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THE STATE OF THE MULTIVALUE MARKETPLACE 2007

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Introduction: The MultiValue Community

Since its debut more than 40 years ago, MultiValue database technology has won a loyal following as a platform for application development. Created by Richard Pick as the Generalized Information Retrieval Language Systems on an IBM S/360, a commercial version of what came to be called the Pick Operating System was developed and released by Microdata, which was subsequently purchased by McDonnell-Douglas Information Systems. In the mid-1970s, a Microdata VAR began to market the database component of the system independently as the Prime Information, running on Prime computers.

Over time, several different “flavors” of the MultiValue database emerged. They differ from relational databases in several ways. First, MultiValue databases support an unlimited number of values in a single field. In relational database technology, each entry requires its own field. Secondly, MultiValue databases support variable-length fields. The fields in relational databases must be of a fixed length.

These two characteristics lead to several advantages, according to Multivalued loyalists. MultiValue databases are more flexible and easier to change than relational databases. They conserve storage space. And they have performance advantages.

Despite these advantages, MultiValue database technology has remained a niche technology for much of its existence, particularly as relational database technology emerged as the dominant mode of data management in distributed computing environments. The MultiValue community was further challenged in the 1990s, as graphical user interfaces became standard and expected in many applications. To a large degree, applications using MultiValue technology still used traditional “green screen” interfaces. The growing acceptance of Web-based applications has presented yet another trend to which the MultiValue community has had to react.

On the other hand, in recent years, positive developments have begun to emerge. Tools that allow MultiValue developers to create graphical and Web-based user interfaces have emerged, modernizing the look and feel of MultiValue applications. Service-oriented architectures and other data integration technologies have lessened the overall importance of the underlying data store for any given application. And the MultiValue community continues to have very loyal adherents.

In April 2007, Unisphere Research conducted a survey of the MultiValue community, including end-users as well as value-added resellers (VAR) systems integrators (SI) and independent software vendors (ISV). An email solicitation inviting participation in a Web-based survey was sent to subscribers of 5 Minute Briefing: MultiValue, a monthly email newsletter for the MultiValue community published by Unisphere Media, the parent company of both Database Trends and Applications magazine and Unisphere Research. Two of the survey sponsors also invited participation via their own mailings or newsletters.

In total, 252 people participated. About 40 percent of the respondents identified themselves as end-users of MultiValue technology. The remaining 60 percent were VARs, SIs and ISVs. A breakdown of the respondent base can be found in Figures 23 to 26.

The key findings were:

- ➔ The MultiValue community remains committed to the technology and there should not be wholesale migration off the platform over the next year.
- ➔ Internal developers and commercial developers plan to add new features to existing MultiValue applications this year.
- ➔ Modernizing the user interface is high on developers’ priority list.
- ➔ There are no plans to develop a lot of new applications on the MultiValue platform.
- ➔ Budgets to support and maintain existing applications or develop new applications will not increase significantly next year.
- ➔ The MultiValue community is a veteran community, with the overwhelming majority of the developers having over 10 years of experience.
- ➔ The greatest challenges MultiValue developers face is market uncertainty and the lack of visibility of the technology.

Trends among End-Users

MultiValue database technology generally supports a specific application within an enterprise. Financial applications are the most common MultiValue applications; followed by procurement/billing, supply chain applications, and ERP (Figure 1). These applications support a large number of users. More than three-quarters of the respondents indicated that their MultiValue application supported 50 or more users (Figure 2). Moreover, in those companies in which MultiValue technology has found a home, it is often used to support a significant number of enterprise and departmental applications (Figure 3).

Figure 1: What types of applications does your MultiValue database support? (Five most frequently mentioned applications)

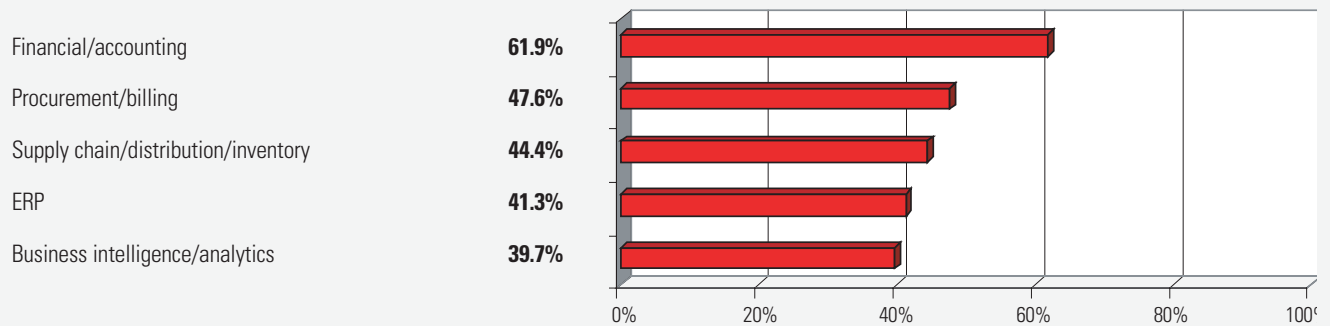


Figure 2: About how many end-users does a typical application running on a MultiValue database platform support?

