, forced to use their editor
• Support for many databases	• Weak query tools: limited SQL queries, no QBE
• Excellent design tools and language	• Difficult to relate multiple SQL tables
• Code generator eliminates syntax errors	• Loses query results that do not fit in memory
• Excellent report writer	

Why should corporations select DBkit over Omnis 5?

- DBkit has a better object-oriented development environment -- Omnis 5 does not have a debugger, you must use their editor, you can only enter code by selecting program commands from menus
- DBkit is database independent -- you are not dependent on the vendor to write database adaptors
- DBkit has a better GUI
- DBkit is more reliable -- Omnis 5 loses query results that cannot fit in memory
- DBkit allows multiple simultaneous connections to any data source

Why would corporations select Omnis 5 over DBkit?

- DBkit does not run on PCs and Macs

  NeXT computers have a more productive and intuitive development environment, with better windowing, multitasking and networking than PCs and Macs.

- DBkit does not connect to the same databases

  DBkit is database independent, allowing developers to create adaptors for any database.

- DBkit does not include a report writer

  DBkit is a tool for developers, not end users. Developers will use DBkit to rapidly build applications for end users with the same interactive features found in Omnis 5.

Oracle Card

PC, Mac

Oracle Corporation
500 Oracle Parkway
Redwood Shores, CA 94065
(800) 345-DBMS

Servers: Oracle Server

Pricing: 1 developer: $448
10 developers: $4480
License fee: na

Summary

Oracle Card is a portable, graphical end-user product, best suited for decision support systems with multi-media capabilities. Oracle Card is extremely easy to use, but it is not intended for serious applications. For developers, Oracle offers SQL*Forms. As with all Windows products, there are serious concerns about the reliability of Windows, data integrity and performance. Oracle is working on a version of Oracle Card for Unix.

Strengths	Weaknesses
• GUI, multiple windows	• Database dependent: only supports Oracle
• Very easy to learn and to use: point-and-click	• Cannot build major applications
• Good graphical QBE implementation	
• Portability between PCs and Macs	
• Single-vendor solution: tight integration	

Why should corporations select DBkit over Oracle Card?

- DBkit's object-oriented development environment creates applications faster
- DBkit is database independent
- DBkit has a better GUI
- DBkit creates robust applications -- Oracle Card only generates simple apps
- DBkit allows multiple simultaneous connections to any data source

Why would corporations select Oracle Card over DBkit?

- DBkit does not run on PCs and Macs

  NeXT computers have a more productive and intuitive development environment, with better windowing, multitasking and networking than PCs and Macs.

- Oracle Card is a single vendor solution of tools and database

  Oracle Card only connects to Oracle databases -- DBkit is database independent, allowing developers to add adaptors for any database.

- DBkit is not an end-user product

  DBkit is a tool for developers, not end users. Developers will use DBkit to rapidly build applications for end users with the same interactive features found in Oracle Card.

Paradox/SQL Link

PC

Borland International
1800 Green Hills Road
Scotts Valley, CA 95066
(408) 438-8400

Servers: DEC Rdb
IBM OS/2 EE DBM
Microsoft SQL Server
Oracle Server
Sybase SQL Server

Pricing: 1 developer: $1290
10 developers: $5270
License fee: na

Summary

Paradox is a RDBMS with built-in application development tools. Paradox is very easy to learn and use, but has weak development tools. Paradox is an end-user or power-user product with excellent interactive query support. Viewing SQL databases, editing SQL databases and multi-table forms require programming. Paradox Windows is expected within the first half of 1992.

Strengths	Weaknesses
• Easy to learn and use • Support for many databases • Excellent interactive QBE and data retrieval • Embedded SQL support in 4GL • Easy to transfer databases between servers	• Character-based UI, single window only • Cannot view or edit server databases directly: requires programming • Weak development tools: editor, debugger • Multi-table forms require lots of programming • No support for long-text, graphics or time fields

Why should corporations select DBkit over Paradox/SQL Link?

- DBkit's object-oriented development environment creates applications faster
- DBkit is database independent -- you are not dependent on the vendor to write database adaptors
- DBkit has a better GUI -- Paradox is character based and limited to a single window
- DBkit is more powerful -- Paradox multi-table forms requires substantial programming
- DBkit is more flexible -- Paradox does not support long-text or graphics fields
- DBkit allows multiple simultaneous connections to any data source

Why would corporations select Paradox/SQL Link over DBkit?

- DBkit does not run on PCs

  NeXT computers have a more productive and intuitive development environment, with better windowing, multitasking and networking than PCs.

- DBkit does not connect to the same databases

  DBkit is database independent, allowing developers to create adaptors for any database.

- DBkit is not an end-user product and does not have QBE, a report writer or graphing capabilities

  DBkit is a tool for developers, not end users. Developers will use DBkit to rapidly build applications for end users with the same interactive features found in Paradox/SQL Link.

SimplifySQL

Sun Microsystems
2550 Garcia Avenue
Mountain View, CA 94043
(415) 960-1300

Servers: Informix
Ingres
Oracle Server
Sybase SQL Server

Sun

Pricing: 1 developer: $995
10 developers: $5000
License fee: na

Summary

SimplifySQL is an easy-to-use end-user tool for graphically querying SQL databases. SimplifySQL allows ad hoc queries and reports, but does not have an application programming language. Moreover, there are no data-entry forms -- all edits are done through the query editor. SimplifySQL is for end users, not application developers. Its primary usage is for retrieving data to be cut and pasted into other applications, not for updating databases.

