

Technology White Paper

[Progression Series 7.5]

MACOLA[®]
SOFTWARE

Table Of Contents

Executive Summary.....	1
Enabling Technologies.....	1
Leveraing 32-Bit Client/Server Technology.....	1
Productive and Easy To Use.....	1
Flexibility To Grow And Change.....	1
Macola Progression And Visual Basic For Applications (VBA).....	2
Progression Client/Server Technology.....	3
Electronic Commerce.....	5
Business Intelligence.....	6
Conclusion.....	7

As the 21st Century rapidly approaches, businesses are faced with crucial choices regarding investments in information technology. With the ever-increasing changes, organizations are acutely aware of the need to choose technologies that will enable them to remain agile and to respond rapidly to shifts in the marketplace. While the proprietary application software and operating systems of the past were highly reliable, they were rigid, hard to modify, and expensive to maintain. Fortunately, a wealth of new tools and technologies are rapidly maturing into a solid foundation, capable of building highly extensible and mission-critical business applications.

As a leading provider of scalable enterprise software for the past two decades, Macola Software is unique in its commitment to providing end users with solutions they'll never outgrow. Over the course of those twenty years and 17,000 customer sites, Macola has continued to grow and adapt to the changing needs of businesses worldwide. Within this white paper you will see Macola's commitment to leading-edge technologies, tempered with the mission to ensure their stability and value to your organization.

Choosing the right enterprise software is an important decision, and the intention of this paper is to provide you with the information necessary to make an informed decision, and determine the best course of action for your organization.

Enabling Technologies

No matter how the marketplace changes, many questions remain:

- How do I best leverage my investment in information technology to create a sustainable competitive advantage?
- As I evaluate the options available to me, what are the items I should be looking for in an enterprise software provider?

Leveraging 32-Bit Client/Server Technology

To remain agile in today's global environment, companies need to remain flexible and responsive to the needs of its customers. With Macola's Progression series, you can operate in a hybrid operating system environment running on both 32-bit workstations (Windows 95 and Windows NT) and 16-bit workstations (Windows 3.11). When operating in a hybrid environment, Progression retains its impressive functionality. However, when operating as a 32-bit application, Progression exploits the full benefits of the system, including increased speed, transaction throughput, and more efficient memory usage.

Since protecting your investment in training and technology is important, this flexibility enables you to leverage your current hardware environment, reduce the need for costly system upgrades, and leverage your current investment in employee training.

Productive And Easy To Use

Because many of your users are familiar with Windows 95 or Windows NT, we made the Progression user interface similar to Windows, and easy to use. Based upon the folder and tree structure found in the Windows 95 Explorer, the Progression Explorer interface gives you one convenient location from which you can access your Progression applications. With this simple interface, expensive retraining and navigation can be kept to a minimum.

Progression Explorer has a place for the commonly used applications, the "Macola Workspace", so you don't have to repeatedly search through various trees or folders to find frequently used applications. To place the application in your Workspace, simply drag the application onto the workspace and the shortcuts to the applications are created. Since most organizations today use productivity tools such as Microsoft Word or Microsoft Excel, the Macola Workspace enables you to improve your productivity and reduce the time spent searching for the correct applications or files.

Flexibility To Grow And Change

As companies grow and find new market opportunities, the flexibility and scalability of their business systems becomes paramount. In the past, this type of growth or change required businesses to replace existing systems in order to embark on expensive customization projects. In these scenarios, in addition to the cost of the new system, there were the costs of data conversion, employee training, and the fear that some applications may not integrate with other productivity tools or corporate information systems.

One key to flexibility within any application is the ability to easily access or act upon the wealth of data that exists within your organization. Open Database Connectivity (ODBC) is an industry standard to which many databases are built. When a database is ODBC compliant, it means that it has been developed to ODBC standards and that other data access tools can retrieve or access data from your database.

Macola Progression uses industry-standard ODBC compliant databases to ensure an open architecture. This open architecture enables users to extend the advanced functionality of Progression to meet the changing needs of their business. Some of the areas of extensibility may include adding new fields to screens, addition of new lookup tables, information lookup, creating external applications, and custom reporting.

