



PRODUCTIONWare™

Manufacturing Execution Systems for the Appliance,
Automotive Tier-One and Discrete Manufacturing Industries

Production Computing Group

www.matrixautomation.com

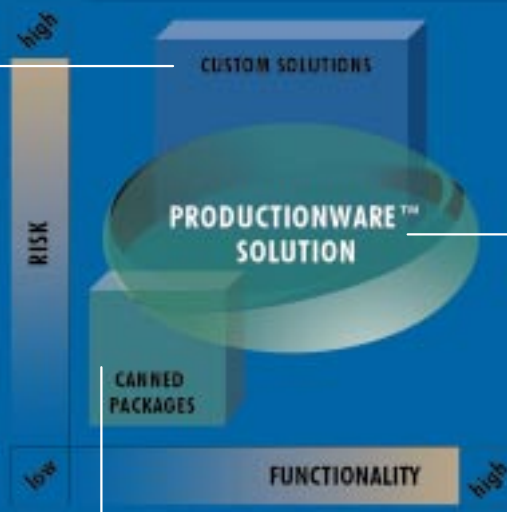
a better approach - a better solution

In industry, innovative manufacturers have always leveraged technology to reduce cycle times, improve product quality and gain an advantage over their competitors. Matrix Automation has spent years on the factory floor developing the productivity tools our customers need and helping them succeed in their markets. We successfully molded canned, supervisory-level software packages and custom-coded applications to deliver these tools in the past. However, due to the shortcoming of these approaches, we used our experience and technology to create a better solution: ProductionWare™ - our component-based Manufacturing Execution Systems.

ProductionWare's underlying technology gives us the functionality of a custom application but also provides a foundation of proven technology that removes the implementation risk associated with a typical custom system. Our Licensed Process Modules (LPMs) are focused on optimizing your production processes, and they are configurable by us to meet the unique challenges of your applications. ProductionWare gives you the flexibility to be as innovative as you can be in pursuing your production, quality and growth goals.

PLC technology replaces relay control systems, automating the control of industrial production processes.	1 9 8 3
Matrix Automation is formed to fill the need for a system integrator to implement PLC technology.	
Human-Machine-Interface (HMI) software brings PLC technology to a new height, by graphically depicting plant floor operations.	1 9 8 9
Matrix Automation begins implementing "canned," supervisory-level software packages, such as WonderWare, Intellution and RSView.	
Custom software solutions offer expanded functionality over canned HMI packages to meet the information management needs of customers.	1 9 9 3
Using Visual Basic, Matrix Automation begins developing custom software solutions.	
Component-based technology revolutionizes software development.	1 9 9 9
ProductionWare is developed and the Production Computing Group is formed to deliver MES solutions to the Appliance, Automotive Tier-One and Discrete Manufacturing industries.	

Custom-coded solutions carry high implementation risk



ProductionWare gives you the best of both worlds - higher functionality and flexibility than canned packages with less risk than custom solutions

Canned software packages lack the functionality to deliver the productivity tools you need

flexible, functional and reliable systems



Technology has, and always will be, the fuel that drives Matrix Automation to respond to the changing needs of customers. It has shaped our product offering, as well as our entire company. Since our inception as an authorized Allen-Bradley Systems Integrator, and highlighted by our current partnerships with Microsoft, Citrix and Wyse, our focus has been to leverage technology to give our customers the competitive edge they need to succeed in their markets.



ProductionWare™ Systems are comprised of three key elements: ProductionWare™ software, a Thin-Client/Server Computing hardware architecture and our extensive Project Management experience.

