



International  
Informix  
Users Group

# THE RISE OF THE RENAISSANCE DATA PROFESSIONAL – 2007 AND BEYOND

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## SUMMARY AND BACKGROUND

The role of many of today's Informix data managers and professionals has evolved beyond simply building and maintaining databases. These individuals are increasingly getting involved in business planning and capacity issues. They are also being looked upon as data "stewards" and required to understand where data is coming from, where it will end up, and how it is being used. Data professionals are being asked to manage a lot more data with fewer resources, while offering far greater flexibility to the businesses they serve. Informix professionals need to understand the business drivers behind the data they manage and interact with business users to help them leverage that data in new and innovative ways.

To examine the expanding scope of responsibilities of today's new database professionals, Unisphere Research conducted a survey for the International Informix Users Group (IIUG), the leading association of Informix technology and database professionals, to gauge how the jobs of database administrators, developers, and managers are evolving and expanding. The survey was conducted in November 2006, in cooperation with Embarcadero Technologies.

The survey was conducted via an email notification to the IIUG membership list, which directed participants to a Web-based survey instrument. A total of 245 responses were collected by the survey deadline.

As Figures 1 through 4 below show, respondents came from a variety of organizations, representing a wide range of job titles. Company sizes were diverse, with 16 percent of the survey group coming from organizations with more than 10,000 employees. (See Figure 1.) Another 29 percent came from small businesses or organizations with 100 or fewer employees. This diversity in sizes is also reflected in the revenue sizes of the respondents' companies. About one fifth, 19 percent, came from organizations with \$1 billion or more in annual revenues. (See Figure 2.) This group of IIUG members was a highly international one; close to three out of five indicated that they are based in North America (57%), followed by 25 percent in Europe, six percent in Asia, five percent in Australia, and five percent in South America.

The survey also reflected Informix's strength in the technology, government/education, and services markets. (See Figure 3.) Respondents reported a wide range of job titles, from database administrators (29%) to IT managers (11%), application developers (7%), consultants (5%), network/systems administrators (5%), team leaders (5%), and CIOs or CTOs (4%). (See Figure 4.)

Among its many findings, the survey revealed that the jobs of many Informix site administrators or managers involve a range of activities beyond simple administration. The survey covered seven key areas of data management, including database administration, configuration management, performance monitoring, data modeling, data integration, application development, and data security. As one survey respondent, a systems architect with a European utility, put it: "It's important that data administrators understand what the data contained within the database is used for. They must understand the importance of the applications accessing that data. In understanding this, they can get more involved in providing assistance to developers/business leads at the design and implementation stage. They can also provide ideas, using their knowledge of the database products, as to how processes could be improved."

Informix managers' and professionals' job roles are highly diverse. Only five percent reported that their jobs are focused on one single task, such as database administration. Close to two out of three, 59 percent, reported that the scope of their job extends to at least five of the seven areas identified within this survey. More than a third (37%) said that their jobs directly encompass just about all of the task areas (six to seven) covered in this survey.

What is driving this expansion and convergence of data professionals' responsibilities? There are many factors, the survey found, including consolidation and cost containment, security, and regulatory compliance. Many DBAs no longer even focus on a particular brand of database. Organizations adopt various commercial and open source brands to suit specific business needs. DBAs need to understand the business purpose and definition of the data they manage, as well as the technological underpinnings of the DBMSs they manage. This puts data professionals - from DBAs to architects to developers - into more proactive roles, in which they need to act more as information "architects" or "stewards."

One respondent agreed that the roles of database administrators and other professionals are evolving into the architecture aspect of data management. "DBAs usually have a good handle on the structure of the data and how it is accessed," said the respondent, who is the DBA with a services firm. "Being able to design and advise on the architecture of the database is important to performance and flexibility of the database. Since this directly impacts the business, it is important to include this role in business discussions."

Another respondent said that his company is “planning to move to a new ERP platform that will not be supported by IBM Informix.” Thus, the DBA for a large manufacturer continued, “we will be outsourcing all hardware and DB administration. The DBA role is becoming a ‘data architect’ role - to assist analysts in working with the business and business processes in determining our future data needs and staying ahead of the business trends.”

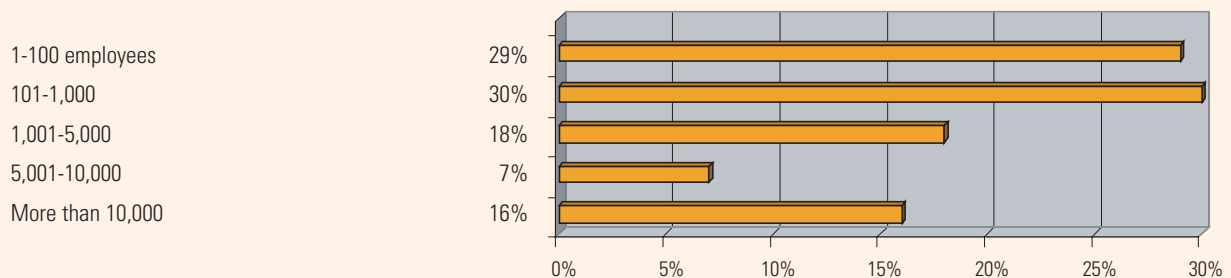
This new role requires that data professionals understand the business usage of the different databases in the organization, develop standards to measure the quality and adequateness of this data for business objectives, and prepare methodologies and processes to bring the data and content to the required levels of quality. Data professionals must also insert themselves into development and enforcement, and be champions of data governance initiatives.