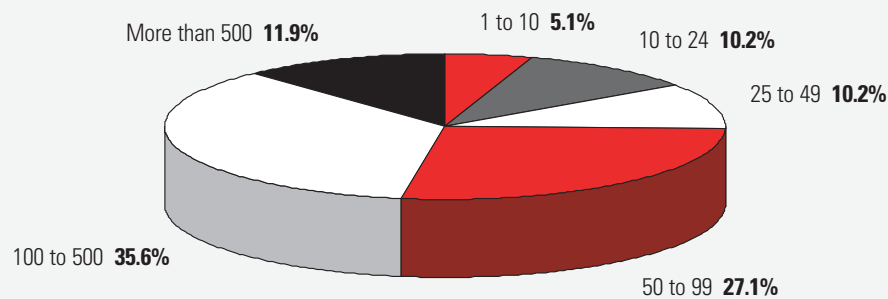
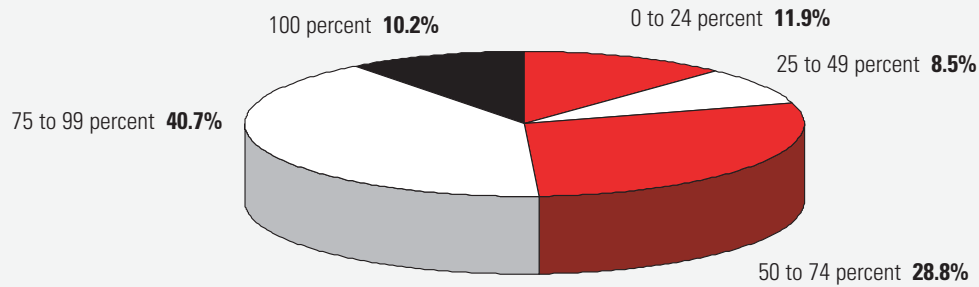


Figure 3: Approximately what percentage of your enterprise and departmental applications run on MultiValue databases?



Along the same lines, end-users that have implemented MultiValue technology use the database to store a significant amount of their corporate data. In fact, slightly more than 70 percent of the respondents store 50 percent or more of their corporate data in MultiValue databases (Figure 4). The most commonly stored data types are transaction records and histories, customer records, and financial and accounting records (Figure 5).

Figure 4: Approximately what percentage of your corporate data is stored on MultiValue databases?

