

Tools for Business Intelligence

by

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Executive overview

Business Intelligence (BI) is no longer a new buzzword. It has been part of the technology lingua franca for almost a decade, so you would think its value and its implementation would be fairly pervasive by now. But a recent survey (conducted and published by *Knowledge Management* magazine, June 2001) shows that there is still a great deal of fundamental education to be accomplished in regard to the imperative nature of embracing BI for those companies who are making great strides in e-business. 26.3% of responders did not have a strong sense that knowledge sharing within the corporation was needed. Nearly the same percentage of responders (23.5%) felt that the need for knowledge sharing was clearly not supported by top level management. How can these numbers still be so high after...

- ✍ years of educating the business community on the value of data warehousing?
- ✍ after years of proving its worth in organizations around the globe?
- ✍ after the selection of BI tools is reaching a level of maturity that certainly softens the demand on local IS resources to implement such a warehouse?

There are many sources for learning more about the concept and value proposition for implementing a business intelligence solution. There are also many sources for reading about effective solutions that have been achieved by organizations big and small. This paper is designed to focus instead on the third bullet above. That is, this paper specifically discusses the wealth of IBM and IBM Business Partner business intelligence tools that are available for use on the IBM ^ iSeries family of servers. This paper also shows how the Tools Network can be of help in the process of identifying applicable tools.

Business Intelligence is one of the six major application modernization strategies for iSeries (see reference figure 1 below). These strategies are designed to bring iSeries from a green screen 5250 proprietary back-office system to one ready and able to handle the demands of e-business and other modern application interfaces.



Figure 1: Aligned with Brand Strategies

The theory behind these six modernization strategies is to provide the strength and functionality necessary to catapult iSeries customers into complete e-business enterprises. In fact, the new iSeries model delivers one of the strongest end-to-end, e-business platforms on the market today. The focus of each pillar of strength is as follows:

- ✍ [Application Reface and Redesign](#) — Tools that provide a Graphical User Interface (GUI) for existing 5250 applications, and help redesign existing applications to take advantage of OS/400 features such as the Integrated Language Environment (ILE) and DB2 UDB for iSeries.
- ✍ [Business Intelligence](#) — These tools transform the data of an organization into meaningful business information which can then be used to make strategic decisions.
- ✍ [e-business and e-Commerce](#) — These tools extend core applications to the Web. This can involve the simple creation of an electronic shopping cart; or can be more complex, involving a complete end-to-end integrated application from supply chain management to customer relationship management.
- ✍ [Lotus Domino and Lotus Notes Integration](#) — Tools that allow developers to build new collaborative Lotus® Notes® applications and/or to seamlessly integrate Lotus Notes clients with existing iSeries applications.
- ✍ [Cross-Platform Integration](#) — Tools that help build and manage applications that interoperate across disparate server platforms, databases, and clients.
- ✍ [Application and Systems Management](#) — Tools that make it easier, and less expensive, to manage both the system and applications that run on the system. These tools can also extend the capabilities of OS/400 security, automate operations, streamline backup and recovery, control object distribution, and much more.

This white paper focuses on the second pillar, business intelligence.

IBM philosophy

What is the big picture of e-business on iSeries? How is IBM positioned to support customers for this generation of computing? Since our philosophy is mentioned in the other papers in this series you may have seen it earlier. However, this is so critical to the understanding of the complete modernization strategy of IBM that it bears repeating — the IBM e-business initiative advocates server-centric, thin-client, network computing based on IBM servers and open, standards based interfaces. This company-wide philosophy is based on a strong belief that e-business is the "sink or swim" strategy for successful organizations in the 21st century.

IBM believes that business transformation and integration are essential elements to unlocking the door to e-business success. Simply placing a catalog on the web and competing on price alone is a road to ultimate failure as margins are squeezed and profits fall. The last 5 years have seen thousands of dot coms become dot bombs as they struggled unsuccessfully to find a significant value add or marketing edge. IBM holds that the extent to which an organization will profit in this challenging arena will be determined not just by the way it uses software to extend and enhance its existing business processes, but more crucially, how the business model itself evolves into a focused e-business. A company cannot merely incorporate e-business technologies into an existing IS system, rather, it must become an e-business end-to-end. Integrated Business Intelligence is the hub around which an e-business revolves. If set up and used correctly BI tools can provide the invaluable information that lets an e-business capitalize on the buying patterns of its customers, leverage its inventory resources and deploy its sales force in the best possible ways to maximize sales revenue. Timely BI information yields the plans for targeted marketing campaigns that increase sales without sacrificing profits. Driving the reach of the world wide web to reach customers and back end Business to Business transactions to integrate with its suppliers, BI provides the advantage a business needs to transform itself into a successful e-business.

One destination, many paths

As any well-worn traveler can attest, there are typically several choices available for getting from point A to point B. But when time is of the essence, the quickest avenue to travel is the most direct, unencumbered path toward a destination. The same can be said for solving e-business problems — there are numerous choices to be made in terms of achieving and maintaining a seamless e-business operation, but the way to success is choosing the mix of tools that will allow a company to rise above its competition. For example, some e-business adopters embrace Java and other new technologies while others do not. Some will simply apply a graphical front end to existing RPG applications, while others will develop new web-enabled applications from scratch specifically to support e-business.