PRODUCTIONWARE™
software



**THIN-CLIENT
COMPUTING
hardware**



**PROJECT
MANAGEMENT
experience**



**PRODUCTION LINE
APPLICATION**

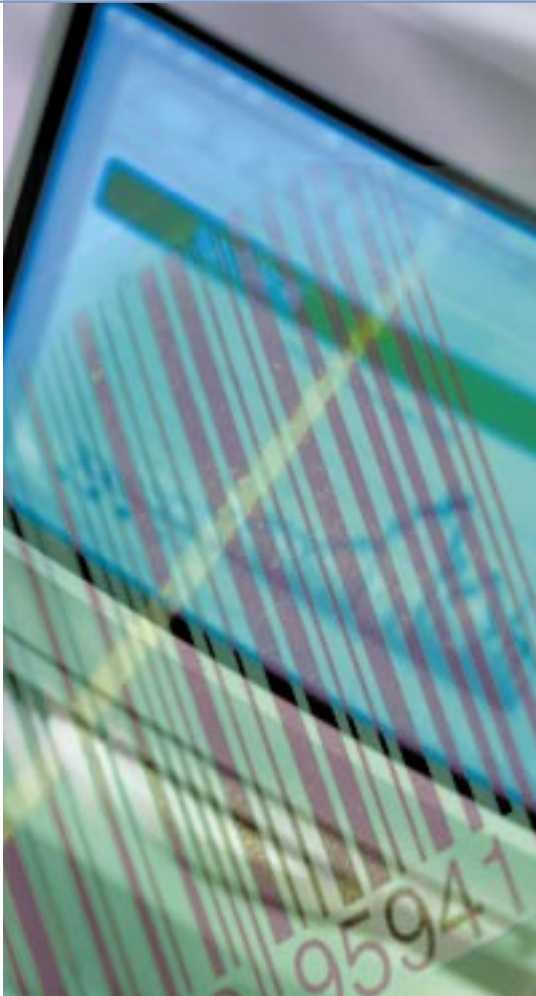
The Production Computing Group has taken industrial automation and information management to a new level. We bridge the gap between your production line control systems and your plant or corporate business systems. Our approach is comprised of three key elements: ProductionWare™ software, a Thin-Client/Server Computing hardware architecture and our extensive Project Management experience.

PRODUCTIONWare™

leading edge, component-based software

ProductionWare™ software gives you the best of both worlds: extensive functionality and flexibility with reduced implementation risk.

Built on Microsoft's Component Object Model, every ProductionWare Licensed Process Module is developed using the tools in our Automation Tool Kit. Our tools are reusable software components, known as COM objects, which are tested, debugged and optimized for performance and reliability. Like a master carpenter, we use our tools to deliver the high-performance system you want on time and on budget.

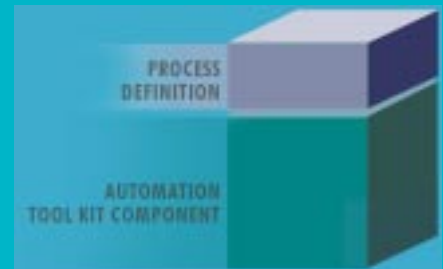


ProductionWare™ Software

Our LPMs are process-specific - focused on optimizing your production line processes. The components in our Automation Tool Kit provide the foundation of proven technology upon which to build your application. The Process Definition of our LPMs is unique to your application and gives us the flexibility to leverage your experience and understanding of your production process to deliver a powerful, reliable system.

After start up, ProductionWare modules can be supported via modem connection so changes or upgrades can be performed remotely from Matrix Automation headquarters.

Licensed Process Module Software Structure



ProductionWare leverages your experience and understanding of your production process to deliver a powerful, reliable system.