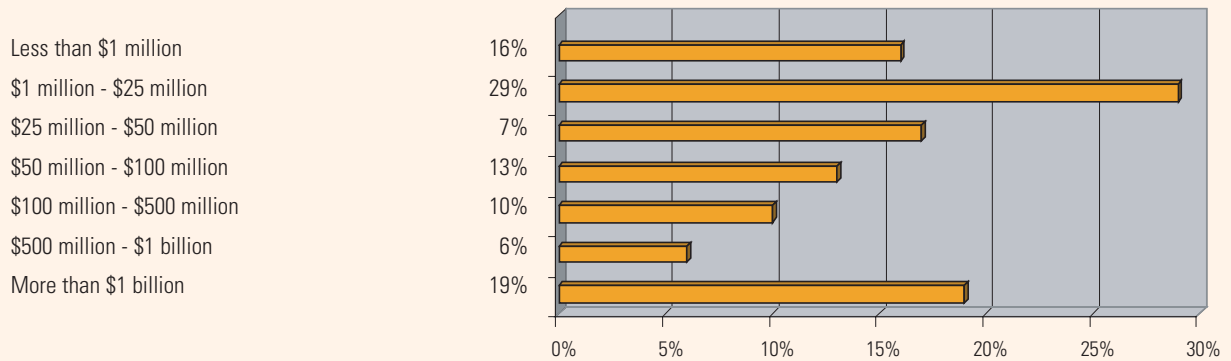
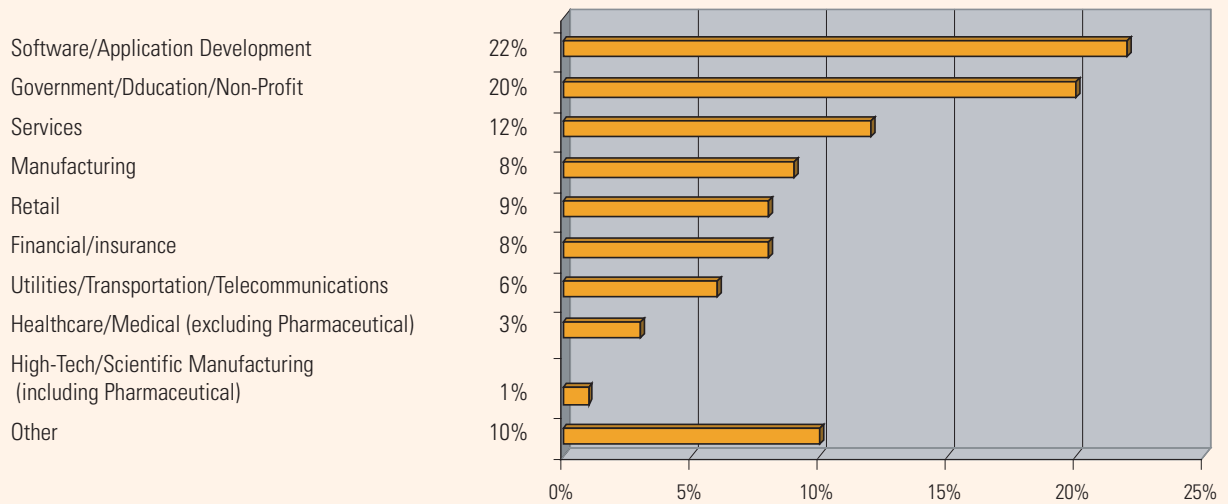
However, in many cases, most data professionals do not even have access to the necessary tools to accomplish a wide range of these tasks across multiple database platforms. For most of the task areas covered in this survey, respondents mainly rely either on native database tools, manual scripting, or a combination of tools and scripts to do their jobs. This is a challenge, since 88 percent also manage a secondary database environment (on occasion), and the majority have jobs with multiple types of tasks.

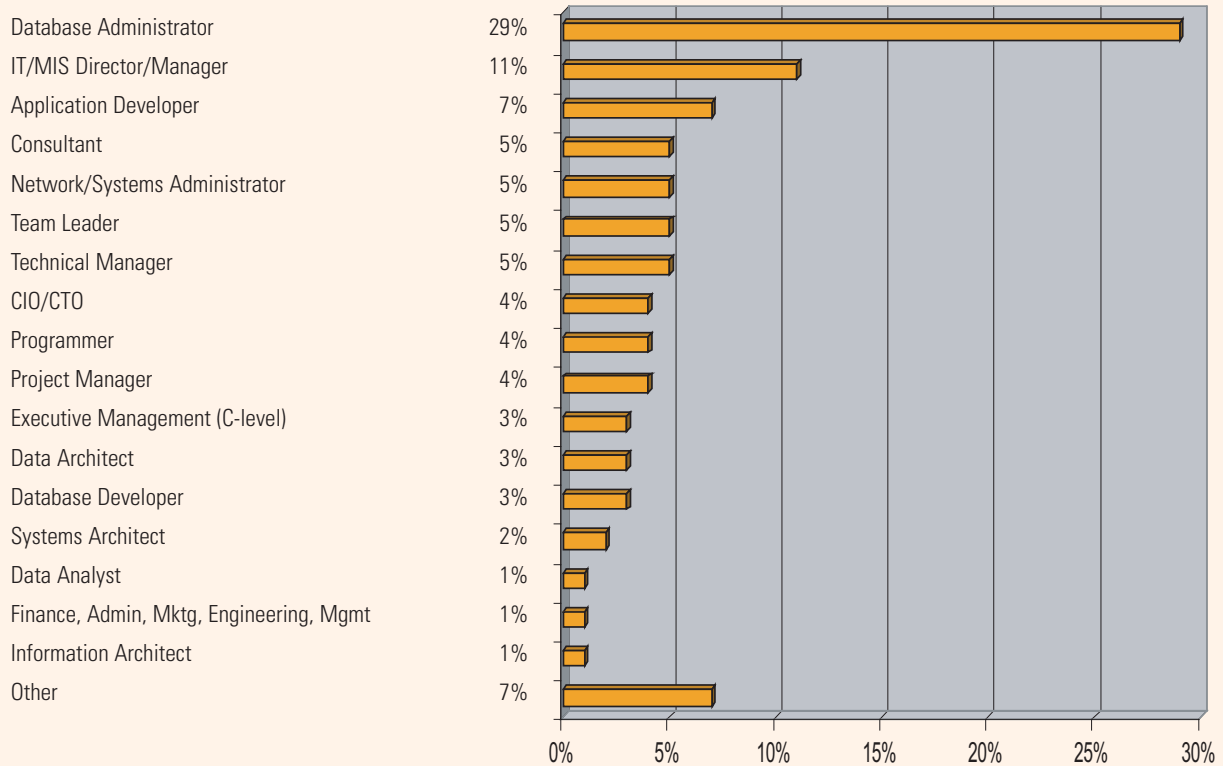
More data professionals are moving away from low-level automated tasks and toward tasks requiring architecture skills, people management skills, and the ability to communicate better with the business. These skills are much higher level, more social, and more problem-solving in nature, versus narrowly-focused technical skills. The results of this survey demonstrate the expanding scope of data professionals’ jobs. The data professional is increasingly serving as the intermediary and activist between the business side and the data management and IT sides of the organization.

On the following pages, we explore the new roles and functions Informix database managers and professionals are assuming within today’s enterprises, and the challenges they face.

**FIGURE 1: Survey Respondents by Employee Company Size**



**FIGURE 2: Survey Respondents by Annual Revenues****FIGURE 3: Respondents' Primary Industries**

**FIGURE 4: Respondents' Job Titles**

## THE EXPANDING ROLE OF DATA MANAGERS

**This survey found that many Informix managers and professionals have wide ranges of responsibilities that extend beyond their primary database environments and traditional job descriptions.**

More than two out of five respondents to this survey (44%) reported that they work on a regular basis with a database outside of their primary Informix environment, and another 44 percent reported that they “occasionally” work with a secondary database.

As Figure 5 shows, four out of five respondents, 80 percent, spend most of their time working within the Informix database environment. Six percent spend most of their time working with Oracle, and five percent mainly work with Microsoft SQL Server.

Though these are mainly Informix shops, there are many Microsoft SQL Server deployments, the survey discovered. As noted above, a total of 88 percent of respondents also spend time with other database brands. Secondary databases consist of a variety of brands and systems, mainly SQL Server (35%), Oracle (20%), MySQL (12%), and IBM DB2 (9%). (See Figure 6.)

Respondents from the largest organizations (with more than 5,000 employees) are most likely to be working on a regular basis with a secondary database, cited by close to two-thirds of this subsample (64%). The use of secondary database environments - aside from Informix - is prevalent in 37 percent of the smallest businesses (with 100 or fewer employees) and 35 percent of companies with 100 to 1,000 employees. Among mid-size companies (1,000 to 5,000 employees), 45 percent of respondents reported working on a regular basis with a secondary database environment.