By utilizing the Macola Designer, users can easily add new fields to Progression applications. Since the Designer enables users with appropriate security to expose additional or "user-definable" fields, these can be added to Progression screens to allow you to track additional information unique to your business. Since Progression also allows you to search on files external to standard Progression data files, searches can also be customized to display user-defined data or have the data filtered to improve speed or accuracy of your specific searches. For even more flexibility, Macola has licensed Visual Basic for Applications from Microsoft. This powerful tool greatly enhances the already significant power of the Progression Designer.

Macola Progression And Visual Basic for Applications (VBA)

Macola knows that its software, while highly flexible, may not address all of the specific needs of your business. In addition to the capabilities contained within Macola's Progression Designer, Macola has worked closely with Microsoft to license Visual Basic for Applications into future versions of the Progression Series. The addition of this technology enables developers and MIS professionals to greatly extend and integrate Macola with other business applications without the effort and maintenance required by traditional source code modifications.

Visual Basic for Applications is the edition of the Microsoft Visual Basic programming system that is designed to provide rich development capability from within an application environment. Originally released as part of Microsoft Excel, Visual Basic for Applications was added to Microsoft Project in 1994 and to Microsoft Access in 1995. Visual Basic for Applications makes it easier and faster for developers or MIS professionals to customize Macola's applications or to write extensions and add-ons for their unique business needs. Because these solutions are built with Visual Basic, and not a proprietary macro language, they can also be easily integrated into business applications.

A Practical Example Of Progression's Flexibility

A salesperson within your organization would like to be able to view customer period-to-date sales in their search window. This can be accomplished by customizing this search to include the field "period-to-date" sales. Then add any field that is part of the file you are searching on the search window.

Let's take this one step further. Now the salesperson would only like to see his or her customer in the search window instead of every customer in the database. You can accomplish this by applying a filter. To do this, select the same utility you used to add the "period-to-date" sales field. Then apply a filter that states select customers with the sales person number of the salesperson you are fulfilling the request for. (E.g. customer salesperson number = 100)

Easy Customization

Macola Progression's Designer allows consultants and/or IS staff to easily make modifications to Progression without ever touching a line of source code, including:

- Add fields
- Rearrange fields in a screen
- Hide fields
- Establish list of acceptable values to populate fields
- Default values for fields
- Change field names

These are just a few of the customization options. Through Progression VBA you can add almost unlimited logic extensions to Progression. These extensions could include:

- Attach validation logic to a field that will restrict entries based on any conditional criteria

- Change the color of fields based on your decision logic
- Add conditional logic to field validations or default values based on data access to your own tables in almost any data format using ODBC drivers
- Add your own forms to Macola screens requesting additional information
- Incorporate workflow concepts by sending E-mail to a supervisor if a credit memo exceeds a predetermined amount

Progression Client/Server Technology

Database Strategy

Like the continuing changes of today's business climate, database technology is constantly evolving. As a leading developer of integrated manufacturing, distribution, and financial applications, Macola is closely aligned with two of the most dominant database vendors in the market today; Microsoft and Pervasive Software. Both of these databases are industry-standard, ODBC compliant, and provide a secure and stable platform to manage your business.

Btrieve

Developed by Pervasive Software, the Btrieve database is one of the most widely deployed database engines on the market. Macola's series of enterprise applications have been available on Btrieve since 1989. Btrieve is ODBC compliant, and it provides users with a wide range of flexibility and data integrity. Fully supported in both 16-bit and 32-bit environments, Btrieve is excellent for small to mid-sized firms that desire a high-speed, low cost database.

Microsoft SQL Server

Microsoft's SQL Server database is quickly becoming the de facto standard for businesses that need the power and flexibility of a relational database, yet are looking for an affordable, well-administered solution. With its high level of integration into other Microsoft technologies, SQL Server is poised to capture a large share of the middle market over the next few years. Macola's Progression SQL applications are optimized to take full advantage of the Microsoft SQL Server environment.

Macola also provides a very easy upgrade path from Btrieve to SQL server. This means you can start with a less costly solution and scale up to a more robust relational database as your transactions and information access requirements grow.

While both databases are leaders in the market today, each have specific strengths and market fit. The chart below summarizes some of the basic differences between the two. Regardless of the database you choose to implement, Macola's enterprise applications will provide you with an excellent solution to address your business needs.

