

MARKET ANALYSIS

Worldwide Analysis, Modeling, and Design Tools 2004–2008 Forecast Update and 2003 Vendor Shares

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IDC OPINION

IDC's assessment of the analysis, modeling, and design (AMD) tools market in 2003 is a worldwide market sizing of \$532 million. These results signify that a steady worldwide recovery is in process. The AMD market recovery is forecast to grow by 5.3% for 2004 and should continue to experience positive growth thereafter. This market is forecast to increase to \$753 million in 2008, representing a 7.2% compound annual growth rate (CAGR) from 2003 through 2008. Highlights are as follows:

- ☒ IDC remains optimistic that the AMD market will continue to grow throughout our five-year forecast period. North America will continue its dominant role as a consumer of AMD tools, and Windows will remain the dominant platform of choice for AMD tools and will gain market share throughout the forecast period.
 - ☒ With the integration of more features and functions in this class of tools throughout 2003 and the repositioning of many products as an improved way to do J2EE development, the AMD market is now poised to create new awareness and interest and attract a new breed of developer to these tools.
 - ☒ The AMD tools market will achieve positive growth, particularly with the growing interest in developing service-oriented architectures and translating complex specifications into code. There is growing interest and need for tools that integrate or combine the abstract benefits of visual modeling and automated methodologies to construct applications from domains, patterns, rules, and/or components.
 - ☒ IDC believes that independent AMD vendors should continue to partner with unified development environment (UDE) and 3GL vendors. The trend, toward one single architecture that supports design through deployment across the full life cycle, is already under way and will help promote the future growth and revenue share gains in this market. To be successful, vendors must focus on providing tools that will help developers get applications to market more quickly and at lower costs. Vendors must also offer a way to reduce software complexity and will need to continue to create ease-of-use features with automatic code and model generation to accelerate the adoption and use of these tools by programmers.
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IN THIS STUDY

This IDC study examines the analysis, modeling, and design tools market for the period 2001–2008, with vendor revenue trends and market growth forecasts. Worldwide market sizing is provided for 2003, with trends from 2002. A five-year growth forecast for this market is shown for 2004–2008. A vendor competitive analysis, with vendor revenue and market shares of the leading vendors, is provided for 2003. This study also includes profiles of leading vendors and identifies the characteristics that vendors will need to be successful in the future. This document updates the forecast published in IDC's *Worldwide Analysis, Modeling, and Design Tools 2004–2008 Forecast* (IDC #30986, March 2004).

Methodology

See the Learn More section of this document for a description of the data collection and analysis methodology employed in this study.

In addition, please note the following:

- The information contained in this study was derived from the IDC Software Market Forecaster database as of June 2004.
- All numbers in this document may not be exact due to rounding.
- For more information on IDC's software definitions and methodology, see *IDC's Software Taxonomy, 2004* (IDC #30838, February 2004).

AMD Tools Market Definition

Analysis, modeling, and design tools represent the formalized methodologies and technologies (either object oriented or nonobject) that assist in creating or constructing model-generated applications, application requirements, data definitions, programming specifications, sequence diagrams, data and business processes, and business rules. This functional market includes:

- Modeling language development environments
- Business process analysis tools

AMD tools and technologies may integrate or combine the abstract benefits of visual modeling and automated methodologies and may include tools to construct applications from domains, rules, and/or components if that ability is fully integrated and sold with the methodology.

This class of tools includes business process modelers, business rules engines, business rules repositories, and business process analysis platforms along with the modeling languages that support them.

SITUATION OVERVIEW

AMD Market in 2003

Our subsequent analysis of 2003 vendor revenue revealed the end of the cycle of negative AMD growth rates with small, positive growth by the end of the year. That is, 2003 worldwide revenue was \$532 million compared with \$496 million in 2002.

Performance of Leading Vendors in 2003

Table 1 displays 2001–2003 worldwide revenue and 2003 growth and market share for AMD vendors. The leading AMD vendor in 2003 was IBM with \$154 million in revenue. IBM retained its lead on the market but did not experience any growth over 2002 revenue. This was primarily due to the work involved with acquiring Rational Software and the time spent in integrating the product lines of the two companies. The second-largest vendor continued to be Computer Associates with \$55 million. Computer Associates actually lost revenue from 2002 due to its struggle to reposition its product line and the effects of the continued negative performance of the economy. ILOG was the third-largest AMD vendor with \$34 million in 2003. Borland moved into fourth place with \$27 million. Telelogic remained in fifth place in 2003 with \$24 million.

Performance by Geographic Region in 2003

Figure 1 illustrates that North America had a 52.5% share of the AMD market in 2003 followed by Western Europe with a 32.3% share of this market.

Performance by Operating Environment in 2003

Figure 2 displays revenue by operating environment. Windows is the dominant platform for AMD tools with a 57% share of the market in 2003. Unix is the second-largest platform running AMD tools.