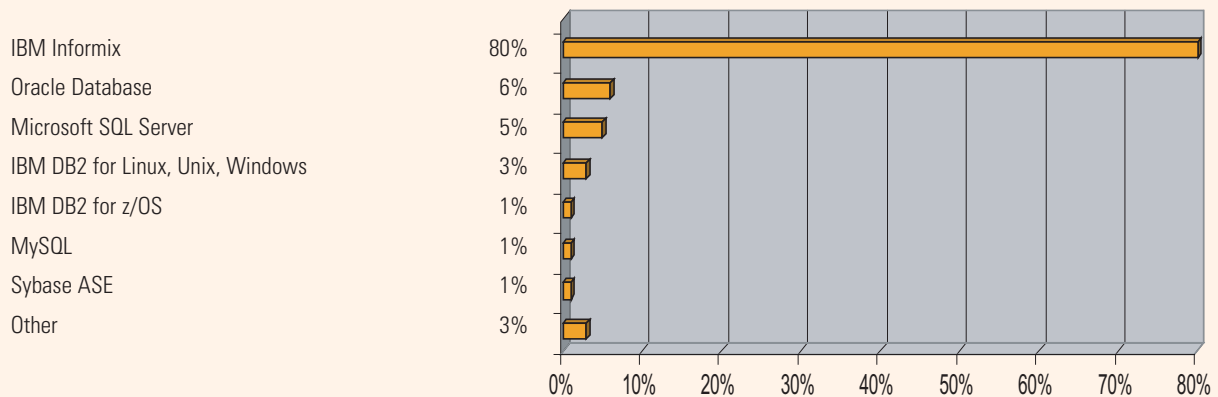
**Database administration, performance monitoring, and database change/configuration management lead the list of tasks in which respondents are most directly involved.**

More than eight out of 10 respondents said they are directly responsible for database administration, performance monitoring, and/or database change/configuration management. Specific details for all seven functional areas are described in greater detail further on.

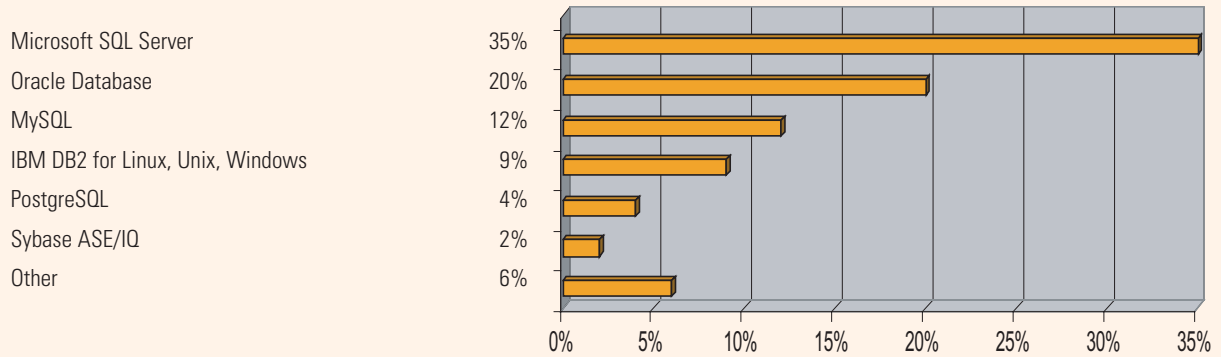
The survey revealed that the role of many DBAs and developers is converging into that of a data architect, who is more likely to work closely with the CTO or CIO on overall enterprise architecture issues, making sure things are designed well and normalized. As shown in Figure 8, most Informix managers' and professionals' job roles are not confined to a single category. Only five percent reported that their jobs are focused on one single task, such as database administration. Close to two out of three, 59 percent, reported that the scope of their jobs extends to at least five of the seven areas identified within this survey. In fact, 14 percent said that their job encompasses all seven of the categories covered. Thus, many Informix managers and professionals wear multiple hats, being directly involved in areas such as database administration, configuration management, performance monitoring, data modeling, data integration, application development, or data security. For purposes of this survey, we define such "renaissance" data professionals as those with direct involvement in at least six of the seven categories covered, or 37 percent of the respondents to this survey.

Most of these renaissance professionals in the Informix world come from smaller companies, where employees wear more hats, the survey confirmed. Among the respondents from smaller companies (1-100 employees), 34 percent reported that they are renaissance data professionals (again, defined as being directly involved in at least six to seven task areas) - as compared to nine percent coming from larger organizations with more than 10,000 employees.

**FIGURE 5: DBMS Brand on Which Respondents Spend Most of Their Time**

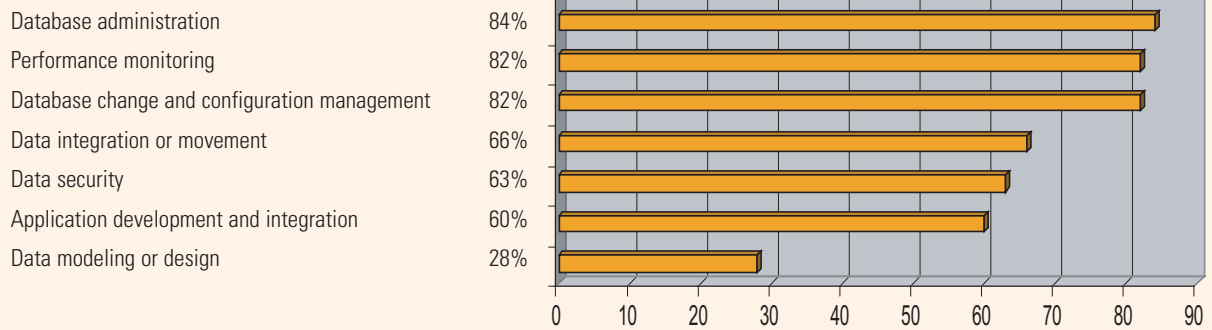


**FIGURE 6: Secondary DBMS Brand on Which Respondents Spend at Least Some Time**



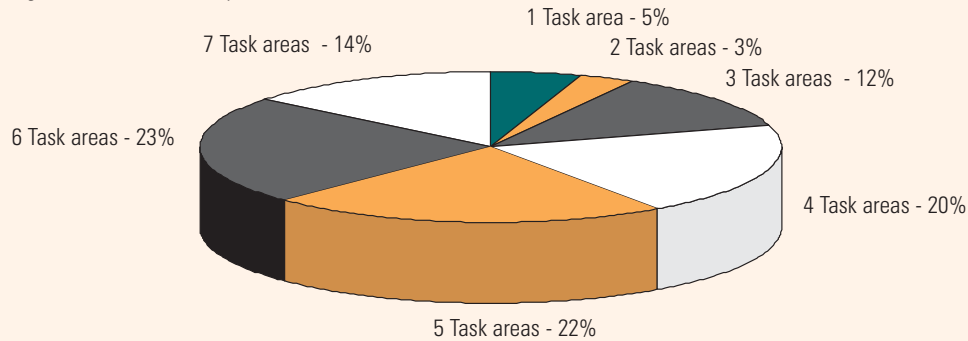
**FIGURE 7: Data Management Task Areas**