Criteria	Btrieve	Microsoft SQL Server
Cost of Ownership	Most cost effective database	Higher cost solution, but most cost-effective fully relational database for middle market
ODBC Compliant	Yes	Yes
Security	Security dependent upon the associated application software	Robust security environment through NT Server or database administration tools
Performance	Very fast, but does not support multiple CPUs, limiting scalability	Highly scalable and capable of addressing up to four CPUs with minimal degradation
Stored Procedures	Not available	Full support for stored procedures
Integration to other Technologies	Access through ODBC drivers	Fully integrated member of Microsoft BackOffice family. Access also available with ODBC drivers

Stored Procedures

In a client/server environment, a great deal of processing power is gained by utilizing the server for processing. To further optimize this power, you need to deploy stored procedures with your application. A stored procedure is a segment of code residing with the database that can be executed by your application. Performance gains are inherent because utilizing stored procedures reduces network traffic and maximizes code performance.

Macola Progression SQL takes advantage of stored procedures to increase performance, but does not depend on their existence. This is quite contrary to some system designs, but allows for the system to operate on minimum server configuration and gain performance with maximum server setup.

Progression SQL ships with over 1000 stored procedures to maximize performance for standard data I/O, including reading, selecting, inserting, updating, and deleting data.

Add your own stored procedures

Many times business rules are best maintained at the server level. All of your enterprise applications including Progression must request or update their data at the server using the DBMS engine. Logic can be added at the field or table level using stored procedures for Progression SQL and Microsoft SQL Server.

An example of these logic extensions would be if a purchasing agent wanted to be informed whenever inventory dropped below a certain level. A stored procedure could be added to send the purchasing agent an E-mail whenever an item's quantity on hand dropped below a predetermined level.

Optimistic Data Retrieval

Macola's Progression Series uses advanced features for data access. Progression SQL uses a methodology known as optimistic data retrieval or ODR. ODR is a methodology by which the data access layer intelligently predicts what portion, or subset of data, will be used by the application first.

By using the entire index structure for the first attempt at data, the system minimizes the view generated by the RDBMS. If this view does not yield sufficient return data, the system will submit the next larger view on demand.

ODR reduces the contention to the server by optimistically building 'thin' views of the data and does not increase the server's workload until necessary. This also increases server scalability by not requesting any more from the server by any one client until it is necessary.

Scalability

As businesses continue to grow, many times they are adding concurrent users to their mission critical applications. It stands to reason that the more people you have using a system, the greater potential you have for the system slowing down. Microsoft SQL Server is a scalable database that will address additional processors on the server. By adding processors, you can continue to maintain adequate levels of performance even as your database increases or as you increase the number of users on the system. Because Progression has been developed for Microsoft SQL Server, you can take full advantage of its ability to add processors and "scale" your Progression SQL application to address the growing needs of your business.

Security

The importance of securely managing enterprise data cannot be understated. Threats to data security range from internal employees unintentionally changing or deleting valuable customer information to attempts by rival companies or renegade ex-employees to alter, steal, or tamper with important enterprise data. Macola provides comprehensive system security throughout the Progression Series. Additional security can be invoked from within your operating system or database environment.

Fault Tolerance

Transaction Rollback

If for some unforeseen reason a system crashes or shuts down in the middle of a transaction, the end user must be assured that upon bringing the system back online, incomplete transactions will not be partially posted, leaving an out of balance condition. Macola's software is designed to handle processing transactions or processing units that are executed and committed as a block. If the server or workstation fails in the middle of a transaction, none of the processing in that block will be committed to the database. For example, each sales invoice is treated as a block or

transaction and if failure occurred within an invoice, none of the invoice's information will be posted. Once the system is back on line, invoice posting can be resumed at the same point prior to the failure.

Disk Mirroring

This method is applicable when hardware failures have occurred. Disk mirroring creates a mirror copy of a customer's data files on another physical hard drive. No down time is experienced upon hard drive failure. Disk mirroring also provides a backup copy of data that is unrecoverable.

Electronic Commerce

Electronic commerce is a widely used term that covers everything from electronic Data Interchange (EDI) to Internet-based inquiry and transaction processing to electronic payment transactions. As Macola observed the changing needs of businesses, we identified three distinct areas where electronic commerce applications add benefit throughout the entire value chain. First, they provide the ability to share information with customers, employees, and suppliers in order to add value to the business relationship. Second, they enable businesses to decentralize their sales processes and tap into new market opportunities. Third, they provide the ability to conduct business globally, 24 hours a day. In addition, Macola recognized that our suite of electronic commerce applications needed to be scalable, and easily tailored to fit the changing needs of your business.