TABLE 1

Worldwide Analysis, Modeling, and Design Tools Revenue by Vendor,
2001–2003 (\$M)

| | 2001 | 2002 | 2003 | 2003 Share (%) | 2002–2003 Growth (%) |
|---------------------------|-------|-------|-------|----------------|----------------------|
| IBM | 183.6 | 153.8 | 153.8 | 28.9 | 0.0 |
| Computer Associates Intl. | 47.8 | 58.0 | 55.0 | 10.3 | -5.2 |
| ILOG | – | – | 33.6 | 6.3 | NA |
| Borland Software Corp. | 45.0 | 43.7 | 26.9 | 5.1 | -38.5 |
| Telelogic AB | 29.3 | 19.3 | 23.7 | 4.4 | 22.6 |
| Sybase | 29.0 | 20.4 | 18.0 | 3.4 | -12.0 |
| Fair Isaac Corp. | 8.5 | 9.8 | 15.1 | 2.8 | 54.1 |
| Popkin Software & Systems | 7.2 | 9.5 | 12.7 | 2.4 | 33.7 |
| Proforma Corp. | 10.8 | 7.3 | 8.7 | 1.6 | 19.2 |
| Embarcadero Technologies | 10.6 | 9.9 | 7.0 | 1.3 | -29.0 |
| Oracle Corp. | 54.4 | 2.0 | 6.4 | 1.2 | 220.7 |
| Hitachi Ltd. | 6.3 | 5.7 | 5.8 | 1.1 | 1.7 |
| ESI | – | 5.0 | 5.0 | 0.9 | 0.0 |
| Haley | 5.0 | 5.0 | 5.0 | 0.9 | 0.0 |
| Mega Intl. | 3.5 | 4.0 | 5.0 | 0.9 | 25.0 |
| Siemens AG | 6.4 | 5.4 | 4.5 | 0.9 | -15.3 |
| Sapiens USA | 5.4 | 5.1 | 4.5 | 0.8 | -11.2 |
| Allen Systems Group | 4.1 | 3.5 | 4.4 | 0.8 | 24.2 |
| Micro Focus | – | 3.0 | 3.4 | 0.6 | 13.3 |
| Casewise | 3.0 | 3.0 | 3.0 | 0.6 | 0.0 |
| Interfacing Technologies | 2.0 | 2.5 | 3.0 | 0.6 | 20.2 |
| Proactivity | 2.0 | 2.5 | 3.0 | 0.6 | 20.0 |
| Fujitsu Ltd. | 2.7 | 2.5 | 2.5 | 0.5 | -0.3 |

TABLE 1

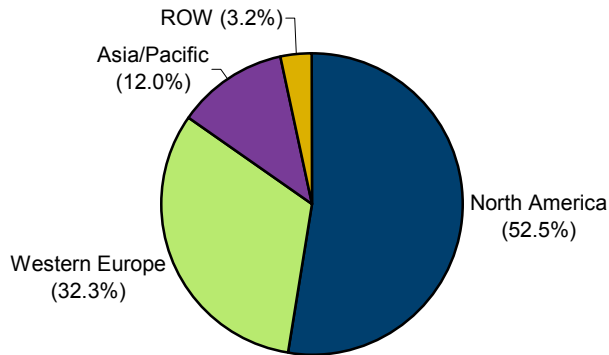
Worldwide Analysis, Modeling, and Design Tools Revenue by Vendor,
2001–2003 (\$M)

| | 2001 | 2002 | 2003 | 2003 Share (%) | 2002–2003 Growth (%) |
|----------------------------|-------|-------|-------|----------------|----------------------|
| LogicalApps | – | 1.4 | 2.0 | 0.4 | 42.9 |
| Object Connections | – | – | 2.0 | 0.4 | NA |
| BR Solutions | 2.0 | 2.0 | 2.0 | 0.4 | 0.0 |
| Rulespower | – | 1.0 | 2.0 | 0.4 | 100.0 |
| Yasutech | 1.0 | 1.5 | 2.0 | 0.4 | 33.2 |
| Aonix | 7.1 | 2.0 | 2.0 | 0.4 | 0.0 |
| Quest Software | 0.5 | 1.3 | 1.6 | 0.3 | 20.0 |
| Openjaw | – | 1.5 | 1.5 | 0.3 | 0.0 |
| IntelliCorp Inc. | 2.7 | 2.6 | 1.3 | 0.2 | -48.3 |
| Visible Systems Corp. | 1.6 | 1.3 | 1.2 | 0.2 | -7.0 |
| Objectstar | – | – | 1.0 | 0.2 | NA |
| Inrule | – | 1.0 | 1.0 | 0.2 | 0.0 |
| Seranin | – | – | 0.5 | 0.1 | NA |
| Global Enterprise Managers | – | – | 0.4 | 0.1 | NA |
| HP | 1.2 | 1.1 | – | – | -100.0 |
| Softlab | 1.0 | – | – | – | NA |
| Subtotal | 483.7 | 397.4 | 430.3 | 80.8 | 8.3 |
| Other | 114.7 | 98.3 | 101.9 | 19.2 | 3.7 |
| Total | 598.4 | 495.7 | 532.2 | 100.0 | 7.4 |

Source: IDC, June 2004

FIGURE 1

Worldwide Analysis, Modeling, and Design Tools Revenue Share by Region, 2003

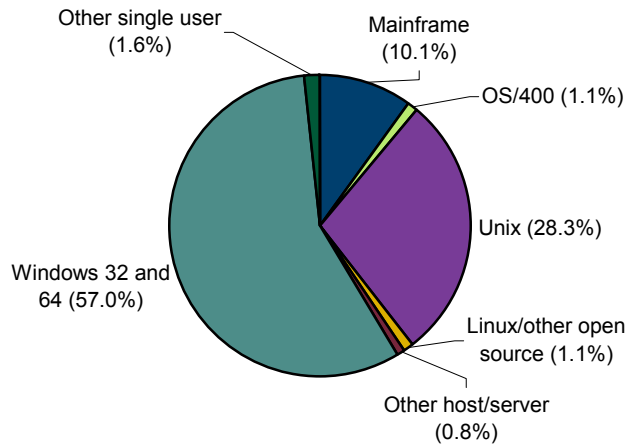


Total = \$532.2M

Source: IDC, June 2004

FIGURE 2

Worldwide Analysis, Modeling, and Design Tools Revenue Share by Operating Environment, 2003