(Percent of respondents directly involved in each)



**FIGURE 8: Respondents Involved in Multiple Task Areas**

(Number of data management task areas and percent involved)





## DATA MANAGEMENT PRIORITIES

**Availability, security, and business intelligence are the top three challenges that will be faced by Informix managers over the coming year.**

The roles of DBAs and other data professionals are clearly shifting to more strategic business priorities. Data professionals are spending less time on technical details and spending more time on higher-value tasks for the business. This might include securing the database for greater compliance, ensuring that systems are secure, or ensuring that the right people are able to access the right data. Data professionals also need to increasingly take an enterprise view, and manage hundreds of servers, rather than just one particular application. “Data administrators must understand the relationships of their data, how it is used, and the business that they are a part of in order to better manage the data and access the data,” said one respondent, an IT director for a large school district. “A better understanding will improve the flow of information and enable others to obtain the information they need in a more understandable form and a quicker timeframe.”

Respondents were asked to provide what they consider to be the top three challenges in data management for the year ahead. (See Figure 9.) Informix site managers and professionals have a full plate for the year ahead, but **improving data recovery and availability** is top of mind for the largest segment of respondents (37%). Data has increasingly become an enterprise asset, versus departmental or individual assets. As a result, data quality and availability has become an essential piece of the data professional’s job. As data professionals assume a greater role in data stewardship and governance, there will be more of a drive to better assure data quality and availability, especially as companies increasingly turn to solutions around business intelligence and analytics for both short-term and long-term decision-making. DBAs are required to provide better reporting for the applications they manage, being able to do data cleansing and some transformation of the data, so that the systems data is better trusted.

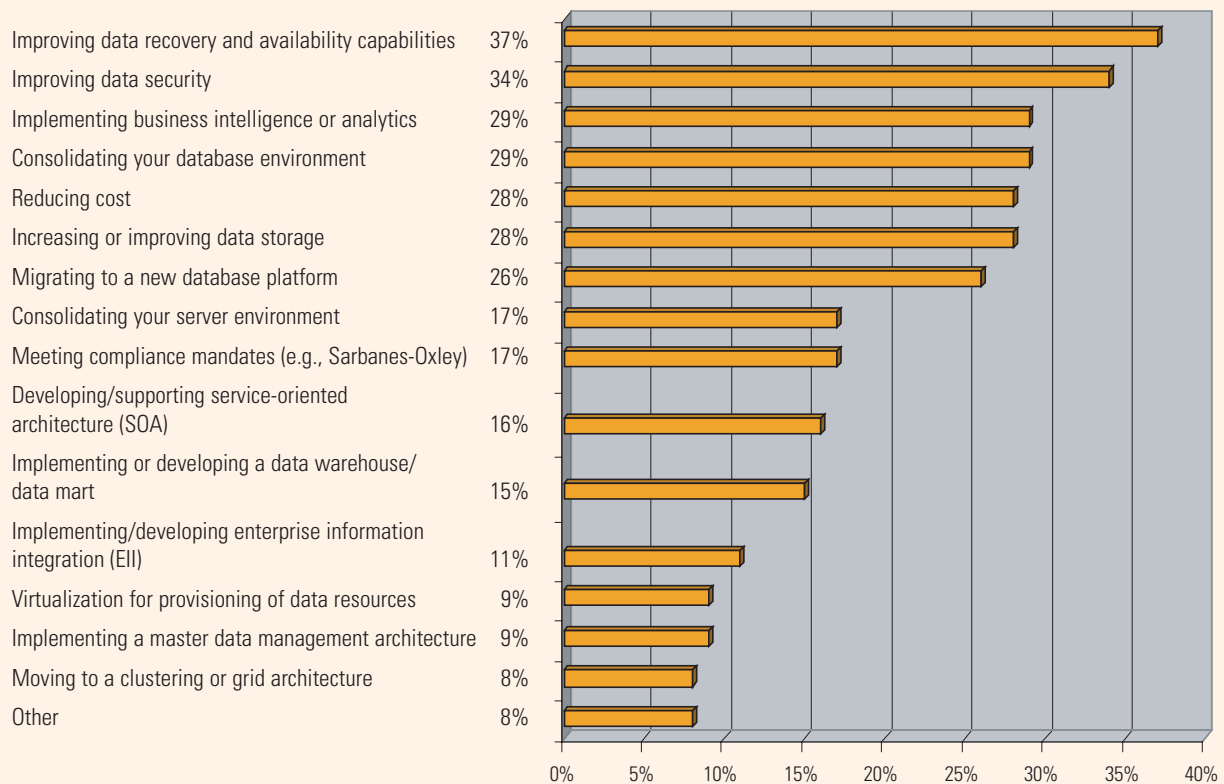
**Data security** is the second leading challenge that needs to be addressed, the survey found. More than a third of respondents, 34 percent, said that securing their database environments is the leading challenge for the year ahead. One respondent warned that with the opening up of data resources across the enterprise, not enough attention is being paid to data security issues. “There’s an increasing emphasis on making data available to everyone, but too little attention is being paid to security, privacy and auditing activities,” commented the DBA for a large high-tech manufacturer.

Another 29 percent consider the development of **business intelligence and analytics** to be their greatest challenge for the year ahead, a reflection of the growing interest among businesses in leveraging their data stores to gain competitive advantage, better anticipate market trends, and optimize operations. “I’ve been working with the business architect in designing and implementing a data model to Informix databases,” explained one respondent. “Nowadays, I’m a member of the business intelligence group. My first responsibility is to design a dimensional data model so that it could be the base of our analytical reporting in future. It will also help our fraud detection team in mining data to dig out various fraudulent activities.”

Twenty-nine percent of respondents are also focusing on **database consolidation**, in which various data silos from throughout the enterprise are brought together into fewer platforms to increase efficiency and lower the costs and risks of duplication. Correspondingly, another 28 percent of IIUG respondents are focusing on **reducing costs** over the coming year. **Increasing data storage** also weighs heavily on the minds of respondents, a concern also cited by 28 percent.

Priorities vary by the scope of the respondents’ jobs. For example, those with more specialized duties (directly involved with one to three of the seven task areas covered in this survey) were most concerned about implementing business intelligence or analytics (41%). Only 31 percent of “renaissance” professionals found this to be a major concern. Respondents in the middle, with four to five sets of responsibilities, had data recovery and availability on their minds (42%). The renaissance data professionals with multiple responsibilities (again, six to seven) were most focused on improving data security over the coming year.

The survey also found that the larger the company, the more likely some key issues will be top of mind. Respondents from larger companies (5,000 or more employees) are more likely to be focusing on data security over the coming year than their smaller counterparts with 100 or fewer employees (41% versus 27%). In addition, meeting compliance mandates is a far greater issue for Sybase professionals at larger companies (39% versus 8%).