Some will simply pour over the sales history reports for hours at a time looking for patterns while others will install a data warehouse front ended with graphical tools distributed to end users and let the tools to in minutes what the human eye does in days or weeks. Some will want to deploy the solution to the Internet via a browser interface, others will want a Windows form based GUI for their intranet users.

The challenge for a large proportion of companies is finding ways to utilize accumulated data more effectively without slowing down entire systems with solutions that do not compliment each other. When it comes to managing IT resources, two issues which are typically a high-priority for CEOs are:

- 1) increasing globalization and therefore, in effect, global competition and
- 2) improving knowledge management to ensure existing data can help the company compete.

However, change is never easy, particularly for countless corporations that envision the "here and now" rather than the "now and future" options. Fortunately, IBM and its partners have a wealth of tools to help e-businesses perform on a higher, more efficient level. iSeries business intelligence tools are designed to solve immediate e-business problems and position users to take advantage of future opportunities. In addition, these tools can ease the transition from traditional development methodologies to state-of-the-art e-business applications.

Converting Raw Data to Action

Companies are greatly hindered if their existing data cannot be used to facilitate growth of profits because it isn't organized properly. The challenge is making past data work more effectively today — and tomorrow. To meet this challenge, it is critical to understand the relevance of each data component and to have tools that can help turn the data into action.

For example, the value in capturing **data** related to each customer transaction is shown in this chart (follow the top bullets in each of the three columns). Capturing customer transaction detail allows for the segmentation of customers according to similar purchasing behaviors. This segmentation lets the marketing team glean a deeper **insight** into buying patterns and trends. Once these insights are quantified, **action** can be taken, that is, marketing programs can be designed to further motivate that customer segment to make additional purchases.

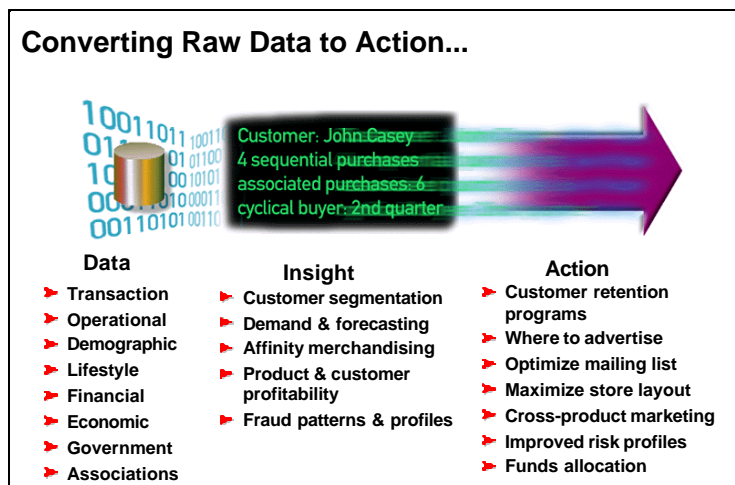


Figure 2: Converting Raw Data to Action

Information-based Decision Making

Many e-businesses have incredible amounts of transactional data being generated on a daily basis through normal company operations, yet the data is inaccessible to business analysts for a myriad of reasons: concern over negative effects of query and reporting on the performance of the operational systems; transaction data not being stored in presentable formats; a limited history or lack of currency of the data rendering it ineffective; inconsistent storage; data being stored in too many areas and in too many different formats; and the lack of effective tools. Ironically, many e-businesses already possess the tools that will

allow them to facilitate decision-making, but do not know how to utilize these tools successfully.

What CEO would not want to make faster and more accurate decisions that stem from a more effective picture of the data that is already routinely captured through the IS infrastructure — while also increasing the productivity of corporate workers? What e-business would not benefit from more accurate trend analysis and forecasting while critical data remains insulated from changes in organization or data sources? When a company can focus on the "right" customers, items, markets, or processes while reducing inventory and increasing sales that ultimately maximize its profit; it can distinguish itself from its competitors. BI (Business Intelligence) Tools from IBM help managers sort through the confusion, so that they can make better decisions.

iSeries Business Intelligence Scalability

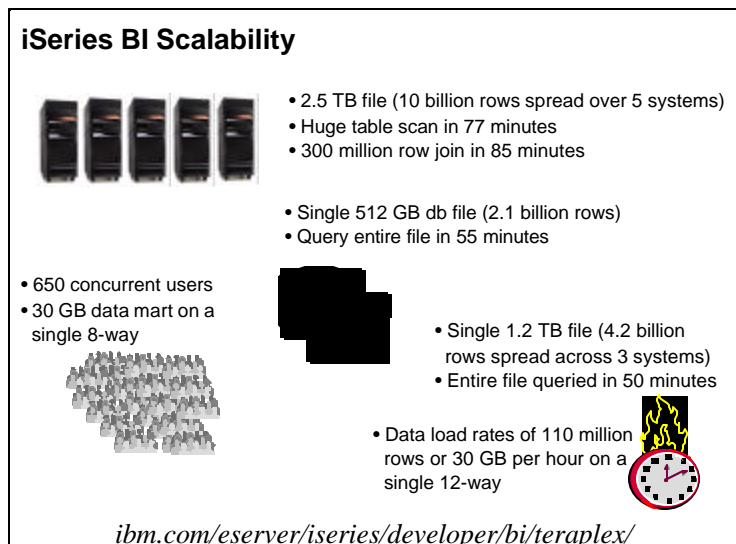


Figure 3: iSeries BI Scalability

At the IBM iSeries Teraplex Center in Rochester, Minnesota, engineers and developers have investigated, researched, tested, and demonstrated the scalability of the BI implementations on iSeries servers. They have found that these BI implementations are powerful enough to handle practically any customer's needs. Here are some of the recent results achieved in the Teraplex Center. (Additional information on the IBM Teraplex Center can be found online at: ibm.com/eserver/iseries/developer/bi/teraplex/):