Total = \$532.2M

Source: IDC, June 2004

Vendor Profiles

IBM

IBM completed the \$2.1 billion acquisition of Rational Software and gave IBM access to a variety of tools that support software development throughout the application life cycle, including design and modeling, testing, quality assurance, and software configuration management and maintenance. IBM's success has been based in part on its continuing effort to revamp its tool strategy, adding new capability and full life-cycle support to its growing family of WebSphere application design, development, and deployment tools that are being used to create Web services and service-oriented architectures. Built around a growing suite of highly productive 4GL and RAD solutions, IBM's WebSphere Studio tool suite is designed to allow developers working on WebSphere Studio and other Eclipse-based tools to use a common interface that provides a consistent look and feel, regardless of the vendor tool included in the WebSphere tool suite.

IBM's recent acquisitions give its customers access to a variety of tools that support software development throughout the application life cycle, from design, modeling, and testing to quality assurance, software configuration management, and maintenance. All this capability blends well with IBM's strategy to be a complete solutions provider as well as with the framework and architecture for design, development, deployment, and maintenance of applications. IBM is putting together all its resources across the entire company into a single development platform that fully embraces open standards. The company has also been integrating testing tools with design tools so that software testing can happen at any stage of the development process, rather than just the end of the process.

IBM's WebSphere Studio tools focus on open standards, multivendor tool integration, and integration with IBM's middleware. As part of its strategy, IBM continues to work to grow the developer community around WebSphere and partners with scores of vendors that are developing on Eclipse-based tools to provide a full spectrum of functionality required by the diverse development community.

IBM Strengths

IBM provides a full life cycle of design, development, and deployment tools that serve as a cross-platform and open standards-based development environment. The company has a track record of creating enterprise-class solutions that will prevail and continue to attract a strong following among customers and developers. IBM's tools help control costs, improve efficiency, reduce complexity, decrease time to market, and improve productivity by providing developers with a single, well-integrated tool platform that can manage all aspects of creation and deployment of applications.

IBM's single, unified interface and integration with its recent acquisitions and its partners' products encourage team-oriented programming and developer collaboration among people with different skills, such as programmers, Web content developers, business analysts, database administrators, wireless and voice application developers, and graphic artists. The integrated tool platform also enables developers to customize their environment and mix and match tools of their choice,

reducing the time required to learn new products and increasing developer productivity.

WebSphere Studio tools enable developers to implement requirements, design systems, analyze and model systems, create applications, and test them within the same environment. IBM Studio tools provide a common development environment across Windows and Linux so that Linux developers can create enterprise-ready applications directly on top of Linux, without having to port them to Windows.

IBM provides a wide array of products from which a development organization can select what it needs. IBM's solutions are standards based. IBM also reaches out to developers in ways that encourage and foster good will and commitment, which could translate into greater leverage over time for other IBM products and services.

IBM Challenges

IBM still faces the challenge of creating consistency and a similar look and feel across all its own tools and the tools of its partner organizations that can also meet the needs of developers with varying degrees of skills and proficiency with languages such as Java or UML. Meeting this challenge is critical if the company is to make the most of these additions to its tools portfolio.

Now more than ever, IBM prefers to keep its customers within its own architecture and tool family. However, knowing which tools to purchase for specific products is still complex and difficult. Many of IBM's largest companies are now beginning to explore the opportunity to migrate their applications off mainframes as they prepare for service-oriented architectures. Some of these customers may not use IBM systems for their new solutions, and IBM will have to work to keep the development and maintenance costs in line with its competition. Finally, much of IBM's integration solutions still require large contracts with IBM Global Services in order to implement an effective product customized for a company's individual requirements. Although this is a profitability center for IBM, it is often a too-expensive proposition for many of IBM's midrange customers.

Computer Associates International

Computer Associates International (CA) delivers software and services that enable organizations to have integrated tools solutions that provide full application life-cycle management. CA's business model is crafted to deliver solutions that extend beyond an organization's boundaries to include the applications and processes of business partners. By assessing requirements, modeling new processes and applications, and providing a visualization of the relationships between business and technology, CA's AllFusion Modeling Suite simplifies and accelerates the complex aspects of analyzing, designing, and implementing applications and business processes.

CA's customers appreciate the well-engineered integrated modeling environment as they try to create and manage diverse and/or complex processes across different platforms as well as multiple business partners and complex computing environments. The AllFusion Modeling Suite has been positioned to address CA's customer needs and as a suite of tools designed to lower the cost of development. The AllFusion Modeling Suite is also designed to meet business requirements and

provide users with a better understanding of their corporate business and information architectures. Since AllFusion Modeling Suite can provide valuable insight into business process, data, and applications, it allows individual IT assets to be more easily developed, implemented, and maintained.

AllFusion Modeling Suite includes technologies formerly available as Enterprise Modeling Suite and ERwin Modeling Suite. The AllFusion Modeling Suite is made up of the following AMDC and complementary business process components: AllFusion ERwin Data Modeler (an industry-leading data modeling and database design solution), AllFusion Process Modeler (a business modeling environment that automates the capture, validation, analysis, and optimization of business and IT processes), AllFusion Component Modeler (for modeling, designing, visualizing, and maintaining modern business applications), and AllFusion Model Manager (for model management solution).