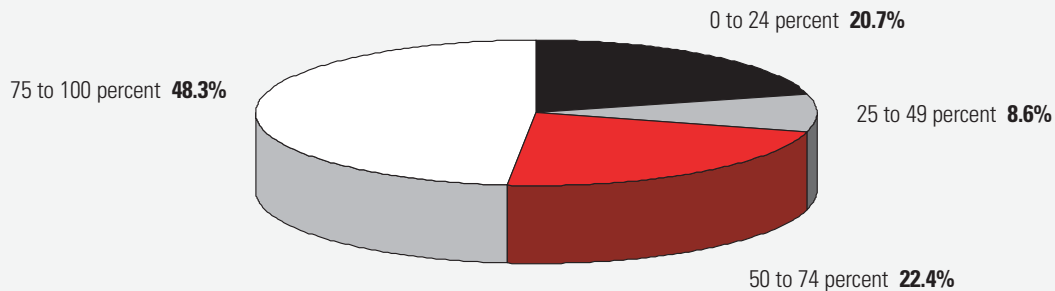
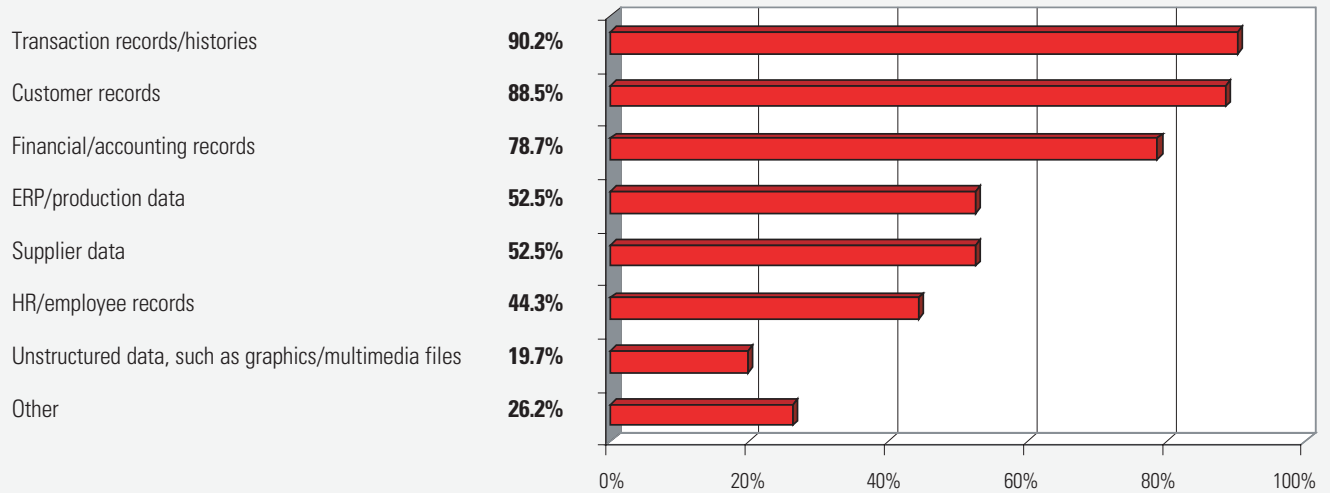


Figure 5: What types of data are stored in your MultiValue database?



Interestingly, most end-users reported that they develop most of their MultiValue applications in-house (Figure 6). And most do not intend to purchase additional MultiValue applications in the coming year (Figure 7).

Figure 6: How did you acquire the majority of your applications that are running on a MultiValue database?

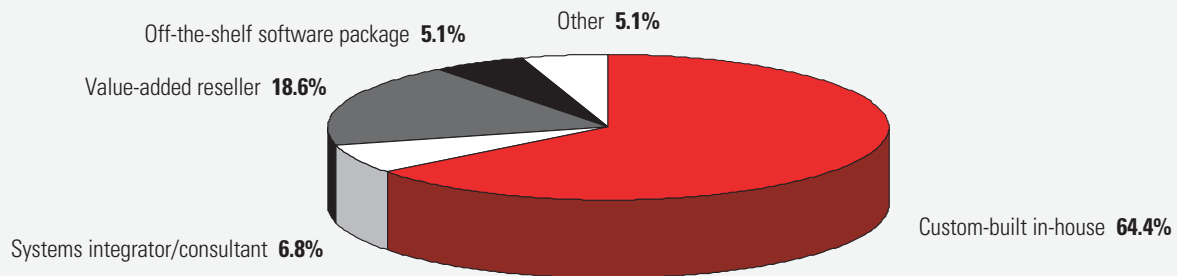


Figure 7: What types of applications running on a MultiValue database do you plan to purchase over the coming year?

None	60.3%
E-commerce	12.7%
Data warehouse/data mart	9.5%
ERP	9.5%
Financial/accounting	7.9%
Web servers/intranets	7.9%
Business intelligence/analytics	6.3%
Procurement/billing	4.8%
Supply chain/distribution/inventory	4.8%
Human resource/benefits	4.8%
CRM/sales force automation	3.2%
Fault tolerant/backup	1.6%
Other	3.2%

In most companies the budget for supporting and developing MultiValue applications varies widely. For example, 16.7 percent of the respondents said they spend more than \$250,000 a year to support their MultiValue applications while one-third (33.3%) said that they spend less than \$50,000.

The budget for developing new applications in-house is somewhat more limited. A little more than 47 percent (47.7%) of the respondents indicated that they spend \$50,000 or less developing MultiValue applications while only 4.3 percent said they spend more than \$250,000 developing MultiValue applications.

As Figures 8 and 9 show, end-users do not anticipate their budget either for supporting MultiValue applications or developing new MultiValue applications to increase over the next year. Instead, it should remain flat or decrease. Respondents that indicated that their MultiValue budgets may go up expect that increase to be modest. On the other hand, 9.1 percent of the respondents indicated that their budgets for developing and acquiring MultiValue applications may plunge by 50 percent or more next year.