- ✍ A database that contained 2.5 TB (packaged into 10 billion rows that were spread across five iSeries servers) was table scanned in just 77 minutes. Using this same database, 300 million rows were joined in just 85 minutes.
- ✍ A database that contained 512 GB (packaged into 2.1 billion rows) was loaded onto a single iSeries server. Yet a query of the entire file was accomplished in only 55 minutes.
- ✍ A database that contained 1.2 TB (packaged into 4.2 billion rows and spread across three iSeries servers) was queried, in its entirety, in just 50 minutes.
- ✍ A single 12-way iSeries server supported load rates of 110 million rows (or 30 GB per hour).
- ✍ A single 8-way iSeries server was loaded with a 30 GB data mart, and was "hit" with 650 concurrent users — without a significant slowdown of the system.

The iSeries family of servers has created quite a stir among outside consultants and researchers who have recognized the servers and the IBM BI Tools as forces to be reckoned with in the industry:

- ✍ According to Tom Bittman of Gartner Group Research, "Through 2002, at least 70 percent of iSeries customers' data marts will be on iSeries (0.8 probability)."
- ✍ Colin White, an analyst for DataBase Associates International said, "iSeries is an ideal platform for building a variety of different warehouse systems from large enterprise data warehouses to small departmental ones."
- ✍ The Bloor Research Group stated that "DB2 UDB for iSeries is, in our view, the database in the DB2 family which has the most sophistication in its parallel implementation, and the iSeries development plans are sound."

The Pillar of Business Intelligence

The job of turning data into meaningful information for the e-business organization is a daunting task for those who do not know where to begin, or how to implement the changes. The BI plan from IBM is a top-to-bottom, thorough examination of the needs of each customer. By following a basic formula, customers can be helped step-by-step on every level. The ultimate goal — the reorganization, transformation, and analysis of the corporate data — can be achieved through a detailed checklist designed to facilitate a seamless transition.

First, data is extracted from existing databases. This data is then summarized and "cleansed" (duplicates removed, etc) before placing the results into a corporate warehouse structure on a dedicated server or partition. Next, specialized data "cubes," or datamarts are created from the cleansed and consistent information found in the data warehouse. Graphical query and report writing tools, which can access the data marts and/or the data warehouse, is provided to the e-business user. These tools may also include web-based presentation tools in order to extend the access and use of the data throughout the organization. As use of the warehouse system grows and matures, the warehouse database administrator assists in fine-tuning and optimizing the warehouse query environment.

Some corporations try to solve their e-business problems simply by analyzing mounds of data without investing in the initial steps of data replication, transformation, and cleansing. Unfortunately, usability issues routinely arise when this step is bypassed. Educating the user community on the data warehouse and its contents, through the use of descriptive business metadata, is essential in making the data warehouse more useful. This step is critical if the company wishes to fully utilize the assortment of end-user visualization and data presentation tools.

The organization must also decide whether to add the new BI workload to the existing operational system (with a corresponding upgrade in hardware), or whether to physically separate the two workloads by placing the BI solution on its own server. Most often a separate system for BI is chosen because system administrators are often concerned about the impact of BI queries on performance of other applications — and rightfully so. If a non-dedicated environment is going to be implemented - that is, if the same iSeries server will be utilized for both core business and BI applications - then the company's IT organization (or its BI solution provider) will need to understand the issues associated with combining transactional and analytical processes on a single server model so that they may keep both workloads running at balanced and optimal levels. If a company decides to take this route, logical partitioning of the two different workloads is something that should be seriously considered.

Business Intelligence Tools

Most existing applications revolve around the day-to-day operations of the business — selling things and accounting for those sales. Many customers have recognized the need to look beyond the tactical (what do I do today) and see the need for strategic planning applications. Creating these "Business Intelligence" applications requires a completely different set of tools. There are tools to handle the replication and cleansing of the data placed in the data warehouses or data marts. There are tools for creating and managing the warehouses or data marts. There are tools for the end user to build their own access to the information as well as tools for developers to build more complex applications for the enterprise. These types of tools can be found listed in the Tools Network Program.

NOTE: The following list is a brief description of each type of tool. The most current listing of BI tools can be found at:

www.ibm.com/eserver/series/developer/tools

When entering the Tools Network Web site, a list similar to this will appear. By choosing a specific category, the tool selection can be narrowed to a specific task, making the search more efficient.