CA supports Microsoft Visual Studio .NET 2003 and gives developers the ability to enhance the business value of their new and upgraded applications. Rules-based components can readily be used in any Visual Studio .NET application deployed on the .NET Framework and delivered as Web services.

CA Strengths

CA provides tools and solutions to address the full life-cycle application development, deployment, and management capability. The company's stated goals are to give their customers the ability to use what they have acquired more effectively and efficiently. The company has begun to make a concerted effort to provide more tools that are based on open standards and are more interoperable with other key vendor solutions. CA developers are very loyal to the company and to its products.

CA Challenges

CA continues to work to overcome the complexity, proprietary aspects, and somewhat confusing diversity of its product line. It is often difficult for users to understand what suites they need to get their projects done. Although CA has worked to simplify the names of its products, there is more work that has to be done to better integrate and consolidate similar and/or complementary suites to provide a more comprehensive and interoperable, extended development environment. CA tools seem to be primarily used by existing CA clients. CA needs to increase its marketing efforts and interoperability efforts to improve workflow and workgroup interaction between all the members of the extended development teams in order to help developers work together more efficiently. This effort should have the added effect of attracting more outside developers to CA's tools.

FUTURE OUTLOOK

Forecast and Assumptions

Worldwide

IDC's estimate of the growth of the AMD market through 2008 is presented in Table 2. The market will continue to grow steadily and achieve positive growth throughout the remainder of the forecast period as the pent-up demand for investment in IT technology and the popularity of Java translates into spending on important language development tools. Many vendors are repositioning these tools as an improved method for doing J2EE development. Market revenue is forecast to increase to \$753 million by 2008, which represents a CAGR of 7.2% from 2003 through 2008.

Table 3 shows the key assumptions underlying this forecast. Some of the key assumptions are that worldwide economic growth will continue to recover slowly from 2001 levels to traditional levels, and pretax profits in 2003 will be noticeably better than in 2001, which will serve to build confidence and increase spending for AMD tools. Growing demand for more efficient and improved tools to develop service-oriented architectures, to reduce development complexity, facilitate the creation of Web services, and reduce the risk and costs associated with application development will fuel growth in this market.

By Geographic Region

IDC analysts around the globe supplied regional input and insight into the AMD market forecast. The worldwide forecast is the aggregation of this regional data as reported in Table 2. North America, with a 52.5% share in 2003, continues to dominate the AMD market throughout the forecast period. However, all regions are expected to perform equally well throughout the forecast period so shares for all regions will stay constant, with no one region gaining significantly more market share than another by 2008. Revenue for 2003 and 2008 is shown in Figure 3.

By Operating Environment

This study represents IDC's operating environment forecast for the worldwide AMD market through 2008. The revenue forecast for the AMD market, segmented by operating environment, is also shown in Table 2; revenue for 2003 and 2008 is illustrated in Figure 4. Windows market share increases slightly from 57% in 2003 to 61.9% by 2008. Mainframes lose 3.1 percentage points of the market share for AMD tools. Linux makes some small gains in this market as it increases from a 1.1% market share in 2003 to 6.1% of the market by 2008. Unix market share declines throughout the forecast period, going from 28.3% in 2003 to 22.8% in 2008.

TABLE 2

Worldwide Analysis, Modeling, and Design Tools Revenue by Region and Operating Environment, 2003–2008 (\$M)

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2003 Share (%) | 2003–2008 CAGR (%) | 2008 Share (%) |
|------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|----------------|--------------------|----------------|
| Geographic region | | | | | | | | | |
| North America | 279.3 | 288.8 | 304.4 | 326.4 | 352.5 | 383.5 | 52.5 | 6.5 | 50.9 |
| Western Europe | 172.2 | 184.5 | 198.3 | 213.6 | 230.4 | 247.7 | 32.3 | 7.5 | 32.9 |
| Asia/Pacific | 63.7 | 68.3 | 74.5 | 80.1 | 87.3 | 94.2 | 12.0 | 8.1 | 12.5 |
| ROW | 16.9 | 18.8 | 20.9 | 23.2 | 25.3 | 27.5 | 3.2 | 10.2 | 3.7 |
| Total | 532.2 | 560.4 | 598.2 | 643.2 | 695.5 | 752.9 | 100.0 | 7.2 | 100.0 |
| Operating environment | | | | | | | | | |
| Mainframe | 53.9 | 53.5 | 53.4 | 52.8 | 52.3 | 52.4 | 10.1 | -0.6 | 7.0 |
| OS/400 | 5.7 | 5.2 | 4.8 | 4.5 | 4.4 | 4.3 | 1.1 | -5.6 | 0.6 |
| Unix | 150.7 | 150.3 | 152.5 | 158.0 | 164.9 | 171.4 | 28.3 | 2.6 | 22.8 |
| Linux/other open source | 5.8 | 10.1 | 16.3 | 24.8 | 34.9 | 45.8 | 1.1 | 51.4 | 6.1 |
| Other host/server | 4.3 | 4.3 | 4.3 | 4.4 | 4.5 | 4.5 | 0.8 | 1.2 | 0.6 |
| Windows 32 and 64 | 303.1 | 328.5 | 358.3 | 390.3 | 426.1 | 465.9 | 57.0 | 9.0 | 61.9 |
| Embedded | – | – | – | – | – | – | – | NA | – |
| Other single user | 8.6 | 8.3 | 8.2 | 8.1 | 8.0 | 8.0 | 1.6 | -1.4 | 1.1 |
| Platform independent | 0.2 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.0 | 29.7 | 0.1 |
| Total | 532.2 | 560.4 | 598.2 | 643.2 | 695.5 | 752.9 | 100.0 | 7.2 | 100.0 |
| Growth (%) | 7.4 | 5.3 | 6.8 | 7.5 | 8.1 | 8.3 | | | |

Note: See Table 3 for key forecast assumptions.