**FIGURE 9: Top Data Management Challenges for 2007**

## DATA MANAGEMENT TOOLS

**Most Informix professionals in this survey do not have access to the necessary tools to accomplish such a wide range of tasks across multiple database platforms.**

Across most of the various task areas covered, respondents mainly rely on a combination of tools and manual scripting to do their jobs. For example, while database change and configuration management is one of the major activities for respondents, most reported that they rely on manual scripting to perform these tasks. A combination of scripting and tools was most frequently used (as a first choice) in the six other task areas (administration, data integration, performance monitoring, data security, and application development). This is a challenge, since three out of four also manage a secondary database environment, and the majority have jobs involving multiple types of tasks.

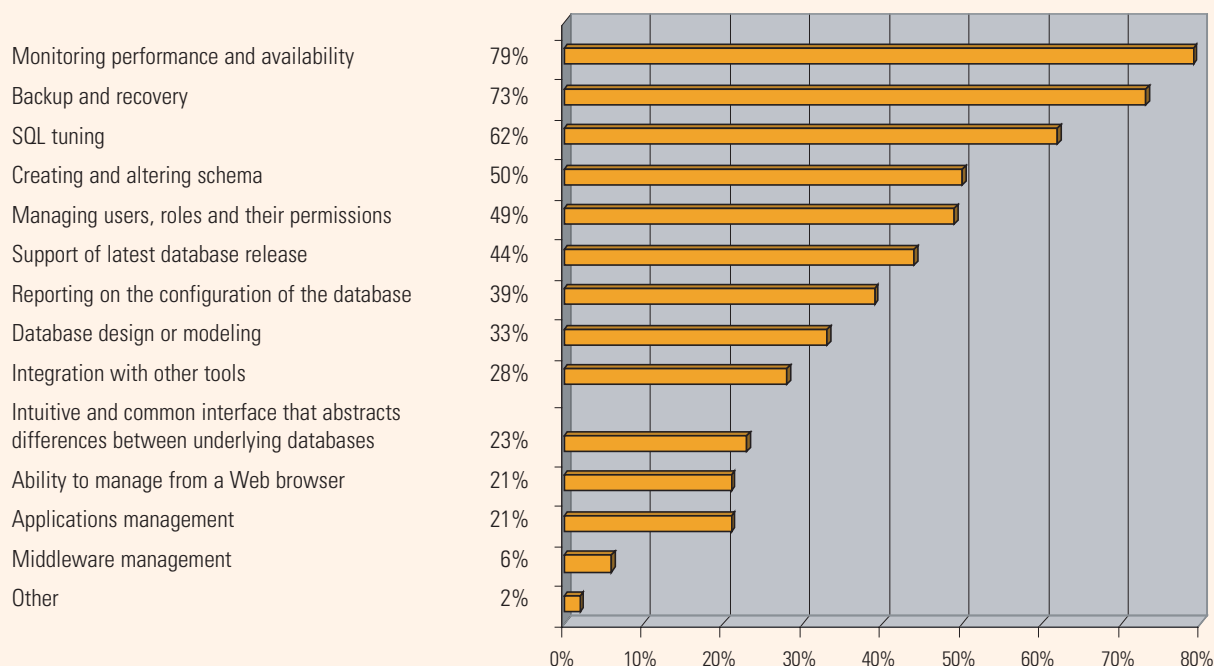
Three out of four respondents in the survey, 75 percent, rely on the dbaccess toolset to manage their data environments. Another 61 percent rely on other native toolsets included with their Informix environments. About 41 percent reported using the isql tool.

One out of five respondents to the IIUG survey have or are considering adoption of open source tools to assist in database management and development. At least 13 percent of respondents reported working with open source database tools, with another seven percent considering using such tools in the near future.

When it comes to the features or functions sought in the database tools for addressing some of these challenges, three out of four IIUG respondents, 79 percent, look for performance monitoring capabilities, the survey found. (See Figure 10.) Another 73 percent focus on backup and recovery capabilities, while 62 percent look to tools for SQL tuning capabilities.

On the following pages are greater results and details for the seven task areas identified for this survey.

**FIGURE 10: Most Important Features and Functions in Database Tools**

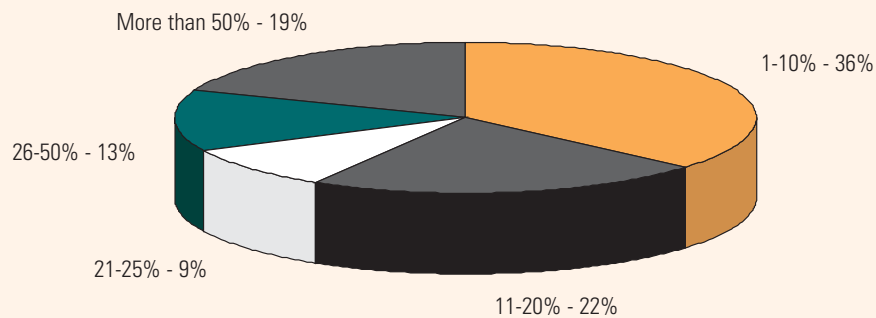
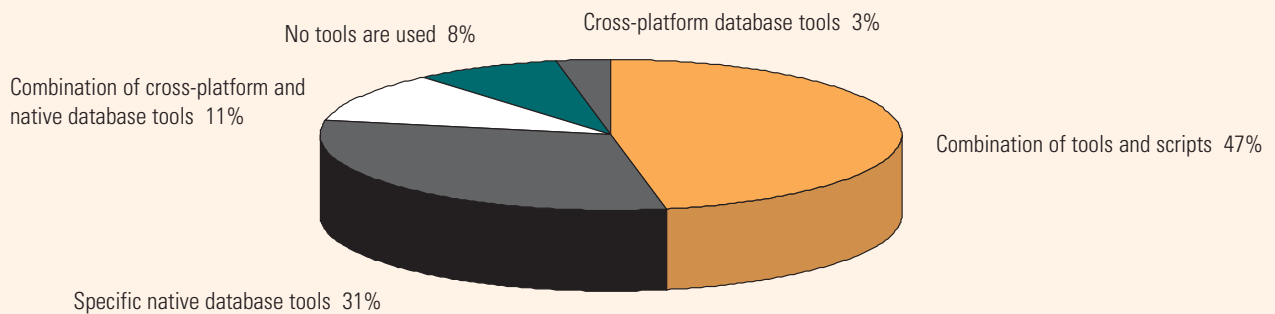


## DATABASE ADMINISTRATION

A large majority of IIUG members responding to this survey, 84 percent, reported that they are directly involved in database administration, which includes "traditional" DBA tasks such as availability, space management, schema changes, network connectivity, performance management, and capacity planning.

Only a part of the work week of Informix data managers participating in this survey is dedicated to traditional database administration tasks. Only 19 percent, in fact, estimated that they spend the bulk of their time each week (more than 50%) involved in administration tasks. (See Figure 11.) About 27 percent reported that the amount of time they spend on database administration tasks has increased over the past year, compared to 58 percent who said it has remained the same.

As shown in Figure 12, close to half of respondents that are directly charged with database administration, 47 percent, rely on a combination of tools and scripts to manage their environments. Another 31 percent rely on native toolsets provided with their Informix database products.