- ✍ **Business Intelligence Application Development** — Provide an application development environment which is particularly well-suited for developing Business Intelligence applications integrated with business applications.
- ✍ **Business Intelligence Solutions** — Industry specific or other turn key solutions for Business Intelligence.
- ✍ **Data Mining/ Statistical Analysis** — Perform iterative processing of data, searching for patterns in buying habits, etc. Can be rules based to search for specific patterns.
- ✍ **Data Replication** — Used to select and copy data from one system to another, typically a production system to a specialized BI system.
- ✍ **Data Warehouse Management** — Used to define and manage the data placed in the "warehouse". These tools do not to perform queries or analytical processing.
- ✍ **ETL** — Perform Extraction/Transformation/Load functions that include capturing data, changing the format, cleansing data, and loading source data into the data warehouse.
- ✍ **OLAP** — Provide capabilities for Online Analytical Processing. They include analytical processing over historical data. Some include features to "drill down" into the data for further results.
- ✍ **Performance/Tuning** — Help make queries run faster and prevent long running queries from affecting system performance.
- ✍ **Query & Reporting** — Used by end users and analysts to present the results of queries into the historical data either to a display or printer.

Now, for a closer look at these categories of business intelligence tools...

Business Intelligence Application Development Tools

The Tools Network has tools used to integrate business intelligence solutions with existing applications. **Excel Data XL/InfoSuite** is a tool based on OLAP technology stored in DB2 UDB for iSeries. It provides users the ability to create reports, initiate on-line inquiries, and extract to PC tools or Lotus Notes. **GeneXus Gxplorer** is a product that contains an OLAP module that allows users to run analytical reports that can be imported to Microsoft Excel. The product includes a metadata module that allows analysts the capability to design dimensions and measures. **Lansa/Client** is a graphical tool that allows end-users to create complex reports that can be published to the Web. It has an OLAP engine and is integrated with Crystal Reports, a popular Windows report product. **Magic/400** is a tool that allows developers create front-end GUIs on either new or existing business applications. Existing analytical report applications can be deployed to the Web. **mrc-Productivity Series** is a fourth generation language(4GL) tool used by developers to generate executive reporting applications that include data warehouse and data mining features. The reports can be deployed as a client/server application in Visual Basic or as a thin client application in a browser. mrc also serves as the North American affiliate of Olympic Group and their amis product. **Orenburg Board Management Intelligence Toolkit** has a multi-dimensional engine that includes on-line visual modeling. **ShowCase Strategy** is a tool that includes data warehouse management modules and end-user report development and deployment. Strategy can be used to import data from Microsoft SQL Server and Oracle on a UNIX AIX server.

Figure 4 (below) shows the Tools Network vendors that provide business intelligence development tools.

Excel Data XL/InfoSuite	www.exceldata.com
GeneXus Gxplorer	www.genexus-usa.com
Lansa/Client	www.lansa.com
Magic/400	www.magicsoftware.com
mrc-Productivity Suite	www.mrc-productivity.com
Orenburg Board Mgt Intelligence Toolkit	www.board.com
ShowCase Strategy Suite	www.spssshowcase.com

Figure 4: Tools Network vendors that provide BI development tools

Business Intelligence Solutions

Industry specific tools that provide business intelligence features are listed below. **IBM EZMart for Profitability** is a tool used to create decision support systems and data warehouses for the banking industry. It provides specific financial reporting that includes customer profitability, product profitability, and location profitability. **InfoManager CRM** is based on Lotus Notes and provides customer profiles, contact management, campaign management, customer segmentation, and target marketing. **InfoManager Planner** is a tool that has a Microsoft Excel user interface and is used for closed-loop budgeting and rolling forecasting.

Silvon Stratum Analytic Applications contains different modules for performing specific analytical reporting. Stratum contains modules such as sales performance, marketing performance, manufacturing performance, procurement performance, e-business performance, and financial performance.

Figure 5 (below) shows the Tools Network vendors that provide application management solutions.

IBM EZMart for Profitability	
ibm.com/solutions/businessintelligence/pdf/ezmart.pdf	
InfoManager CRM	www.infomanager.fi
InfoManager Planner	www.infomanager.fi
Silvon Stratum Analytic Applications	www.silvon.com

Figure 5 — Tools Network vendors that provide application management solutions

Data Mining and Statistical Analysis

These tools can help iSeries customers uncover hidden business opportunities. Other features of these tools include trend analysis and statistical reporting. This is critical to iSeries developers who are testing their large database access programs on non-production systems. **IBM Intelligent Miner™ for Data** has a wide variety of business applications that include product associations, sequential buying patterns, and predictive customer buying algorithms. **Showcase** provides support for planning and forecasting. **Clementine** is a workstation product that works in conjunction with Essbase on the server to search for patterns and relationships at the desktop.

Figure 6 shows the Tools Network vendors that provide data mining and statistical analysis solutions.

IBM Intelligent Miner for Data	ibm.com/software/data/iminer/fordata/
Showcase/SPSS Clementine	www.showcasecorp.com
Showcase/SPSS Essbase	www.showcasecorp.com

Figure 6 — Tools Network vendors that provide data mining and statistical analysis solutions

Data Replication

Data replication tools allow customers performing business intelligence activities to copy production data to another system. This allows customers to offload resources from their production environments. **CommerceQuest eAdapter™** is a suite of adapters that transport data across multiple platforms and multiple business applications. **DataMirror® Transformation Server®** is a tool that can replicate databases across multiple platforms. This server includes an application programming interface (API) that can be incorporated in existing applications. **IBM**

DataPropagator™ can be used to transfer local databases to other platforms at specified time intervals. **IBM DB2 Warehouse Manager** moves data directly from source-to-target and controls the server on which transformations take place with distributed warehouse agents. **IBM DB2 OLAP Builder** is a tool that supports data replication for data warehouses. **OmniEnterprise™** from **Lakeview Technology** supports a variety of data movement methods that include 'near real-time' data synchronization, transaction bundling, replication monitors, and complete database replication. **Trader's Quick-EDD** can be used to selectively replicate data to non-DB2 UDB databases, such as Microsoft SQL/Server and Oracle. **Vision Suite™** from **Vision Solutions®** supports bi-directional data replication in multi-platform environments and supports replication between most of the popular database products.