Source: IDC, June 2004

TABLE 3

Key Forecast Assumptions for the Worldwide Analysis, Modeling, and Design Tools Market, 2004–2008

| Market Force | IDC Assumption | Impact | Accelerator/ Inhibitor/ Neutral | Certainty of Assumption |
|-----------------------|---|---|---------------------------------------|----------------------------|
| Macroeconomics | | | | |
| Economy | Worldwide economic growth will continue to recover slowly from 2001 levels to traditional levels, creating demand for upgrading existing tools or purchasing new tools particularly for improved development environments with visual interfaces and rapid application development capabilities. There will be no double-dip recession. Consensus Economics' March 2003 forecast holds. | High. Improved economic outlook is becoming a positive impact for IT spending. | ↑ | ★★★★☆ |
| Profits | Pre-tax profits in 2003 will be noticeably better than in 2001. This will benefit the stronger 3GL vendors to increase investments in future product features. Consensus Economics' March 2003 forecast holds. | High. IT spending will begin to increase as individual company profits improve. | ↑ | ★★★★☆ |
| Iraq | The war in Iraq will be over, and the aura of uncertainty affecting business decisions will dissipate. | Low. There is little reason for economic uncertainty over Iraq to impact IT spending. | ↔ | ★★★★☆☆ |
| Other geopolitics | The threat of terrorism at home and other potential armed political conflict will neither escalate nor abate. There will be no events as drastic as those of September 11 within the forecast period. | Moderate. Business decision and project initiation will be in line with a better economic outlook. | ↔ | ★★★★☆☆ |
| U.S. elections | U.S. elections may mean a change in political issues and platforms, which usually end up creating changes to the current economy, business conditions, and income taxes, and will ultimately affect consumer spending and consumption of technology products and solutions. | Low. Traditionally, election year has been good for the economy; the issue will be what happens in 2005. | ↔ | ★★★★☆ |

TABLE 3

Key Forecast Assumptions for the Worldwide Analysis, Modeling, and Design Tools Market, 2004–2008

| Market Force | IDC Assumption | Impact | Accelerator/ Inhibitor/ Neutral | Certainty of Assumption |
|----------------------|---|--|---------------------------------------|----------------------------|
| Energy | Energy costs will rise in the United States, and the European central bank will lower interest rates. However, continued rising gas prices, particularly in the western United States, will have a negative impact on the economy and curb consumer spending. | Moderate. Steady and predictable oil prices under \$30 a barrel are generally good for business, whereas escalating oil prices will have a negative impact over time. | ↔ | ★★★★☆☆ |
| Inflation | Inflation will remain under control. Over next three years (Consensus Economics), U.S., Western Europe, and Asia/Pacific consumer prices will rise less than 2%. Eastern Europe and Latin America, however, will see double-digit growth in 2003. There will be no deflation. | Low. Business confidence is unaffected. | ↔ | ★★★★☆☆ |
| Unemployment | The return to a more favorable economic outlook will produce an increase in hiring in 2004. Job creation is a lagging indicator of economic recovery. | Moderate. More employment drives more need for IT infrastructure, and job creation should be accompanied by willingness to invest in other areas. | ↑ | ★★★★☆☆ |
| Telecom | The telecom industry will begin to recover. Capex and opex spending in 2003 mirrors 2002 and will then slowly pick up. European governments will help rebuild after the 3G licensing fiasco. | Low. The IT industry has already factored this in. | ↔ | ★★★★☆☆ |
| Government and trade | Government budget deficits and trade imbalances will remain neutral with regard to their impact on IT. The dollar will remain stable. | Low. There will be no change. | ↔ | ★★★★☆☆ |
| Exchange rates | The falling dollar will drive up profits reported by U.S. multinationals but will inhibit IT exports from exporting countries. | High. This will inhibit IT exports from exporting countries. | ↓ | ★★★★☆☆ |

TABLE 3

Key Forecast Assumptions for the Worldwide Analysis, Modeling, and Design Tools Market, 2004–2008

| Market Force | IDC Assumption | Impact | Accelerator/ Inhibitor/ Neutral | Certainty of Assumption |
|---|--|---|---------------------------------------|----------------------------|
| Expansion of the eurozone | Although the expansion of the eurozone is historic, we will see little impact on global markets in the immediate future. | Moderate. Over time, there will be investment from Western Europe into production and services in Eastern Europe. But for 2004, we expect little change in IT spending outlook, although a large portion of IT budgets in the joining countries will be related to the move. | ↔ | ★★★★☆ |
| Compliance | Increased compliance legislation within the United States and Western Europe will increase transparency in many industries with Sarbanes-Oxley, Basel II, HIPAA, and others. | Moderate. Compliance regulations may begin to have an effect on software spending in 2005 and beyond. Compliance will affect areas of infrastructure software like security, and storage and applications areas such as records management, content management, and business performance management. | ↑ | ★★★★☆ |
| Technology/ service developments | | | | |
| Software complexity | Software systems will continue to increase in complexity, but demand for higher quality and productivity will be unabated. | High. The complexity crisis will maintain the need for integration, but the demand for high quality and productivity could deter skeptical buyers from existing product offerings. Increasingly, this functionality may be delivered as an IT or business service. | ↔ | ★★★★☆ |
| Linux | Technical IT users will lead application deployment with home-grown applications moving first. Mainstream software will also move toward applications serving on Linux. | Moderate. This will have a downward impact on price pressures. | ↔ | ★★★★☆ |