Figure 8: How will your budget for supporting MultiValue applications change over the next year?

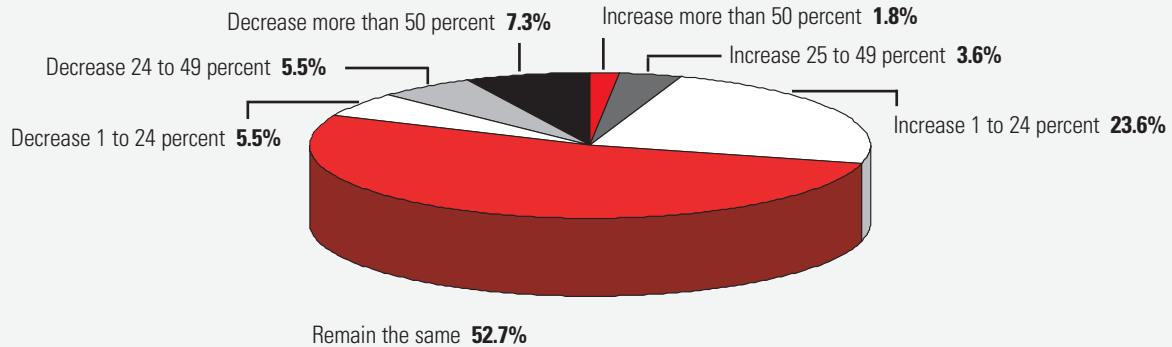
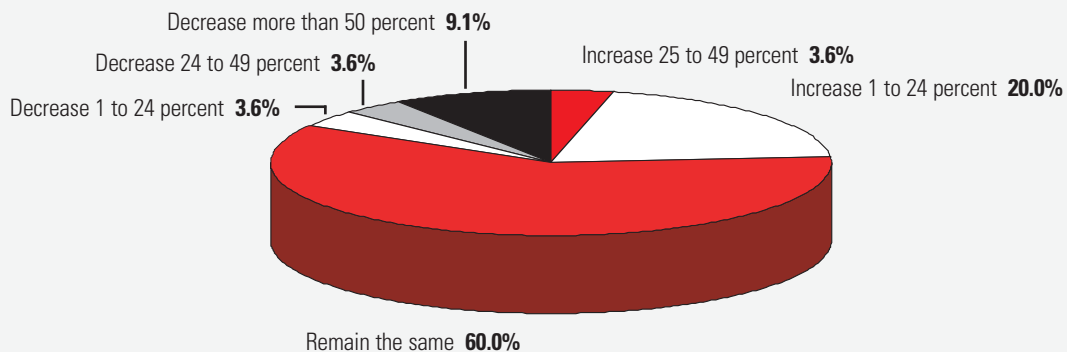


Figure 9: How will your budget for developing and acquiring MultiValue applications change over the next year?



While internal budgets for MultiValue applications may not be growing at a robust rate, companies are not necessarily standing still. Figure 10 shows that 57.9 percent of the respondents plan to add new functionality to their existing applications next year and 44.9 plan to modernize their applications' interface. On the other hand, 15.8 percent of the respondents said they plan to migrate some of the MultiValue applications to a new platform and 10.5 percent said they plan to migrate all of their MultiValue applications to a new platform.

Figure 10: What are your plans for your MultiValue database applications over the next 12 months? (Multiple responses allowed)

Will add new functions to existing applications running on MultiValue databases	57.9%
Will modernize interface to existing applications	47.4%
Will upgrade to a new version of MultiValue database	36.8%
Will add new applications running on MultiValue databases	31.6%
Will integrate MultiValue database applications into a .NET or J2EE environment	24.6%
Will upgrade to a new version of an application running on a MultiValue database	15.8%
Will migrate some applications from the MultiValue database environment to another database environment	15.8%
Will migrate all applications from the MultiValue database environment to another database environment	10.5%
No change	12.3%

Trends among VARs, SIs and ISVs

Due to its ease of development and flexibility, MultiValue database technology has attracted a loyal community of VARs, SIs and ISVs. In fact, as Figure 11 shows, this is a veteran community. Nearly 90 percent of the VARs, SIs and ISVs have been using MultiValue database technology for more than 10 years and 48.7 percent have been developing with MultiValue for more than 20 years. The vast majority develops custom applications for their clients and 62.6 percent also develop commercial applications (Figure 12). Many develop applications exclusively on MultiValue databases, which represents a significant percent of their business (Figure 13).

Figure 11: How long has your company been developing applications using MultiValue technology?