Figure 7 shows the Tools Network vendors that provide data replication solutions.

CommerceQuest Data Integrator	www.commercequest.com
DataMirror Transformation Server	www.datamirror.com
IBM DataPropagator	ibm.com/software/data/dpropr/
IBM DB2 Warehouse Manager	ibm.com/software/data/db2/warehouse/
IBM DB2 OLAP Builder	ibm.com/software/data/db2/
Lakeview OmniEnterprise	www.lakeviewtech.com
Trader's Quick-EDD	www.quick-edd.com/uk/
Vision Solutions Vision Suite	www.visionsolutions.com

Figure 7 — Tools Network vendors that provide data replication solutions

Data Warehouse Management

The Tools Network has products that define and manage data warehouses. **RODIN** from **Coglin Mill** is a tool that can manage the user and data rules for the data warehouse. **IBM DB2 Warehouse Manager** is a tool that can manage data warehouse activities in a cross-platform environment. **Showcase** also markets their Warehouse Manager and Warehouse Builder products under the Showcase/SPSS label. **New Generation NGS-IQ** is a data warehouse management tool that includes features to design and develop the data warehouse and to secure the data that is extracted from different sources.

Figure 8 shows the Tools Network vendors that provide data warehouse management solutions.

Coglin Mill RODIN	www.coglinmill.com
IBM DB2 Warehouse Manager	ibm.com/software/data/db2/warehouse/
New Generation NGS-IQ	www.ngsi.com
Showcase Warehouse Builder	www.showcase.com
Showcase Warehouse Manager	www.showcase.com

Figure 8 — Tools Network vendors that provide data warehouse management solutions

Extraction/Transformation/Load (ETL)

Tools are available to capture and cleanse data prior to loading a data warehouse or data mart. These tools are important when large amounts of data is replicated to a target data warehouse. **Coglin Mill RODIN** is a tool that can perform the entire data warehouse load and includes data cleansing capabilities. It generates RPG programs which can later be modified for advanced data load requirements. **DataMirror Transformation Server** is a tool that creates data filters for a data warehouse. **DI-Atlantis™** is a tool that can automate the transformation of raw data to meaningful end-user data. **Excel Data AS XL/InfoSuite** is a good product for extracting and transforming data for PC applications. **IBM DB2 Warehouse Manager** and **DB2 OLAP Builder** are tools that can extract and transform DB2 UDB databases across multiple platforms. **Copy Manager** from **Information Builders** has a GUI wizard interface and includes error handling features.

Lakeview OmniEnterprise has advanced features to extract and transform data without compromising data integrity. **New Generation NGS-IQ** has a menu driven SQL interface to allow developers to create specific extraction and cleansing definitions. **Strategy Suite** from **ShowCase** - A Division of SPSS is a tool that includes an SQL wizard that can build data transformation rules for extracting and loading data into the data warehouse or data mart. **Silvon DataTracker** has an extraction feature for transforming and loading changed source data versus migrating entire databases. **Vality INTEGRITY Data Re-engineering™** extraction and load includes a feature to add other data sources such as financial goals. **Vision Solutions® SYMBIATOR®** includes data filtering and transformation tools, high-speed data extraction and load, and National Language Support (NLS).

Figure 9 shows the Tools Network vendors that provide ETL solutions.

Coglin Mill RODIN	www.coglinmill.com
DataMirror Transformation Server	www.datamirror.com
DI-Atlantis	www.dimensionalin insight.com
Excel Data AS XL/InfoSuite	www.exceldata.com
IBM DB2 Warehouse Manager	ibm.com/software/data/db2/warehouse/
IBM DB2 OLAP Builder	ibm.com/software/data/db2/
Information Builders Copy Manager	www.ibi.com
Lakeview OmniEnterprise	www.lakeviewtech.com
New Generation NGS-IQ	www.ngsi.com
ShowCase Strategy Suite	www.showcasecorp.com
Silvon DataTracker	www.silvon.com
Vality INTEGRITY Data Re-engineering	www.vality.com
Vision Solutions SYMBIATOR	www.visionsolutions.com

Figure 9 — Tools Network vendors that provide ETL solutions

On-Line Analytical Processing (OLAP)