**FIGURE 11: Amount of Time Spent Per Week on Database Administration****FIGURE 12: Tools Used for Database Administration**

## DATABASE CHANGE AND CONFIGURATION MANAGEMENT

A large majority of IIUG members responding to this survey, 82 percent, reported that they are directly involved in database change and configuration management, making this the top category of activity, tied with performance monitoring for second place among vital day-to-day activities. (Database administration was the top activity cited by respondents.)

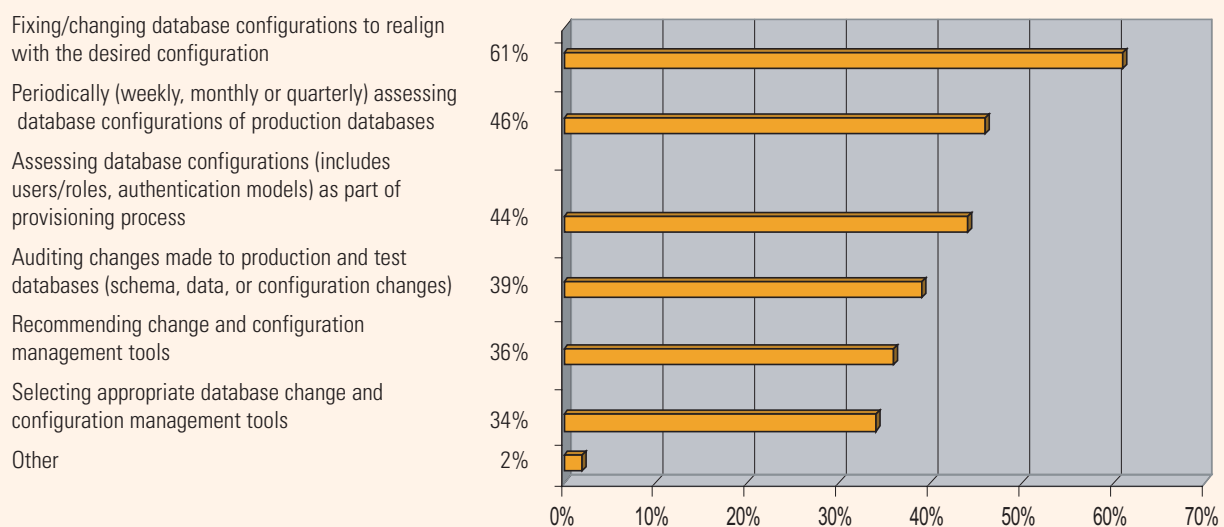
Database change and configuration management involves fixing/changing database configurations to realign with the desired configuration, and periodically assessing database configurations of production databases. Many respondents consider change and configuration management to be part of their jobs, but it is not a significant part of their work week. Only one percent said these activities take up the bulk of their time (more than 50%), and six percent said this activity takes up at least 25 percent or more of their work-week. A majority, 73 percent, said that no more than 10 percent of their time per week is involved in change and configuration management.

The survey results suggest that this mix of responsibilities is likely to remain unchanged for most part - about 20 percent reported that the amount of time they spend on these tasks has increased over the past year, while 68 percent said it has not changed. A lack

of automated tools may cause change and configuration management, however, to continue to consume more of respondents' jobs. Close to three out of four respondents, 74 percent, rely on manual scripting to assess their database configurations. Another 38 percent employ administration tools, while seven percent rely specifically on change management tools.

Respondents from the total survey group spend the greatest amount of time fixing or changing database configurations to realign with the desired configuration, as cited by 61 percent. (See Figure 13.) Another 46 percent said they are involved in periodically (weekly, monthly or quarterly) assessing database configurations of production databases. Another 44 percent are directly involved in assessing database configurations (includes users/roles, authentication models) as part of the provisioning process. A large segment of respondents, 39 percent, is also engaged in auditing database changes.

**FIGURE 13: Areas of Responsibility for Database Change and Configuration Management**



## PERFORMANCE MONITORING

More than eight out of 10, or 82 percent of IIUG members responding to this survey, reported that they are directly involved in database performance monitoring, which ranks in second place along change/configuration management. (Again, database administration was the top activity cited by respondents.)

To help troubleshoot and optimize the performance of today's complex databases, database professionals need the tools and know-how to monitor the activity of today's increasingly complex systems. Performance monitoring tasks include the performance and tuning of databases, database configuration and setup, space management, and creating or reviewing the logical and physical database model. Database monitoring tools can present statistical data in a meaningful way so that the database administrator or developer can confirm acceptable availability and performance, or recognize a potential threat and take action.

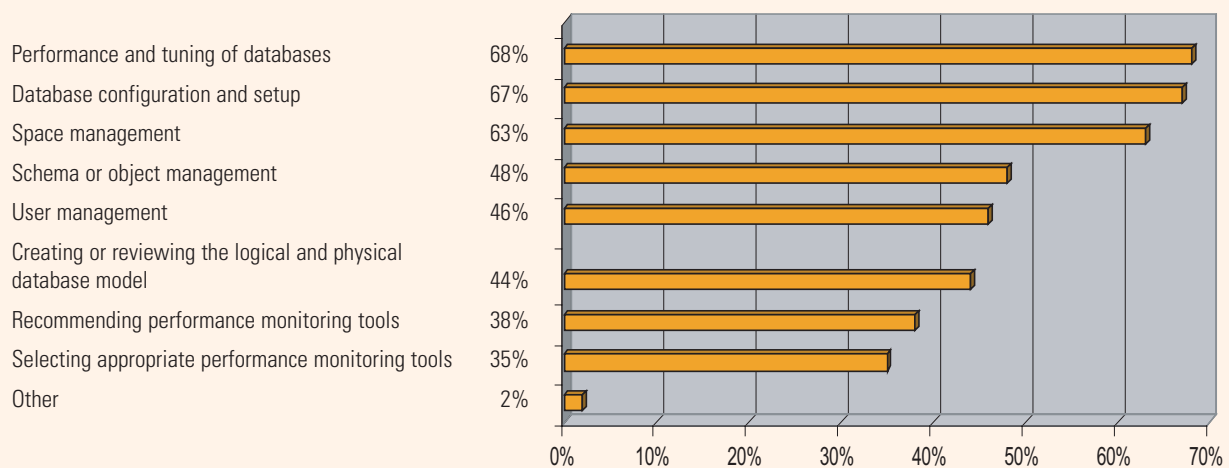
Only eight percent of the respondents reported that they spend significant amounts of time on performance monitoring (encompassing more than 25% of their time per week). This time commitment is not likely to change soon - only 25 percent reported that the amount of time they spend on performance monitoring has increased over the past year, while 64 percent said it has remained the same.

Close to three out of five respondents, 68 percent, reported that they conduct ad hoc performance monitoring. Another 34 percent also perform a combination of both real-time and historical performance monitoring.

In terms of tool adoption, most respondents, 52 percent, rely on a combination of tools and scripts to monitor the performance of databases. Another 29 percent use native tools provided with their Informix database products. Another 11 percent rely on a combination of cross-platform and native database tools.