TABLE 3

Key Forecast Assumptions for the Worldwide Analysis, Modeling, and Design Tools Market, 2004–2008

| Market Force | IDC Assumption | Impact | Accelerator/ Inhibitor/ Neutral | Certainty of Assumption |
|-------------------------|---|---|---------------------------------------|----------------------------|
| Mobility | Application and user-focused mobile deployments will now address business needs, which are being driven by line of business and will drive tools sales. | Low. There will be a low impact on overall software growth in the short term, but this will be a factor accelerating developer tools in the three- to five-year range. | ↑ | ★★★★☆ |
| Utility computing | Multinational vendors will continue to drive the concept of utility computing in various forms, however the concept is not well defined yet in the marketplace. | Low. There will be a low near-term impact on software revenue. Software spending may pick up toward the end of the forecast period. | ↑ | ★★☆☆☆ |
| Killer apps | New technology (e.g., Web services, wireless LANs, storage area networks, clustering, and high-growth software areas) will help drive price performance to attractive levels that support new IT spending growth. | Moderate. No "killer apps" or new technologies come to drive overall industry growth in the same way Windows and office suites did in the 1980s or the Internet did in the late 1990s. Web services continues to be mostly a software development technique. | ↔ | ★★★★☆ |
| Labor supply | | | | |
| Productivity management | During the economic downturn, companies learned to do more with less. We will potentially see less of an uptick in employment as positions are replaced with more automated processes. | Moderate. This will have a moderate impact on increasing software revenue growth. | ↑ | ★★★☆☆ |
| Offshoring | There will be fulfillment of skill supply with offshore software development. | Low. There will be a low impact on overall software growth. | ↔ | ★★★★☆ |
| Capitalization | | | | |
| Venture | Venture funding, now at 1998 levels, will pick up slowly year by year. New companies will begin to find some funds available. | Low. There will be no change. | ↔ | ★★★★☆ |

TABLE 3

Key Forecast Assumptions for the Worldwide Analysis, Modeling, and Design Tools Market, 2004–2008

| Market Force | IDC Assumption | Impact | Accelerator/ Inhibitor/ Neutral | Certainty of Assumption |
|------------------------------------|---|--|---------------------------------------|----------------------------|
| Stocks | The world stock market will hit 2002 peak levels by the end of 2003, but will not hit March 2000 levels until after 2006. | High. There will be increased business confidence and market liquidity. | ↑ | ★★☆☆☆ |
| Market characteristics | | | | |
| Large enterprise software renewals | There will be extreme price pressure on large enterprise software renewals. | Moderate. This will have a moderate impact on changing software revenue growth. | ↓ | ★★★★☆ |
| Software licensing | There will be increased attention to building predictable revenue streams through nontraditional software licensing models. | Moderate. In the short term, there will be less of an impact on overall software revenue and higher impact on software revenue toward the back end of the forecast period. | ↑ | ★★★★☆ |
| Homeland security | There will be an increase in government programs to improve homeland security and protect against terrorism. | Moderate. The focus of security spending is not significantly on software yet; spending is currently on physical security. Software growth will be affected beyond the five-year forecast period. | ↔ | ★★★☆☆ |
| Market ecosystem | | | | |
| Services | IT services will continue to grow as companies attempt to concentrate on what they do best and rely on IT services to handle complexity they cannot. Companies clearly see the advantages of using outside services and outsourcers. IT services will grow faster than the overall IT market as budgets shift from internal spending to external companies. | Low. These trends are already factored in. | ↔ | ★★★★☆ |

TABLE 3

Key Forecast Assumptions for the Worldwide Analysis, Modeling, and Design Tools Market, 2004–2008