These tools perform analytical processing over historical data. Some tools provide the capability to “drill down” into the data warehouse source files. Dimensional Insight provides a suite of products to deploy a multi-dimensional database. Its **DI-Atlantis** is a native iSeries product that builds the data warehouse. **DI-WebDiver™** is a thin client tool that allows users to query the data warehouse in a browser. **Excel Data AS XL/InfoSuite** contains tools to build and query a multi-dimensional database. It allows developers and users to perform data warehouse queries through either a 5250 session or a web browser. **GeneXus Gxplorer** is a Microsoft Excel 2000 add-in that allows users to access the data warehouse from their desktop. **IBM DB2 OLAP** server is a tool that can maintain both multi-dimensional or relational databases. It includes a currency conversion feature and API feature for application integration. **InfoManager Data Warehouse** is a relational database that can be accessed via the web or other third party SQL products. It includes a feature to distribute queries through Lotus Notes. **WebFOCUS Suite** from **Information Builders** supports cross-platform OLAP and includes mainframe support and technologies such as XML support and wireless access. **MicroStrategy 7™** is a tool that supports data warehouse development and access from web browsers. **mrc-Productivity Series** is a 4GL tool that can build a data warehouse and generate custom reports. **New Generation NGS-IQ** is a data warehouse that includes advanced security features such as securing the database at the record level. This can be a valuable feature when combining multiple sources of data. **ShowCase Strategy Suite** includes a tool to design and deploy a data warehouse. It includes a wizard to design the database based on user defined parameters and dimensions. **Silvon DataTracker** deploys an OLAP solution that contains an optimization feature. This feature can be crucial when managing large volumes of data.

Figure 10 shows the Tools Network vendors that provide OLAP solutions.

DI-Atlantis	www.dimensionalin insight.com
DI-WebDiver	www.dimensionalin insight.com
Excel Data AS XL/InfoSuite	www.exceldata.com
GeneXus Gxplorer	www.genexus-usa.com
IBM DB2 OLAP Server	ibm.com/software/data/db2/
InfoManger Data Warehouse	www.infomanager.fi
Information Builders WebFOCUS Suite	www.ibi.com
MicroStrategy 7	www.microstrategy.com
mrc-Productivity Series	www.mrc-productivity.com
New Generation NGS-IQ	www.ngsi.com
Orenburg Board Mgt. Intelligence	www.board.com
ShowCase Strategy Suite	www.showcasecorp.com
Silvon DataTracker	www.silvon.com

Figure 10 — Tools Network vendors that provide OLAP solutions

Performance/Tuning

These tools assist performance tuning of queries and SQL statements. Some have features to assist both system and data warehouse performance tuning. **Centerfield insure ANALYSIS** is a tool that includes SQL performance

collection services and SQL statement debugging. Analyzing performance data and SQL statements can assist with data warehouse performance tuning. **Centerfield insure Resources** helps the administrator control the impact of end user queries on the system. **Information Builders Resource Analyzer** and **Resource Governor** are tools integrated with its WebFOCUS product to assist performance activities for a data warehouse. **Resource Analyzer** generates reports that identify poor performing activity such as excessive file joins, poor selection criteria, and dormant data. **Resource Governor** is a tool that has a wizard to setup rules to limit excessive file joins, to allow queries at specified times and to limit user capabilities.

Figure 11 shows the Tools Network vendors that provide performance tuning solutions.

Centerfield insure ANALYSIS	www.centerfieldtechnology.com
Centerfield insure RESOURCES	www.centerfieldtechnology.com
Information Builders Resource Analyzer	www.ibi.com
Information Builders Resource Governor	www.ibi.com

Figure 11 — Tools Network vendors that provide performance tuning solutions

Query & Reporting

The Tools Network includes products that allow users to develop reports. These reports may be from historical data or from data warehouses. Brio.Enterprise is a desktop query product that can be integrated with Microsoft desktop products. It also is a client-server tool that includes an SQL wizard that allows users to build complex queries. **BCD Spool Explorer/EZ Pickin's™** is a query tool that can automate the distribution of reports via email or the Web. **CommIT DataGlider** includes a connectivity wizard that allows queries to be performed over files on multiple platforms. **IBM Query Management Facility (QMF) for Windows** can be used by users to query DB2 UDB databases or developers to incorporate its API interfaces. **QMF for Windows** can also be used to query files on multiple platforms and it includes a performance management feature. **Information Builders WebFOCUS Suite** can generate reports that can be integrated with Microsoft desktop products and can query most platform databases, including mainframes. **New Generation NGS-IQ** has a feature to convert queries and reports to PC formats such as PDF files. **Orenburg Board Management Intelligence Toolkit** has a GUI interface that allows users to create online reports based on analytical models.

Figure 12 shows the Tools Network vendors that provide query and reporting solutions.

BCD Spool Explorer/EZ Pickin's	www.bcdsoftware.com
Brio.Enterprise	www.brio.com
CommIT DataGlider	www.dataglider.com
IBM QMF for Windows	ibm.com/software/data/qmf/
Information Builders WebFOCUS Suite	www.ibi.com
New Generation NGS-IQ	www.ngsi.com
Orenburg Board Mgt. Intelligence	www.board.com

Figure 12 — Tools Network vendors that provide query and reporting solutions

Conclusion

Aristotle Onassis once said that the secret to business success is knowing something that your competition doesn't know. In today's globally competitive landscape, businesses are under pressure to adapt to the changing needs of customers and do it fast. As a result, companies must be able to make strategic and tactical business decisions based upon solid facts, not speculation or anecdotal evidence. Business Intelligence tools and solutions provide the insight and infrastructure which allow a company to quickly and easily extend their core applications with additional analytics and knowledge in order to meet these challenges.