For the most part, respondents from the total survey group spend the greatest amount of time in the performance and tuning of databases, as cited by 68 percent. (See Figure 14.) About the same number, 67 percent, reported that they oversee database configuration and setup, while 63 percent concentrate on space management. About 48 percent are charged with schema or object management as part of this line of responsibility, while 46 percent focus on user management issues.

**FIGURE 14: Areas of Responsibility for Database Performance Monitoring**



## DATA INTEGRATION AND DATA MOVEMENT

Two-thirds of IIUG members responding to this survey, 66 percent, reported that they are directly involved in data integration and data movement, which involves development and assistance with strategies to acquire, transform, and access data, assisting in extract-transform-load (ETL) processes, and assisting in enterprise information integration efforts (EII).

At this time, data integration tasks do not take up a great deal of respondents' time. Seven out of 10 of respondents involved in data integration, 70 percent, said that less than 10 percent of their work week is taken up by data integration and data movement activities. Only five percent, in fact, reported that such work takes up significant time (more than 25% of their average work weeks).

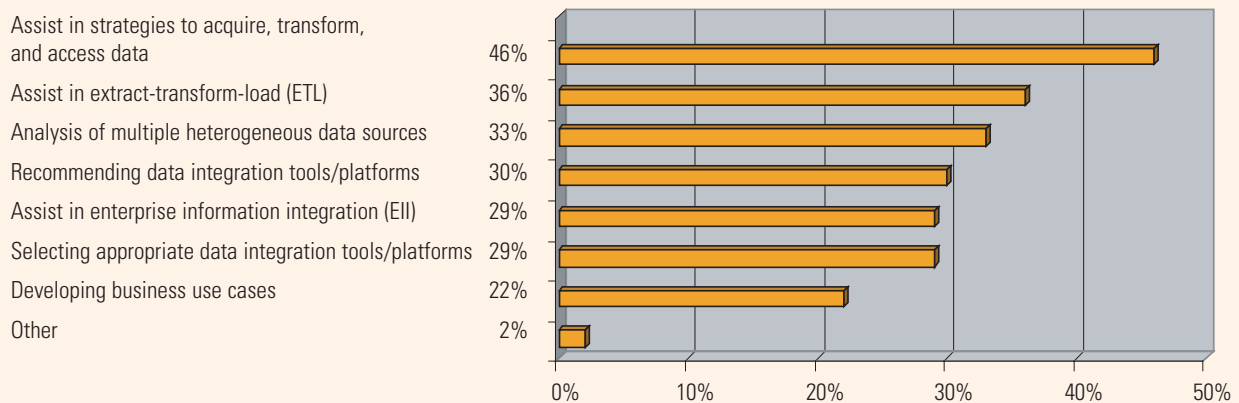
However, data integration is becoming a larger part of respondents' jobs. About 37 percent reported that the amount of time they spend on these tasks has increased over the past year, while 55 percent said it has remained the same. Only five percent noted a decrease in such activity.

More than half of the respondents, 55 percent, rely on a combination of tools and scripts to facilitate data integration and movement between their systems. Another 15 percent rely on a combination of cross-platform and native database tools, while 14 percent use

native toolsets that came with their Informix or other database environment.

Respondents from the total survey group spend the greatest amount of time involved in assisting in development and seeing through strategies to acquire, transform, and access data, as cited by 46 percent. (See Figure 15.) Another 36 percent also reported that they are charged with extract-transform-load (ETL) functions, in which data is uploaded on a regular basis to an environment such as a data warehouse. Another 33 percent also engage in analyzing multiple heterogeneous data sources for access and integration. About 30 percent are in positions in which they recommend the specific data integration tools and platforms to be adopted.

**FIGURE 15: Areas of Responsibility for Data Integration**



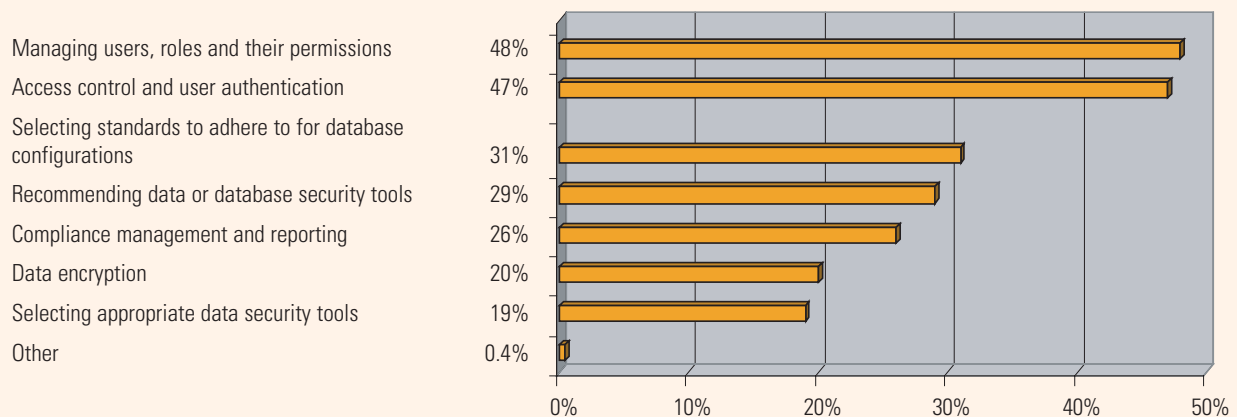
## DATA SECURITY

At least two-thirds of IIUG members responding to this survey, 63 percent, reported that they are directly involved in data security, which involves developing access control and user authentication, managing users, roles and their permissions, selecting standards to adhere to for database configurations, and compliance management and reporting.

Data security isn't necessarily a time-consuming task, the survey revealed. More than four out of five respondents involved with data security, 83 percent, said that it takes up no more than 10 percent of their work week. This time commitment to data security remained steady for most survey respondents over the past year - 60 percent said the amount of time dedicated to security has remained the same, compared to 30 that reported spending more time in this task area.

More than two out of five of Informix respondents responsible for data security, 42 percent, rely on a combination of tools and scripts to do the job, the survey found. Another 25 percent rely on native database tools that come with their database environments.

For the most part, respondents from the total survey group spend the greatest amount of time involved in managing users, roles, and permissions, as cited by close to half (48%). About the same number, 47 percent, also reported that they are charged with access control and user authentication. About 31 percent are engaged in selecting standards to adhere to for database configurations. (See Figure 16.)

**FIGURE 16: Areas of Responsibility for Data Security**

## APPLICATION DEVELOPMENT AND INTEGRATION

The lines between database administrators and developers are blurring. The DBA needs to take an active role in development, and the developer has to be a lot more in sync with the DBA. They have to ensure that the requirements of the application are well thought-out and implemented in conjunction with the database environment. Many industry observers see a growing convergence between the jobs of administrators and developers, especially since there's a need for administrators to get involved earlier in the application development lifecycle. As one respondent, the chief DBA with a large financial services firm, put it: "Data administrators will have to learn a lot about all software lifecycle phases and become involved in them."