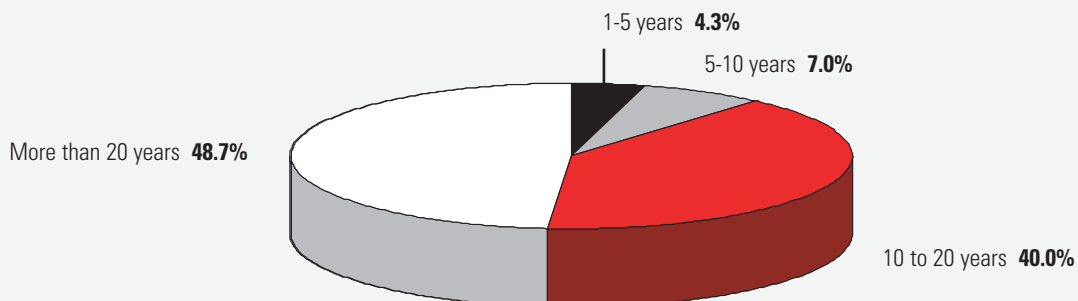


Figure 12: What do you do with MultiValue database technology?

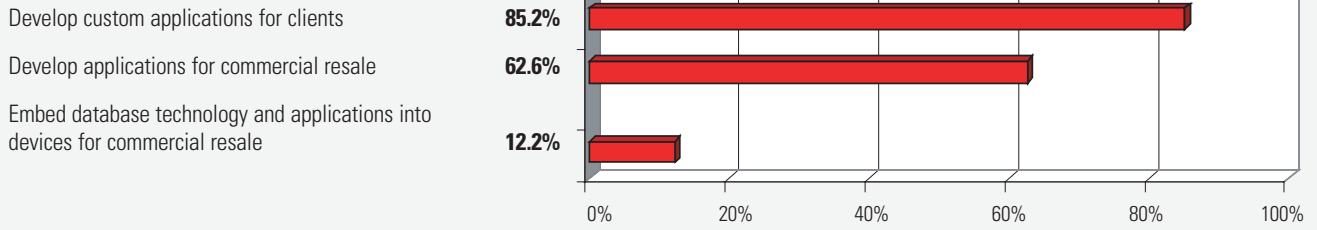
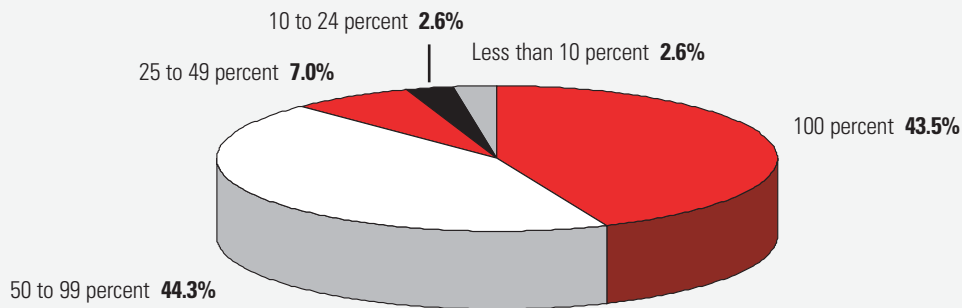


Figure 13: About what percentage of your overall business is represented by activities with applications running on MultiValue databases?



In general, VARs, SIs and ISVs have developed two or more applications running on MultiValue technology (Figure 14). And unlike end-users, this part of the community generally anticipates that the percentage of the business represented by MultiValue technology will stay flat or increase. Only 12.2 percent said they anticipate any decrease in business and only 2.6 percent foresee a significant decrease (Figure 15). Overall, a wide array of applications has been developed on the MultiValue platform (Figure 16).

Figure 14: How many different applications has your company developed that run on a MultiValue database technology?

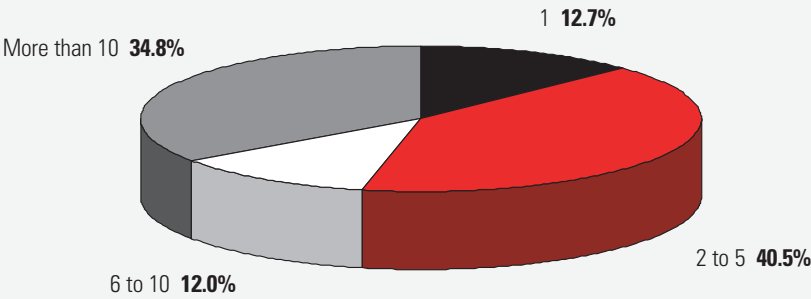


Figure 15: Over the next year, do you expect the percentage of your business represented by your activities with applications running on MultiValue databases to increase or decrease?