Strengths	Weaknesses
• Easy to use: point-and-click interactions • GUI consistent with OpenWindows • Support for many databases • Works the same against all the databases supported • Good for ad hoc queries and reports	• Not a developer tool: no development language • No data-entry forms: just data retrieval • Elementary report capabilities • Clumsy mechanism for SQL programming: do a query, then modify it -- no programming window

Why should corporations select DBkit over SimplifySQL?

- DBkit's object-oriented development environment creates applications faster
- DBkit is database independent -- you are not dependent on the vendor to write database adaptors
- DBkit has a better GUI
- DBkit creates applications -- SimplifySQL cannot create applications
- DBkit creates data-entry forms -- SimplifySQL cannot
- DBkit allows multiple simultaneous connections to any data source

Why would corporations select SimplifySQL over DBkit?

- DBkit does not run on Sun computers

  NeXT computers have a more productive and intuitive development environment, with better windowing, multitasking and networking than Sun computers.

- DBkit does not connect to the same databases

  DBkit is database independent, allowing developers to create adaptors for any database.

- DBkit is not an end-user product and does not have a report writer

  DBkit is a tool for developers, not end users. Developers will use DBkit to rapidly build applications for end users with the same interactive features found in SimplifySQL.

SQL*Forms

NeXT, Sun, PC, terminals

Oracle Corporation
500 Oracle Parkway
Redwood Shores, CA 94065
(800) 345-DBMS

Servers: Oracle Server

Pricing: 1 developer: $960
10 developers: $9600
License fee: na

Summary

SQL*Forms is a developer tool which runs on a wide variety of hardware, but only against Oracle databases. SQL*Forms is powerful, but not that easy to use and it is slow. Forms are difficult to design and there is no support for interactive queries. However, when used with the complete set of Oracle Tools, it provides a good integrated development environment. Oracle Tools include SQL*Plus (for SQL statements), SQL*ReportWriter (for report generation), and SQL*Menu (for designing custom menu interfaces). The price of SQL*Forms is 30% of the kernel (the database engine). The DOS version is slightly less. A Mac runtime version is available for $399. A new version is expected with the release of Oracle Server 7.0, within the first half of 1992.

Strengths	Weaknesses
• Excellent application portability to over 90 platforms without changing any code • Automatically adapts to the native UI • Powerful forms designer • Good SQL language documentation • Single-vendor solution: tight integration • Huge installed base of over 80,000 users	• Database dependent: only supports Oracle • Character-based UI or crude GUI in OpenLook • Designing forms requires substantial coding • All data integrity is built into the forms, not the server: changes require modifications to all the applications, instead of one change on the server • No word wrap in forms: can only display one line of a long-text (64K) field

*Why should corporations select DBkit over SQL*Forms?*

- DBkit's object-oriented development environment creates applications faster
- DBkit is database independent
- DBkit has a better GUI -- SQL*Forms is usually character based or uses a crude GUI. Also uses a single window
- DBkit supports long text -- SQL*Forms does not allow word wrap
- DBkit supports server-enforced data integrity, so any changes are coded just once on the server
- DBkit allows multiple simultaneous connections to any data source

*Why would corporations select SQL*Forms over DBkit?*

- DBkit only runs on NeXT -- SQL*Forms is portable to over 90 platforms

  *SQL*Forms only connects to Oracle databases -- DBkit is database independent, allowing developers to add adaptors for any database.*

- SQL*Forms is a single vendor solution of tools and database

  DBkit provides a more productive and intuitive development environment for rapidly building applications. DBkit apps are also portable, in case you ever need to change your back-end database server.

SQLWindows

PC

Gupta Technologies, Inc.
1040 Marsh Road
Menlo Park, CA 94025
(800) 876-3267

Servers: Gupta SQLBase
IBM DB/2
IBM OS/2 EE DBM
Microsoft SQL Server
Oracle Server

Pricing: 1 developer: $1295
10 developers: $12,950
License fee: $115/user

Summary

SQLWindows is a developer tool for building graphical applications under Windows and OS/2. SQLWindows was designed from the ground up for SQL. Although SQLWindows can build transaction processing systems, the 4GL is difficult to learn. SQLWindows was the first Windows front-end. Gupta also markets Quest for end users. As with all Windows products, there are serious concerns about the reliability of Windows, data integrity and performance.

Strengths	Weaknesses
• WYSIWYG GUI, multiple windows	• Difficult to use
• Support for many databases	• Poor user interface: pull-down menus
• Windows DDE and DLL support	• 4GL is difficult to learn
• Available for Windows and OS/2	• No embedded SQL: must use 4GL version of SQL
• Creates executable which are smaller and faster than runtime versions	• Requires substantial programming • Poor technical support

Why should corporations select DBkit over SQLWindows?

- DBkit's object-oriented development environment creates applications faster
- DBkit is database independent -- you are not dependent on the vendor to write database adaptors
- DBkit has a better GUI -- SQLWindows has a GUI, but relies extensively on pull-down menus
- DBkit has greater power, and allows embedded SQL
- DBkit allows multiple simultaneous connections to any data source

Why would corporations select SQLWindows over DBkit?

- DBkit does not run on PCs under Windows and OS/2

  NeXT computers have a more productive and intuitive development environment, with better windowing, multitasking and networking than PCs.

- DBkit does not connect to the same databases

  DBkit is database independent, allowing developers to create adaptors for any database.

- DBkit is not an end-user product and does not have a report writer

  DBkit is a tool for developers, not end users. Developers will use DBkit to rapidly build applications for end users with the same interactive features found in SQLWindows.