EDI

Electronic Data Interchange (EDI) can greatly improve the profitability and efficiency of your business. To fully realize the benefits of EDI, it must be more than a "glorified fax machine." Only by thoroughly integrating EDI into your enterprise application software can you begin to leverage its power. Macola Progression provides a completely integrated EDI solution that tightly integrates all members of your value chain.

Macola's Progression EDI solution allows you to integrate common tasks such as Purchase Orders, PO Acknowledgements, and Advanced Ship Notices directly into your distribution applications. Utilizing Progression EDI, a customer order is received electronically and is then integrated directly into your order entry system. Once in the system, you can utilize the comprehensive distribution and manufacturing functionality of Progression to produce the item, fulfill the order, and notify your customer electronically when it will be shipping. In addition to reducing redundant data entry and administrative overhead, it also greatly reduces your chances of a costly data entry error. Since you are now dealing with timely, accurate information, you can focus on optimizing your operations and improving your profitability.

For more detailed information on EDI please request Mas1056 or download the EDI White Paper from www.macola.com.

Internet

Through Macola's Internet solutions, distributors and manufacturers will be able to share information with employees, customers, and vendors like never before. Through a series of three products, Macola will enable your business to take full advantage of the emerging market opportunities. Since all of Macola's electronic commerce applications are based upon industry-standard technologies such as Microsoft FrontPage, Microsoft Internet Commerce Server, Microsoft BackOffice, and MS SQL Server, businesses can rest assured that they will have a solid platform to meet the changing needs of their enterprise.

e.Views

The e.Views series makes it easy for employees, vendors, or customers to get the information they need to operate more effectively. Using a standard Web browser, e.Views users can access the wealth of data contained in Macola's Progression Series Software. Since access is real-time, e.Views delivers the up-to-date information necessary to make better decisions faster.

The views in e.Views are HTML documents built with Microsoft FrontPage, so you can use this or other HTML editors to easily tailor the views to match the look and feel of your corporate web site. Utilizing industry-standard scripting languages, you can add, remove, or rearrange fields, add or remove range selections, or develop new view applications to adapt to the changing needs of your business.

Running Macola Applications Over The Internet

Macola has partnered with Citrix Software, the leading provider of remote access technologies, to develop the standard configurations necessary to run Macola Software via a browser and Internet connection. In a standard deployment, Macola's application will run locally on the application server while the user interface objects and events are sent to the remote PCs. This distributed Windows architecture allows Macola applications to perform at very high speeds over low bandwidth connections. This solution is designed to run over industry-standard network protocols such as TCP/IP, NetBEUI, IPX/SPX, and PPP.

e.Commerce

Macola's e.Commerce solution is a consumer-to-business electronic commerce application that links Macola's Progression SQL series to Microsoft Site Server, Commerce Edition. e.Commerce leverages the features contained in Site Server to provide a secure, integrated environment for those companies that want to have a "virtual storefront" on the Internet.

With e.Commerce, customers can use a standard Web browser to access an on-line catalogue of products or services, choose the items they wish to purchase, put the items into a shopping cart, and once complete, enter secure credit card and billing information to complete the purchase.

For more detailed information on Macola's Internet strategy please request MAS1089 or download the Internet White Paper from www.macola.com.

Business Intelligence

What is Business Intelligence?

Business intelligence (BI) is the ability to access data and rapidly leverage the data to make decisions, find solutions to business problems, or better service your customers. In today's advanced client/server systems, the amount of raw data that is stored is tremendous. Unfortunately, this data is only valuable if it is easily accessible and actionable.

Paradoxically, as the amount of data available continues to increase, the resources necessary to access and process this data becomes limited. In fact, The Gartner Group characterizes this gap between the amount of data and the resources to manage "The Fact Gap."

Macola's BI Strategy

Macola Software has a strong commitment to providing users with a series of tightly integrated, highly customizable business intelligence solutions. This commitment can be evidenced in the drill down capability within Progression to the tight integration and partnership with best-of-breed industry tools. Regardless of your specific application, Macola provides you with a series of highly flexible and powerful tools to make your investment in Macola even more profitable.