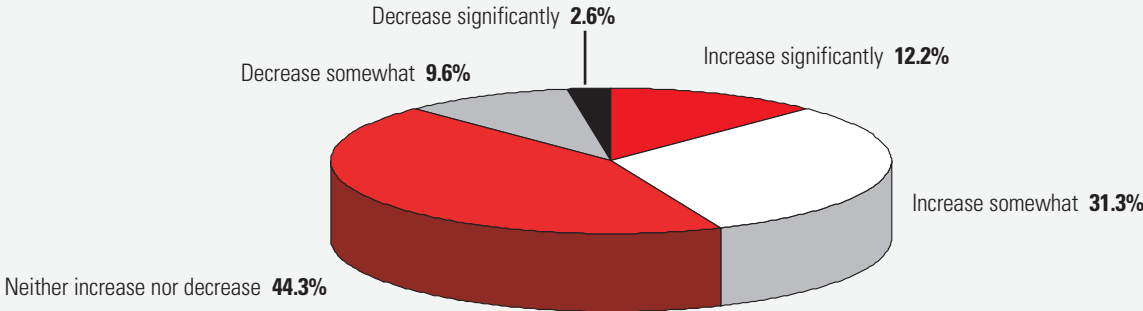
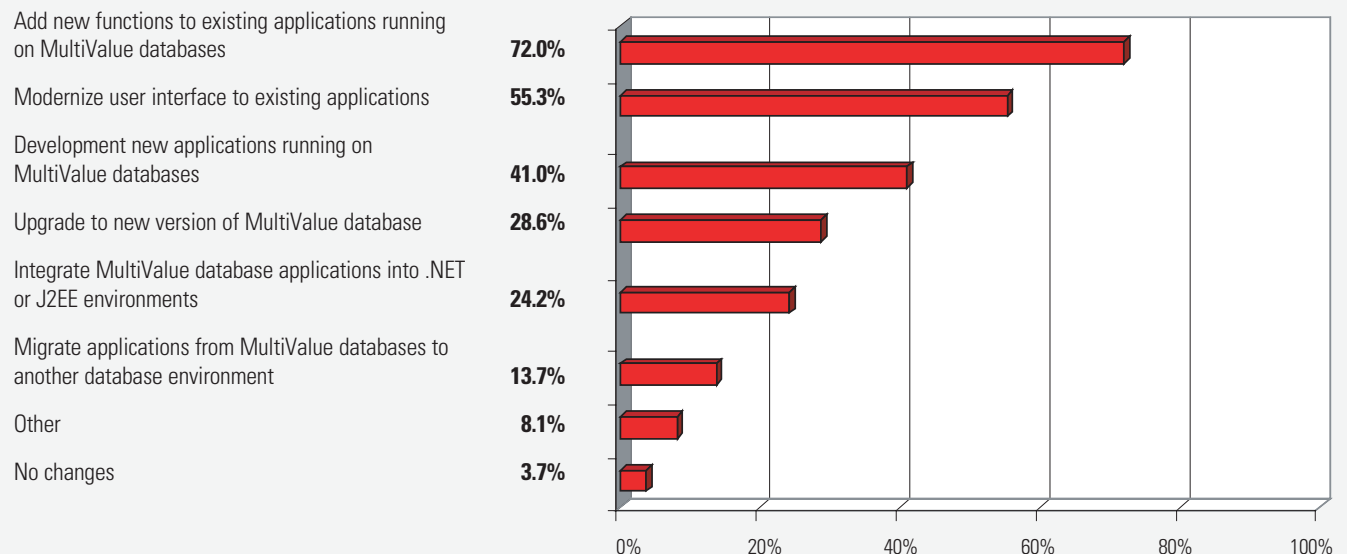


Figure 16: What kinds of applications have you developed that run on MultiValue database technology? (Multiple answers allowed)

Financial/accounting	67.7%
Other	48.4%
Supply chain/distribution/inventory	46.6%
ERP	32.9%
Business intelligence/analytics	32.9%
Procurement/billing	30.4%
CRM/Sales force automation	29.2%
E-commerce	8.6%
Data warehouse/data marts	28.0%
Web servers/intranets	25.5%
Human resource/benefits	21.7%
Retail POS	21.1%
Insurance	18.0%
Fault tolerant/backup	7.5%

As Figure 17 shows, the top priority of application developers using MultiValue database technology over the next year is to add new functions to existing applications, followed by modernizing the user interfaces.