PRODUCTIONWare™

innovative solutions

Production Scheduling

Component Validation

In-Line Testing

Operator Statistics

Production Monitoring

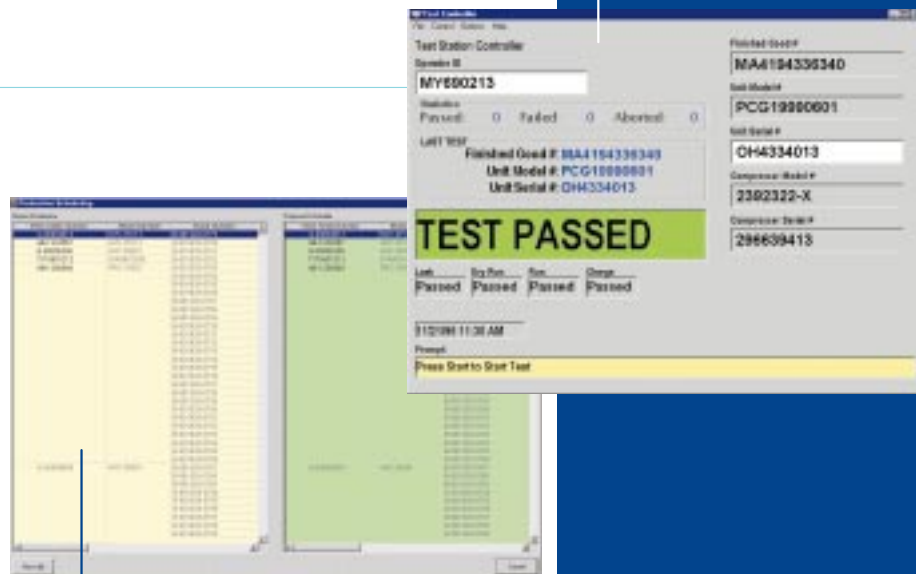
Data Warehousing

Lot Traceability

Production Reporting

Product Verification

Test assemblies and sub-assemblies with Test Controller to ensure the quality of finished goods.



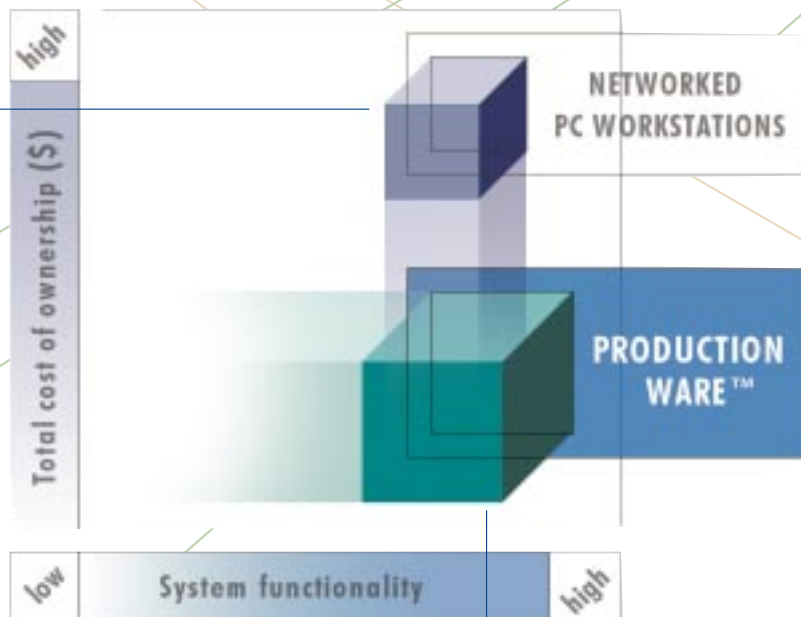
Schedule and modify production runs from the plant floor or manager's office using Production Scheduling.

eliminate plant floor PCs

ProductionWare™ is optimized to perform in a Thin-Client/Server Computing (TC/SC) architecture, which allows us to remove PC workstations from your plant floor.

PRODUCTIONWare™

Plant floor PC systems are high maintenance and have high support costs and Total Cost of Ownership.



Remove PCs from your plant floor and decrease your support costs without sacrificing system performance by utilizing ProductionWare's high-performance, Thin-Client architecture.

ProductionWare™ Manufacturing Execution System

Data Warehousing
Store production data for enterprise-wide use

Business Systems Communications
Two-way communications with company information systems

Advanced Reporting
Use web-based communications tools for reporting

Broadcast Verification
Receive build information from corporate or customer business systems

Matrix Automation - Remote Support
ProductionWare can be supported remotely by Matrix Automation