The iSeries hardware platform is a clear leader from a hardware perspective in the BI space. Its scalability reliability and ease of use make it a solid choice to deploy these types of applications. There are hundreds of BI solutions deployed world wide on AS/400 and iSeries. There are, as you can see in this white paper, a wealth of tools for building and deploying BI solutions. To keep up with the latest in BI tools visit the Tools Network web site at:

www.ibm.com/series/developer/tools

Appendix A — Application Development Tools Network for iSeries

Sorting out the available application development tools can be a daunting task for even the best of developers. Recognizing this, iSeries brand marketing and PartnerWorld for Developers have combined efforts to create the Application Development Tools Network for iSeries . For more information, visit the AD Tools and Middleware for iSeries Web site at:

ibm.com/eserver/iseries/developer/tools/.

The AD Tools Network identifies and promotes tools to facilitate application development on iSeries servers. The objective is to keep the application portfolio attractive and current with the latest technology. The Application Development Tools Network for iSeries was created to not only help developers identify application modernization options, but to recruit and encourage Business Partners to create advanced development tools for iSeries servers.

The Application Development Tools Network for iSeries program promotes a set of quality application development/deployment tools. The program has been designed to help iSeries customers (and prospects) evaluate, select, and utilize these tools to maximum effect; and to insure that tool providers are in sync with iSeries development strategies and directions. To some extent, the Application Development Tools Network should be seen as a Better Business Bureau for iSeries AD tools.

Application development is key to the future of any computing platform. iSeries customers and solution providers must be able to create new applications, and extend existing applications in ways that take advantage of the latest technologies, such as:

- ✍ Graphical User Interfaces (GUIs) via a PC forms-based GUI or browser
- ✍ The World Wide Web
- ✍ Integration with Lotus Domino/Notes running natively on iSeries servers
- ✍ Transition to Java and the world of object-oriented programming
- ✍ Business intelligence

The mechanics of the Tools Network

There are more than 140 partners and almost 500 tools represented in the AD Tools Network, including both IBM and non-IBM tools. Understanding that a long list of tools can be overwhelming to sort through, the AD Tools Network Web site serves as a filter to quickly narrow the selection to those that perform a particular task. The site is available to iSeries customers, prospects, and Business Partners.

A tool search can be performed two ways. A tool can be selected by choosing a specific manufacturer or tool for immediate "quick navigator" drill down. Or, the user can choose a modernization strategy, drill down to the work task level, and finally see a list of partners and tools available to accomplish that task. For example: when the user drills down into the e-business/e-Commerce strategy, tools are further categorized by functional area such as "browser front-end for an existing application."

Within each sub-category or work task, tools are displayed in tables. By clicking on a the name of a partner, the user is directed to the home page of that partner. Or, by selecting a particular tool, the user is transferred to a page dedicated to that particular tool or, if unavailable, a products page. The idea is to help iSeries shops and solution providers quickly identify an application development strategy and then filter the available tools to reduce the number of tools options that must be examined.

Appendix B — Tool Selection Issues

While some development teams like to work with low-level tools to create new interfaces, others prefer higher level development environments to accomplish the desired result. Additionally, customers, prospects, and solution providers all differ in how aggressively they adopt new technologies and how important platform independence is to them. So, let's hit the pros and cons of using development tools "straight on." Below are some questions that will help in the process of deciding if a vendor or a tool is right for your application development needs. Consider your answers carefully, and use them as filters through which you view the promises and features of vendors and their tools:

How much control do you require?

- ✍ Are you willing to change the way you do business?
- ✍ Does everything need to be done from scratch?
- ✍ How does your culture feel about tools and partners?
- ✍ How deep is your backlog?

Employing tools may force you to change the way you do things to accommodate the tool. If you are not open to possible changes, then using high level tools can prove difficult for you. On the other hand, minor changes to the way you do business may be a good thing and may in fact lead to improved productivity from the IT staff through the use of tools. If you require the lowest level of control and like to build everything from scratch again tools may not be a fit for you. Then again, higher level tools remove the burden of technology churn from your programming staff since they will not have to master each new technology that comes along. Some shops have a culture that wants to invent everything themselves. This type of resistance will lead to a bad experience with tools. If your backlog is significant, turning to tools may be the only way you can free enough time to proceed with new changes and applications.

Are you willing to rely on a partner?

- ✍ What if they disappear?
- ✍ Will they play well with other partners' tools?
- ✍ How flexible are they on pricing?
- ✍ What if the partner does not know your business but has broad experience in related industries? Will head count issues be easier to deal with using contractors?

Many customers are concerned about the ramifications of a partner going out of business after they have invested heavily in the partners tools and methodologies. In fact, in today's IT world, it is more likely that a partner will simply be acquired by a "larger fish". This can lead to more resources for the partner and improved tooling. The class of tools found in the Tools Network are typically very stable and most have a history in the iSeries space. A more likely concern is will the partner's tools coexist well with other IBM and

partner tools. These issues can be tested as a proof of concept or some other form of purchase pre-requisite. Most partners are reasonable on pricing and will work with a prospective customer on pricing issues. But if you are a multiples customer or are thinking about implementing LPAR on a single iSeries, you should discuss pricing issues with the tool provider and be sure you understand the initial acquisition and the ongoing maintenance prices. Another emotional issue that should be discussed before the purchase decision is made is how much support you will require from the partner and how they will staff your needs. If you must have an industry specialist, let that be know early on. But don't discount the perspective a tools specialist without industry bias can bring to solving your problems.