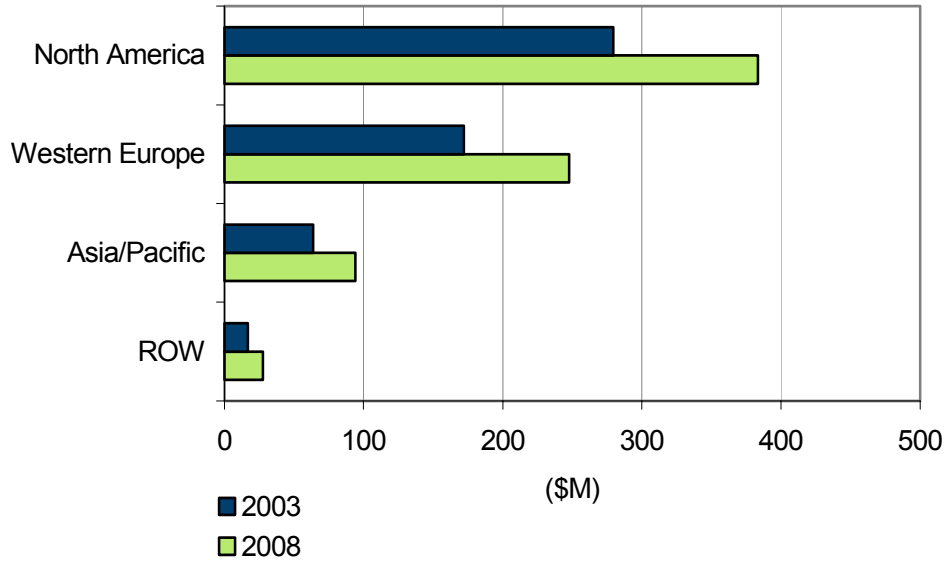
| Market Force | IDC Assumption | Impact | Accelerator/ Inhibitor/ Neutral | Certainty of Assumption |
|--------------------|--|---|---------------------------------------|----------------------------|
| Consumption | | | | |
| Buying sentiment | IT buyers will begin to moderately spend again as the economy improves; CIOs will begin to replace hardware and operating systems, begin to spend on mobility, and regain the attitude that IT spending is critical to the well-being of a company (or household). IT spending as a percentage of revenue (or income) will increase. | Low. These trends are already factored in. | ↑ | ★★★★☆ |
| Saturation | PC and Internet markets will continue to saturate, but emerging geographies will invest and new applications will drive users to multiplatform usage. | Low. These trends are already factored in. | ↔ | ★★★★☆ |

Legend: ★☆☆☆☆ very low, ★★☆☆☆ low, ★★★☆☆ moderate, ★★★★☆ high, ★★★★★ very high

Source: IDC, 2004

FIGURE 3

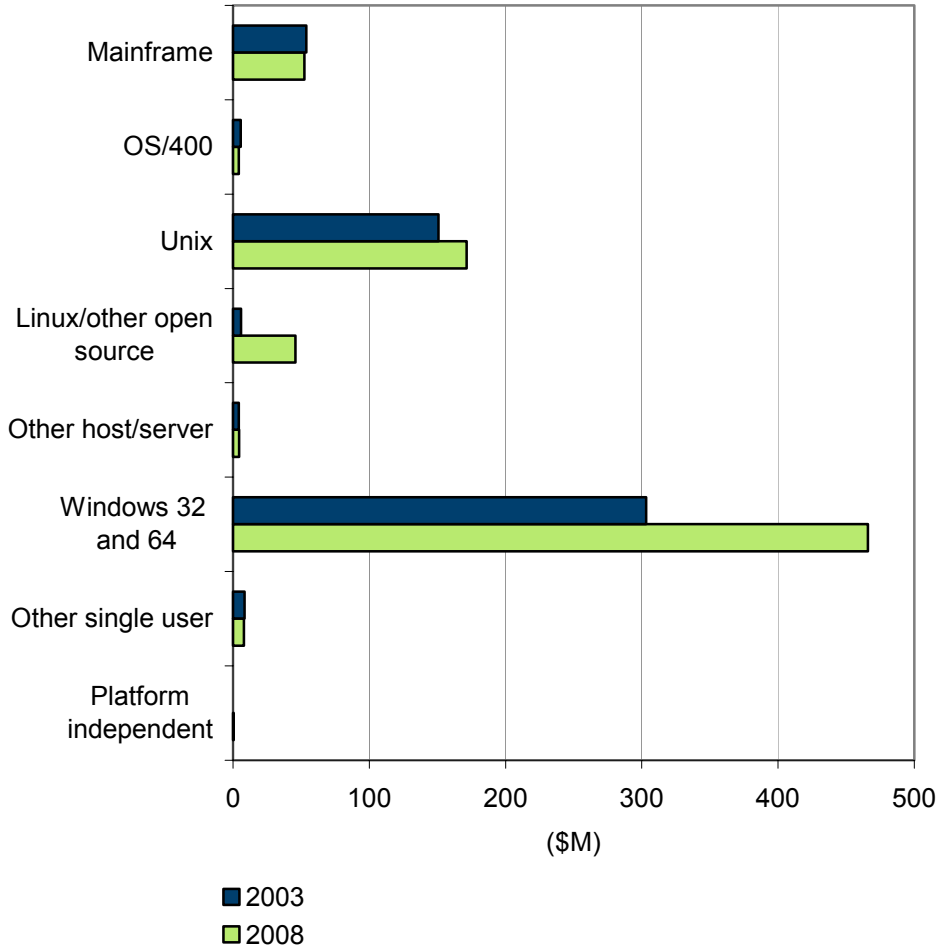
Worldwide Analysis, Modeling, and Design Tools Revenue by Region, 2003 and 2008



Source: IDC, June 2004

FIGURE 4

Worldwide Analysis, Modeling, and Design Tools Revenue by Operating Environment, 2003 and 2008



Source: IDC, June 2004

ESSENTIAL GUIDANCE

IT organizations are facing the need to do more with existing levels of staffing. Faced with a growing software complexity crisis and the need to deliver Web services and service-oriented architectures, companies are turning to more abstract methodologies to become more productive, reduce development costs, and to achieve the separation of infrastructure code and business logic required to achieve these goals. Many of the new breed of tools appearing in 2004 and in years to come will represent an improvement in moving from design to deployment by allowing developers to spend more time developing business logic and less time fighting with infrastructure code generation. IDC highlights the following:

- ☒ Development teams are geographically dispersed and include members from diverse disciplines with multiple skill levels. These teams are working with a large cross-section of developer abilities and tools that are being used for the inception and layout, the analysis and modeling, and the deployment and maintenance of applications. The automation of many of these efforts are making drastic improvements in producing better applications in less time.
- ☒ Software applications are more highly visible than ever before and have a high cost of failure so tools that can reduce these losses, increase developer productivity, and produce more reliable applications are in demand.
- ☒ Complex applications take time to develop and are more difficult than ever to debug and maintain, making it desirable to have the tools that can help developers resolve these issues.
- ☒ Web services and service-oriented architectures will not be achieved without using components, business rules, UML, and other abstract development methodologies and reusable, componentized software constructs.