Drilling Down Into The Data

Macola Software provides several tools to close "The Fact Gap" and help you make sound business decisions. One tool is the Progression Drill-down views or inquiries. This standard component within all Progression applications enables users to access a wide variety of information from a single inquiry.

How A Drill Down Works

One of your best customers has called and would like to order 3000 of your widgets, and they want to know if you can fulfill their request and ship all 3000 items to them in five weeks.

You can utilize the Progression Multi-Level Item view to inquire if you have them in stock to ship. You see that you currently have on hand 1250, but from this one inquiry you can access your available-to-promise (ATP). ATP takes into account your production schedule, purchase orders, and outstanding customer orders to give you (by period) the quantity you have available-to-promise and when.

Since the drill down tells you that two deliveries for 1000 widgets are due in two and four weeks respectively, you are now in a position to promise delivery to your customer. Based on current delivery schedules, you will be able to fulfill their request and provide world-class customer service. In a matter of seconds, you were easily able to track down the necessary information.

Reporting & Query Tools

Progression offers a number of best-of-breed reporting solutions: Crystal Reports from Seagate Software, Macola's Enterprise Reporting System (ERS), the FRx Financial Reporter, and F9 financial reporting and analysis tool from Synex. Crystal and ERS are focused on enterprise-wide reporting and queries, while FRx and F9 are strictly targeted at financial reporting and analysis.

FRx is an advanced financial reporting tool geared to larger companies that have advanced reporting needs such as multi-company reporting. F9 is a tool that allows users to hot link their G/L data to their spreadsheet of choice for financial reporting. It also allows budget write back capabilities, meaning that you can perform what-if analyses within your spreadsheet and write that data back to your budget file within Progression's General Ledger module.

Crystal Reports

Macola Software's close partnership with Seagate Software provides Progression users with industry-leading reporting tools. Seagate Crystal Reports is a highly flexible and intuitive tool that provides users with a very graphical environment to design reports and choose multiple report output styles including Word, Excel, Lotus, HTML, Exchange, Lotus Notes, or email. Since the output options include output to HTML formats, sharing information from Progression on a corporate Intranet or web server is easy. Crystal Reports also allows you to add graphs illustrating key data to make your reports more informative. You can maximize the impact of your report by including bitmaps, boxes, lines, and even embedded objects from other applications.

Enterprise Reporting System

ERS is for those companies or developers requiring an integrated reporting solution that combines the flexibility of Visual Basic for Applications scripting language with the power of virtually limitless scripting. This scripting power includes full database manipulation, data write-back, and it allows any complex business processes to be modeled.

Since many of the standard Progression reports have also been developed in ERS scripts, ERS enables you to visually modify the scripts and adapt them to your company's requirements. For users that need to navigate large amounts of data and drill down into specific detail, ERS's real-time data mining or drill down capabilities enable users to quickly find the information necessary to make better business decisions. Since the drill downs are represented visually, users can easily understand how to explore their data.

Database Dictionary

The key to using any reporting tool is understanding the data model used by an application. Progression offers a highly relational and normalized database. The database is also very consistent between Btrieve and SQL Server, maintaining over 95 percent compatibility. This means that reports written in Btrieve can also be used with SQL Server with very minor changes. This allows organizations to preserve their investment if they decide to upgrade from Btrieve to SQL Server as their company needs continue to grow.

Macola Provides comprehensive documentation on the Progression database. Whether you are writing reports or developing customized solutions, a thorough understanding of how Progression manages and stores data is needed to manage your enterprise information needs.

Conclusion

Macola has over twenty years of success in providing growth-oriented companies with software they'll never out-grow. Throughout the years, we've worked closely with business partners and customers to provide proven, easy-to-use tools that are customer-driven and focused on solving real business issues. We understand that our customers need software that is built upon the leading industry-standard technologies and that they are easily integrated with other productivity tools or existing information systems.

While Macola is built upon leading-edge technology, we understand that this technology is only useful if it helps you solve your business's problems and helps increase your bottom line. Through a unique combination of tools and technologies, Macola provides the foundation for growth into the next century.



333 E. Center St.
P.O. Box 1824
Marion, OH 43301-1824

Sales: 800.468.0834
tel: 740.382.5999
fax: 740.382.0239
<http://www.macola.com>

MAS1088-072498