Final Audit
Ensure finished good meets all criteria for shipment

Customer-Defined Process

Inspection
Log visual inspection data for finished good

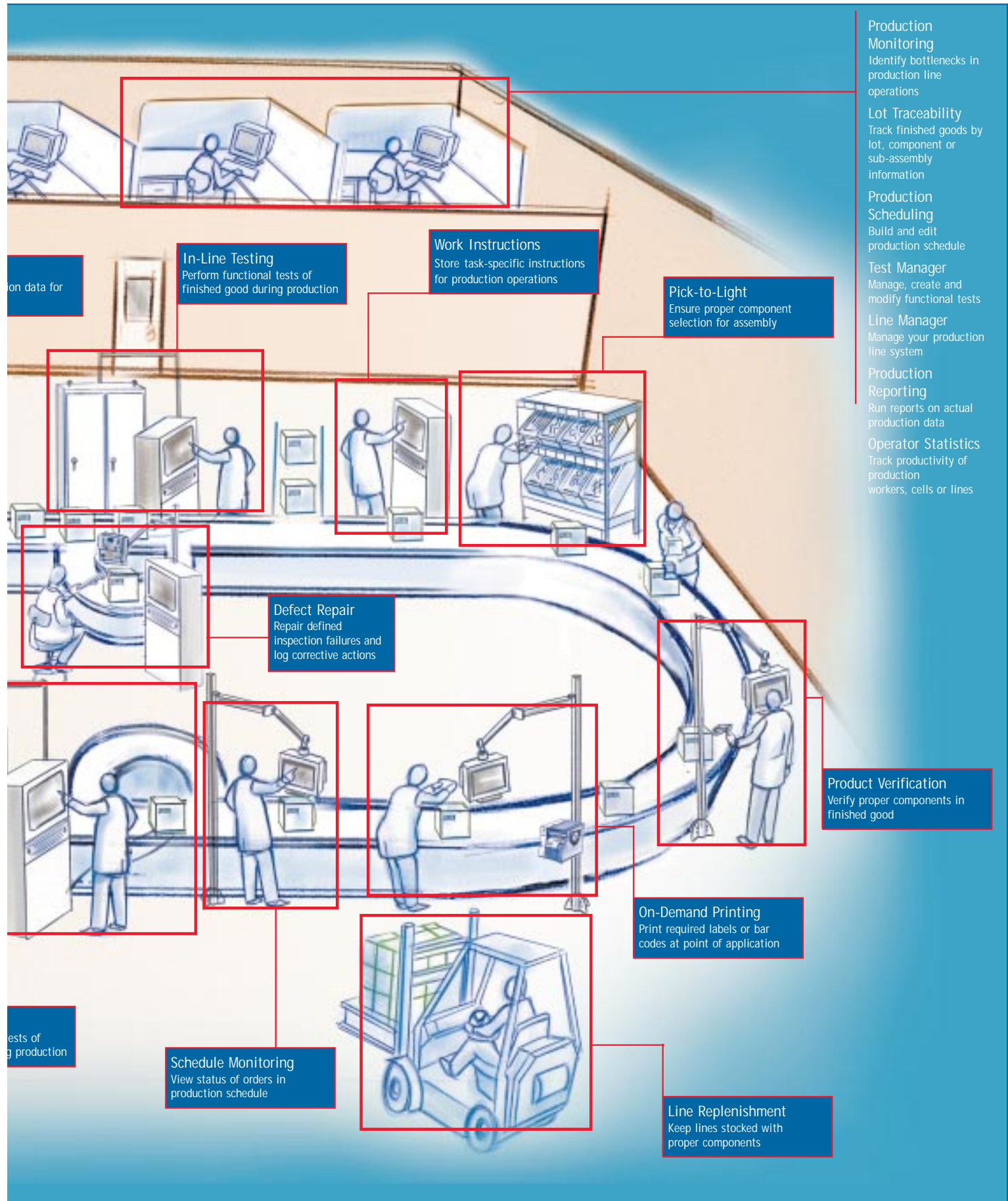


Order Marriage
Link critical data with unique finished good record

Critical Component Validation
Ensure installation of proper components or sub-assemblies

In-Line Testing
Perform functional tests of finished good during production

on Systems



on data for

In-Line Testing
Perform functional tests of finished good during production

Work Instructions
Store task-specific instructions for production operations

Pick-to-Light
Ensure proper component selection for assembly



Defect Repair
Repair defined inspection failures and log corrective actions



Product Verification
Verify proper components in finished good



On-Demand Printing
Print required labels or bar codes at point of application

ests of g production

Schedule Monitoring
View status of orders in production schedule



Line Replenishment
Keep lines stocked with proper components

- Production Monitoring**
Identify bottlenecks in production line operations
- Lot Traceability**
Track finished goods by lot, component or sub-assembly information
- Production Scheduling**
Build and edit production schedule
- Test Manager**
Manage, create and modify functional tests
- Line Manager**
Manage your production line system
- Production Reporting**
Run reports on actual production data
- Operator Statistics**
Track productivity of production workers, cells or lines