Changes in the business also drive such convergence. Another respondent, a DBA with a large high-tech manufacturer, stated: "In my company, application administration (PeopleSoft application servers, Web servers, etc.) has been consolidated with database administration responsibilities. So it has become essential that we expand our skill set into the application support arena more than ever and we are required to thoroughly understand application changes and gauge their overall impact."

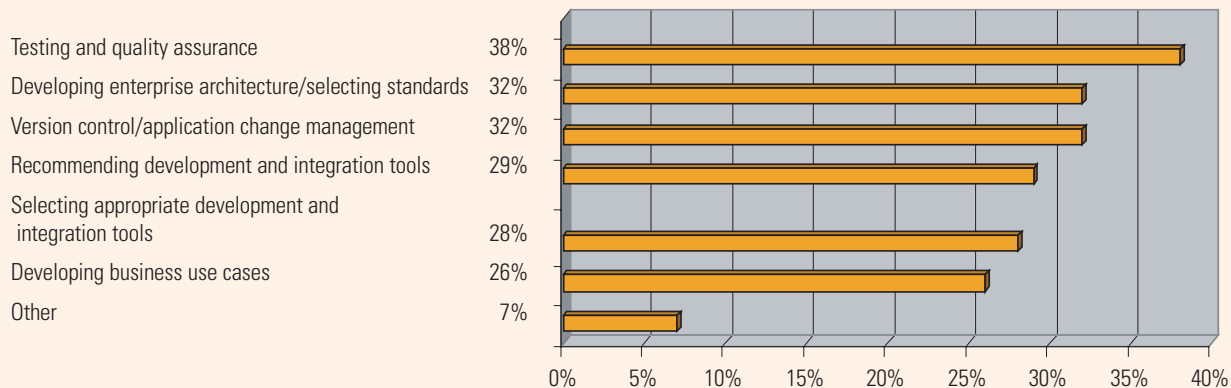
Close to two out of three survey respondents, 60 percent, reported that they are directly involved in application development and integration, which involves developing enterprise architecture/selecting standards, application testing and quality assurance, and version control/application change management.

Application development and integration is a time-consuming aspect of respondents' jobs. Close to 40 percent, in fact, said that such projects take up more than 20 percent of their time per week. For a third of the respondents engaged in application development, these activities are becoming a greater part of their jobs. About 32 percent reported that the amount of time they spend on these tasks has increased over the past year, while 61 percent said it has remained the same.

A sizeable segment of respondents, 43 percent, rely on a combination of tools and scripts to accomplish application development tasks. Another 25 percent use a combination of cross-platform and native database tools, and 19 percent purely use cross-platform development tools. Only 15 percent use specific native development tools that came with their databases.

For the most part, respondents from the total survey group are most likely to oversee testing and quality assurance of applications, cited by 38 percent. About a third, 32 percent, focus on developing enterprise architecture and standards selection, and a like amount are involved with version control and change management. (See Figure 17.)



**FIGURE 17: Areas of Responsibility for Application Integration and Development**

## DATABASE MODELING OR DESIGN

Overall, 28 percent of IIUG members responding to this survey reported that they are directly involved in database modeling or design, which involves physical data modeling with stored procedures, user-designed functions, and triggers, logical data modeling with attributes, specific pieces of information to be included, defining data requirements, normalizing to reduce data redundancy, and denormalizing to improve performance.

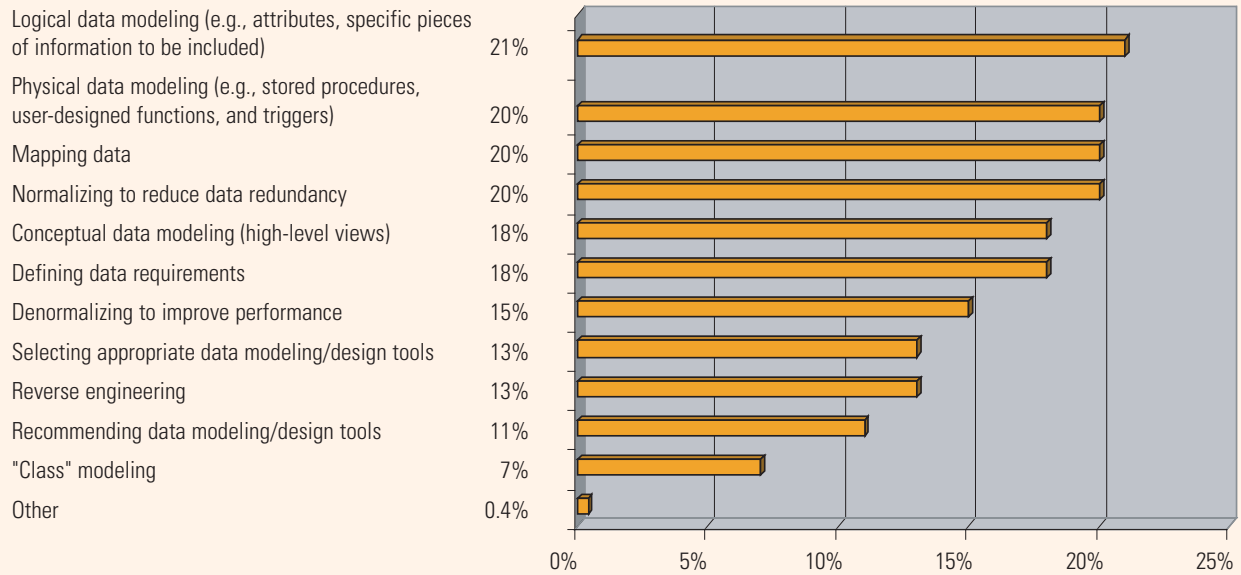
With pressure to assure the quality of rapidly proliferating data, and be able to deliver it to the business, there's increasing movement to automate many low-level database functions, to enable data professionals to focus on business issues. But the technology is also expanding, and while many DBAs are not XML-literate, they'll have to learn XML and XML schema as more XML-based data enters the DBMS environment. Vendors are increasingly responding with more autonomic computing initiatives that automate DBA tasks. The use of data modeling tools is also providing automated shortcuts to application rollouts.

The Informix professionals responding to this survey said that they do not spend a great deal of time in database modeling or design. A majority, 59 percent, reported that no more than 10 percent of their time per week is involved in this area of activity. About 26 percent reported that the amount of time they spend on these tasks has increased over the past year, while 60 percent said it has remained the same.

A third of the respondents involved with database modeling, 33 percent, rely on a combination of tools and scripts to help with this area of activity. Nineteen percent of respondents use their native database toolsets, while another 19 percent use cross-platform database tools, and the same number (19%) use a combination of both cross-platform and native tools to get the job done.

Respondents from the total survey group spend the greatest amount of time involved in logical data modeling, as cited by more than one out of five respondents (21%). (See Figure 18.) Another 20 percent conduct physical data modeling. The same number (20%) also engage in data mapping, and likewise focus on normalizing data to reduce redundancy (20%).

For some respondents, modeling and design functions go well beyond the database. "My role is not only to design and administer a database. I assist in developing consistent business rules and enforce the rules via application design," said the senior systems analyst for a large county government. "I also am required to assist departments with conflicting data requirements and business rules."

**FIGURE 18: Areas of Responsibility in Data Modeling or Design**

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