Figure 17: What are your top development priorities for your MultiValue database applications over the next 12 months? (Multiple responses allowed)



Benefits and Challenges

The MultiValue community itself is convinced of the advantages of the technology. The greatest advantage is the ease of application development, followed by low maintenance and administration requirements and data flexibility (Figure 18). Moreover, the MultiValue community is generally convinced that MultiValue technology provides better value and more functionality, and is less expensive than relational database technology (Figures 19, 20, 21).

Figure 18: What do you consider the greatest benefits from using a MultiValue database environment? (Multiple responses allowed)

Ease of application development	83.5%
Low maintenance/administration requirements	81.6%
More data flexibility	74.1%
Ease of use	69.6%
Ease of deployment	65.8%
Low hardware requirements	62.7%
More data field capacity	57.6%
Price	43.0%
Integration with XML	22.2%
Integration between MultiValue brands	14.6%
Strong VAR/integrator support	13.3%

Figure 19: How does a MultiValue database compare with relational database management systems in terms of value?

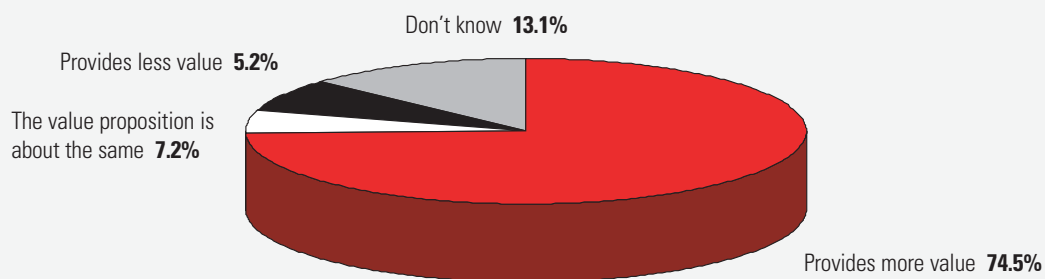


Figure 20: How does a MultiValue database compare with relational database management systems in terms of functionality?

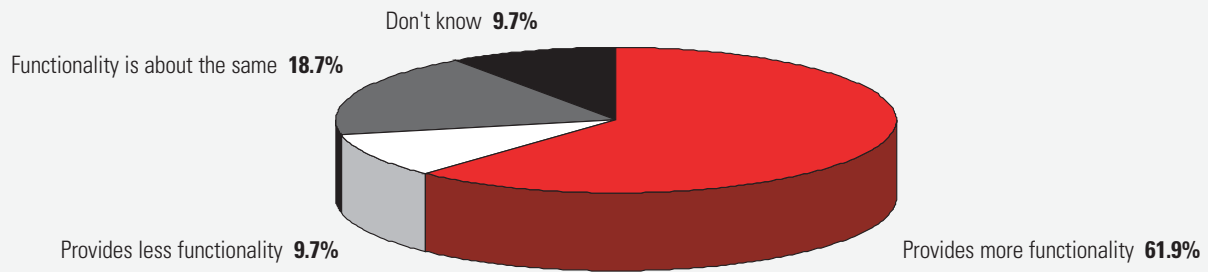
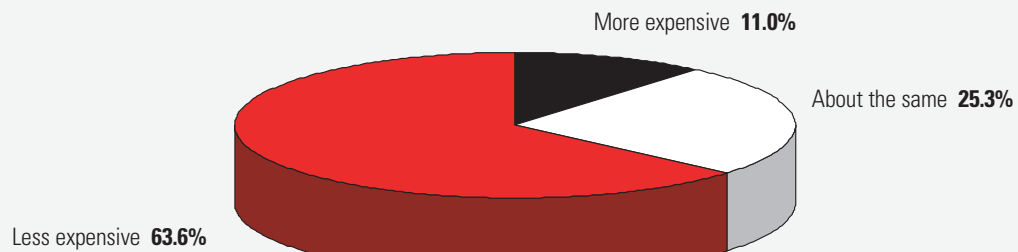


Figure 21: How do MultiValue database systems compare to relational database management systems in terms of cost?



Despite their loyalty to the technology, the MultiValue community faces serious challenges. The most significant is the market uncertainty surrounding the technology, followed by the lack of visibility in the marketplace and the difficulty in modernizing the interface to existing applications (Figure 22).