Thin-Client/Server Computing Hardware

The TC/SC architecture utilizes a high performance application server that communicates with thin-client terminals on the plant floor. Since thin-client terminals have no moving parts, they are much more reliable and easier to maintain than PCs. There are no disk drives on the plant floor to fail or to accept viruses from infected floppy disks. The terminals have no computer games or Internet access either. The only thing running on the thin-client terminals is the ProductionWare application. Also, all application and database information is located in a single location, so upgrades / enhancements are performed only once, and security is greatly increased.

PRODUCTIONWare™

The money saved by buying thin-client terminals instead of PCs translates into more computing power in your system. The application server is scalable for performance and can be protected, internally and externally, with hot-swappable hard drives, RAID-level technology, redundant power supplies and other protection devices. The power of the server and the protection available ensure a full-function, high-performance system with significantly reduced maintenance issues.

For plants with computers, or for organizations that prefer them, ProductionWare is still a viable option. The PCs can simply be configured as thin-client devices, and the ProductionWare application will still be managed from the thin-client server without sacrificing performance.



Project Management Experience

You need more than leading-edge software and hardware to make your project a success. You have deadlines to meet and schedules to keep in addition to keeping the existing production lines running. Our Project Managers provide a single point of contact during your project and ensure all deliverables and schedules are met on the way to the successful, on-time launch.

With over 16 years of industrial project management experience and over 3000 successful projects, we understand the value and importance of project management to your success. We are dedicated to the success of your project and employ an 11-step process that guides the project from inception to customer acceptance.

PRODUCTIONWare™

Step 1 Automation Plan

System requirements plan, schedule and pricing submitted

Step 2 Project Kick-off Meeting

Plan of action clarified, responsibilities assigned and reporting system established

Step 3 Field Survey

Integrator Project Team assesses current system

Step 4 Functional Description

Team details project requirements

Step 5 Detailed Description

Develops implementation method for each requirement

Step 6 Acceptance Test Plan and Procedures

Creates a detailed plan to satisfy all requirements

Step 7 System Development

Design of software and hardware

Step 8 System Integration Task

Scheduling and coordination of all start-up activities

Step 9 Factory Acceptance Test

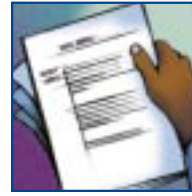
Client approval of factory testing

Step 10 Support Services

From installation supervision to complete training programs

Step 11 Documentation

Comprehensive support materials provided



Step 1



Step 2



Step 7



Step 3



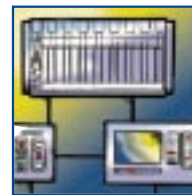
Step 8



Step 4



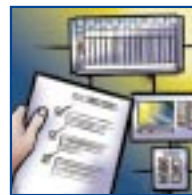
Step 9



Step 5



Step 10



Step 6



Step 11

Matrix Automation family of services

Control Engineering Group

An authorized Allen-Bradley Systems Integrator, Rockwell Software VAR and WonderWare VAR, our Control Engineering Group has significant product and project experience in numerous industries around the world. The Control Engineering Group offers the products and services that originally shaped Matrix Automation, including PLC and HMI-based systems, hardware procurement, contractor coordination and project management.