Today, many applications are customer facing (Web-based order entry, heavy transaction-based, etc.). Downtime and errors in these systems, virus and worm attacks, and poor performance directly impact the bottom line of a business. There is mounting evidence that a growing number of IT organizations are adopting processes (or best practices) and tools for developing, deploying, and maintaining software applications and systems differently than they have been doing in recent years. These tools and processes are the province of more advanced and abstract methodologies and technologies contained within AMD and UDE tools and are the key to significantly improving quality, decreasing development costs, increasing productivity, and decreasing time to market. AMD development will become important tools to develop and deploy Web services in coming years.

IT managers not only have to deal with the complexity crisis and the critical impact of software failures, they are being asked to do so under very stringent budget and time constraints. This is not a passing phenomenon that will dissipate as the general economy improves. It will become the typical IT environment going forward. Businesses are already demanding more discipline and accountability from their IT organizations, relegating development solutions that can provide better alternatives and better ROI.

Successful AMD vendors will be those that can best meet the shifting market needs discussed above by extending their development environment capabilities with more functionality, more extensibility with complementary development tools, more code and pattern generation, and better, easier-to-use interfaces. Full life-cycle support (which can be achieved either by a single vendor or via partnering) will resonate well in the marketplace. Those AMD vendors providing extended developer solutions to increase the productivity of developers will continue to benefit in the coming years. Success in the marketplace will also result from increased functionality in development environments coupled with astute strategies for technology innovation, marketing, integrated business models, and strategic partnering.

LEARN MORE

Related Research

- ☒ *Worldwide Analysis, Modeling, and Design Tools 2004–2008 Forecast* (IDC #30986, March 2004)
 - ☒ *IDC's Software Taxonomy, 2004* (IDC #30838, February 2004)
 - ☒ *Cost-Effective Solution to Web Services and Application Development Using Fair Isaac Blaze Advisor* (IDC #29929, August 2003)
 - ☒ *Worldwide Analysis, Modeling, Design, and Construction Tools Competitive Analysis, 2003: 2002 Shares and Current Outlook* (IDC #29632, June 2003)
 - ☒ *Worldwide Analysis, Modeling, Design, and Construction Tools Forecast, 2003–2007* (IDC #29049, March 2003)
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Methodology

The IDC Software Research Group (SRG) market sizing and forecasts are presented in terms of "packaged software revenue." Packaged software is defined as programs or codesets of any type that are commercially available through sale, lease, rental, or as a service. Packaged software revenue typically includes fees for initial and continued right-to-use packaged software licenses. These fees may include, as part of the license contract, access to product support and/or other services that are inseparable from the right-to-use license fee structure, or this support may be priced separately as software maintenance. Upgrades may be included in the continuing right of use or may be priced separately.

Packaged software revenue *excludes* service revenue derived from training, consulting, and system integration that is separate (or unbundled) from the right-to-use license but *includes* the implicit value of software included in a service that offers software functionality by a different pricing scheme (e.g., the implicit or stated value of software included in an application service provider's [ASP's] or other hosted software arrangement). It is the total packaged software revenue that is further allocated to markets, geographic areas, and operating environments.

IDC's industry analysts have been measuring and forecasting IT markets for more than 30 years. IDC's software industry analysts have been delivering analysis and prognostications for packaged software markets for more than 25 years.

The market forecast and analysis methodology incorporates information from five different but interrelated sources, as follows:

- ☒ **Reported and observed trends and financial activity.** This study incorporates reported and observed trends and financial activity in 2003 as of the end of April 2004, including reported revenue data for public companies trading on North American stock exchanges (CY 1Q03–4Q03 in nearly all cases).

- ☒ **IDC's Software Census interviews.** IDC interviews all significant market participants to determine product revenue, revenue demographics, pricing, and other relevant information.
- ☒ **Product briefings, press releases, and other publicly available information.** IDC's software analysts around the world meet with hundreds of software vendors each year. These briefings provide an opportunity to review current and future business and product strategies, revenue, shipments, customer bases, target markets, and other key product and competitive information.
- ☒ **Vendor financial statements and related filings.** Although many software vendors are privately held and choose to limit financial disclosures, information from publicly held companies provides a significant benchmark for assessing informal market estimates from private companies. IDC also builds detailed information related to private companies through in-depth analyst relationships and maintains an extensive library of financial and corporate information focused on the IT industry. We further maintain detailed revenue by product area models on more than 1,000 worldwide vendors.
- ☒ **IDC demand-side research.** This includes thousands of interviews with business users of software solutions annually and provides a powerful fifth perspective for assessing competitive performance and market dynamics. IDC's user strategy databases offer a compelling and consistent time-series view of industry trends and developments. Direct conversations with technology buyers provide an invaluable complement to the broader survey-based results.

Ultimately, the data presented in this study represents IDC's best estimates based on the above data sources as well as reported and observed activity by vendors and further modeling of data that we believe to be true to fill in any information gaps.

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