Figure 22: What do you consider the greatest challenges in using a MultiValue database environment? (Multiple responses allowed)

Market uncertainty	48.7%
Lack of management awareness	48.1%
Difficult to modernize applications (with GUI interface, etc.)	41.1%
Lack of mainstream vendors	39.2%
Lack of development/support tools	36.7%
Integration issues with enterprise environments like .NET and J2EE	26.6%
Difficulty integrating with other database types	26.6%
Lack of VAR/integrator support	19.6%
Don't know	3.8%

In the final analysis, however, 84.6 percent of the respondents said that they do not foresee replacing their MultiValue application in the near future.

Demographics

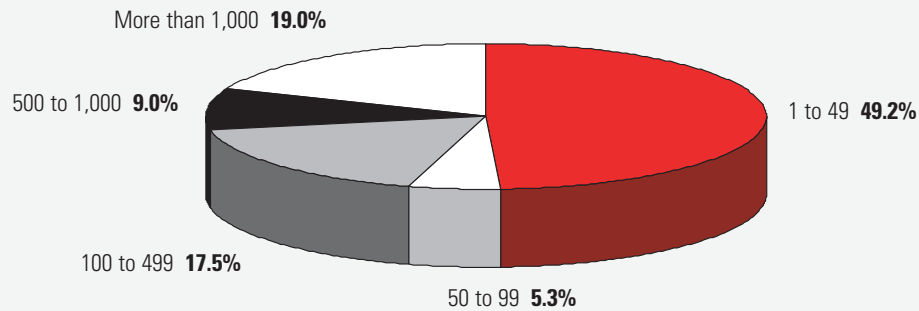
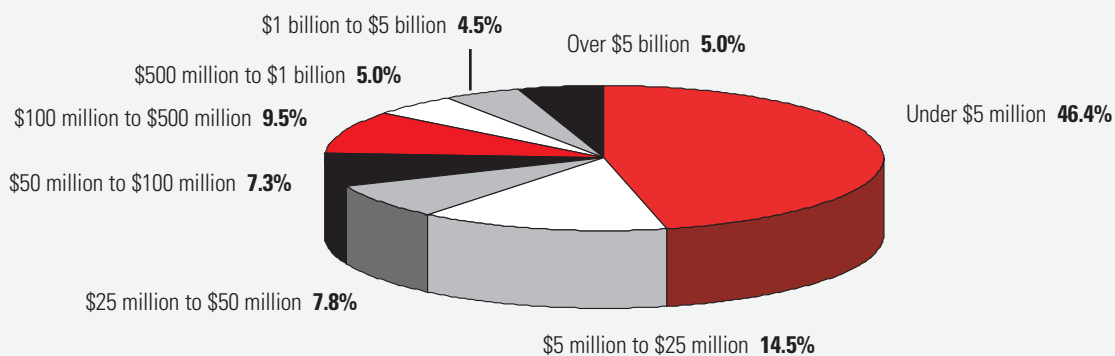
The respondents to the survey came from a broad range of industries (Figure 23) and hold a variety of job titles. Most hold senior management positions, or are database administrator or application developers (Figure 24). And while companies of all sizes are represented, the largest group comes from small companies as measured both by revenue and number of employees (Figures 25, 26).

Figure 23: Industries represented

Manufacturing/distribution	26.0%
Other	15.6%
Services	12.0%
Financial services	8.9%
Healthcare/medical	8.3%
Insurance	5.2%
Government/military	6.8%
Education/nonprofit	4.2%
Utilities/construction/transportation	5.2%

Figure 24: What best describes your job role?

Senior management - owner, CEO, president, senior VP	29.2%
Database manager or administrator	21.4%
Application Developer	17.2%
Director or manager of information technology/systems	13.5%
Systems analyst or programmer	8.9%
CIO, CTO, or VP of information technology/systems	5.7%
Other	3.6%
Line-of-business manager	0.5%

Figure 25: How many employees are in your company?**Figure 26: Approximately what is your company's annual revenue?**

Conclusion

The MultiValue community is a veteran community and the technology still commands the loyalty of those who use it. Those who work with MultiValue technology believe it offers better value and more functionality than relational database technology and is less expensive. Its greatest benefits are its ease of application development and data flexibility.

While most users of MultiValue applications and most MultiValue developers do not plan to abandon the technology, there is not a lot of new development planned either. Most of the respondents indicated that they planned to add functionality to existing applications. Modernizing the user interface ranked second on the development priority list. Budgets both for supporting and maintaining MultiValue applications and for developing new MultiValue applications will generally be flat to down next year, according to the respondents.

The greatest challenge, respondents said, is market uncertainty and MultiValue's lack of visibility in the end-user community.

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