Business Computing Group

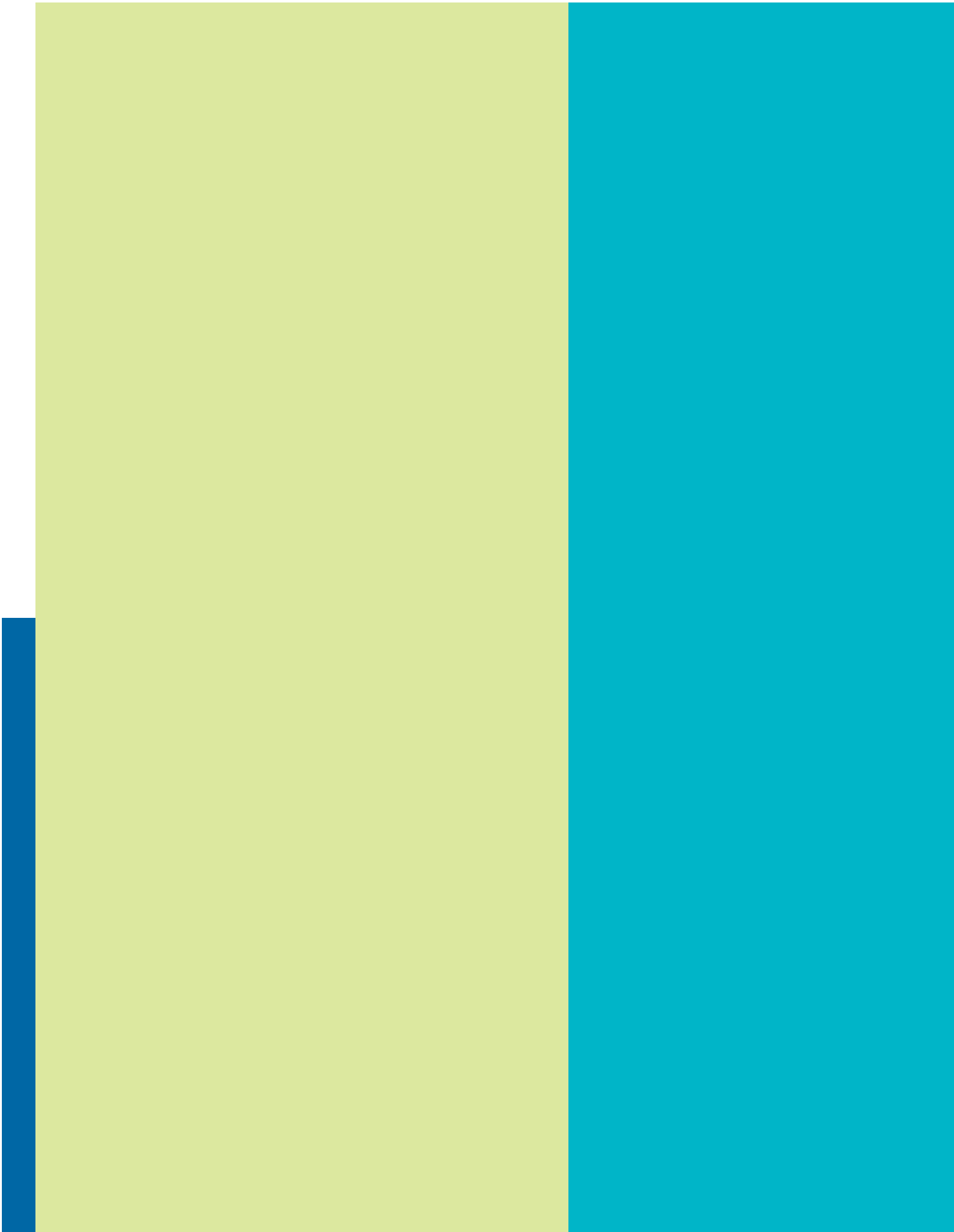
A Microsoft Certified Solutions Provider, Citrix Solutions Network Gold Member and Wyse Winterm Partner, our Business Computing Group has the experience and technical expertise to handle your office networking needs. All personnel are Microsoft certified and trained on the latest computing technologies.

The Matrix Automation Production Computing Group offers products and solutions for improving your product quality, productivity and plant operations. We deliver high-performance Manufacturing Execution Systems built on a foundation of proven technology, and we leverage that technology to give you a competitive edge. The combination of our ProductionWare™ software, the Thin-Client hardware architecture and our proven Project Management experience gives you the tools you need to reach your production, quality and growth goals.

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For more information on our capabilities, please contact the Production Computing Group at [419.433.4013](tel:419.433.4013) or visit our website at www.matrixautomation.com.

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