How complex/far reaching is the overall application?

- ✍ How much integration work is required?
- ✍ Is this a new application or an extension of an existing application?
- ✍ Do you need heterogeneous deployment?

You should work with the prospective tool vendor to be very clear about how much integration work is required with existing applications. BI is generally a new application but issues such as where the data is extracted from (what tables), how much summarization is required and the nature of the cleansing that should take place should be discussed on the front end. Many of the BI partners as well as IBM have established methodologies for setting up BI solutions that you can benefit from.

How much are you willing to invest in training?

- ✍ How much breadth should the training provide?
- ✍ Where can the training be delivered?
- ✍ Can you find qualified technicians?

You should ask what the vendor's suggested training curriculum is composed of - both for administrators and end users. Confirm whether the training can be delivered on site or if your people must go to the vendor's facilities. It may be important to you to know the names of partner affiliates that may be closer to you or may have expertise in your industry. It may also be an issue as to how hard it is to find a technician qualified with the tool as a new hire.

What is the real cost of doing NOTHING...?

Of course the real issue that you must resolve early on is what is the cost of doing nothing. If you do not invest in Business Intelligence technology, will you go out of business? Will competitors get an edge? Your primary goal is to help the company you work for make more money and provide better service to its customers, not deploy great new technologies. Ask yourself what exactly you thing the potential gain is from deploying a BI solution. If you cannot identify a

specific gain, then spending the money may not be a good use of resources. Someone will ask the question “why are we doing this” at some point.

Appendix C — Additional Web Site Information

For additional information, please visit the following Web sites:

- ✍ iSeries Business Intelligence Web site:
ibm.com/eserver/series/bi
- ✍ IBM Teraplex Center Web site:
ibm.com/eserver/series/developer/bi/teraplex
IBM Teraplex Center is a leader in business intelligence scalability testing.
- ✍ Business Intelligence Tools Web site:
ibm.com/eserver/series/developer/tools/busi
- ✍ **Tools Network PartnerWorld for Developers** Web site for additional tool information, reference the Application Development Tools Network for iSeries:
ibm.com/eserver/series/developer/tools/

Additional papers available regarding Application Development tools strategies:

- ✍ **iSeries Application Development Directions Update**
ibm.com/eserver/series/developer/tools/documents/addir/index.html
- ✍ **Creating Web Applications**
ibm.com/eserver/series/beyondtech/creating_web_apps.htm

Additional papers related to *this* paper can be found at:

ibm.com/eserver/series/developer/tools/documents/index.html

Here are the other papers in the series:

"The tools of e-business"

ibm.com/eserver/series/developer/tools/documents/ebiztools.html

"Tools for Application Reface & Redesign"

ibm.com/eserver/series/developer/tools/documents/tools_apref.html

"Tools for Cross-Platform Integration"

ibm.com/eserver/series/developer/tools/documents/cross_platform.html

"Tools for System and Application Development"

"Tools of Lotus Domino"

- ✍ **Redbooks**
[Management Central - A Smart Way to Manage AS/400 Systems](#)
SG24-5407-00
[Managing AS/400 V4R4 with Operations Navigator](#) SG24-5646-00

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Jim joined IBM in 1984 in Rochester, Minnesota. He spent his first five years in Rochester's software development lab involved in the development of several PC-based client-server solutions for IBM's S/36 and AS/400 product lines. Jim then spent several years in the IBM Project Office providing support to EMEA and AP customers before joining the Advanced Technologies development organization in 1991, where he focused on promotion, support and education of IBM's leading-edge multimedia solutions. In 1992, Jim joined the AS/400 Brand team as a technical briefing specialist in the Rochester Executive Briefing Center. Jim has worked in the PartnerWorld for Developers organization since 1994 (when it was known as the Software Partner Laboratory), and has been focused on the topics of Data Warehousing and Business Intelligence since 1996. Jim assumed the BI Segment Manager position in 1999, and added CRM segment responsibilities in 2001.

Doug Fulmer

Worldwide Segment Manager
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Doug joined IBM in 1974 in Little Rock, Arkansas. He spent 14 years in the General Systems division branch office there as a midrange systems engineer supporting the needs of its System/3, System/32, System/34, System/36, System/38 and AS/400 customers. In 1988, he joined the Kansas City Area Systems Center as an AS/400 specialist, working primarily in the areas of communications and PC connectivity. He worked for the Minneapolis and Dallas Area Systems Centers in a similar capacity before joining the AS/400 Competency Center in Dallas (in 1991) where he specialized in client/server application development. In 1993, he joined the AS/400 Brand team as segment manager for DB2 UDB for AS/400. In 1996, he became part of the group that brought the IBM Network Station to market, then returned (in 1998) to the AS/400 division as the worldwide segment manager for application development tools and middleware.

Tom Nichols

Tools Network for iSeries Program
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Tom joined IBM in 1989 in East Fishkill, New York. He transferred to Rochester, MN and joined the site Midrange Support department that is responsible for site production iSeries systems. His responsibilities were maintaining and development iSeries systems applications for specific site support functions. He has worked in both small and large iSeries installations as both a non-IBM employee and as an IBM Global Services employee.

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