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MANUFACTURING INTELLIGENCE SOLUTIONS

An ICONICS Whitepaper

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1 About This Document

1.1 Scope of the Document

This document contains information on the features of several ICONICS products and third-party products that may be of use to companies wishing to apply manufacturing intelligence solutions. An overview of ICONICS BizViz and manufacturing intelligence suites is presented.

The intended audience includes plant managers, operators, manufacturing executives, process engineers, IT professionals, and maintenance personnel desiring to gain an understanding of this subject matter and ICONICS solutions.



2 Summary

Manufacturers recognize that each and every process provides a vital link to real-time data for the enterprise as a whole, which is especially critical with the move towards Real-time Performance Management (RPM) that uses dynamic performance targets to drive an enterprise to its optimum potential and competitive advantage. This is leading manufacturers toward real-time-based solutions at the manufacturing and enterprise level, a category known as Manufacturing Intelligence, which is an indispensable component of Collaborative Production Management systems.

Manufacturing Intelligence provides a common basis for using manufacturing information from the plant floor to enterprise systems and business partners. Supporting the enterprise's information and visualization requirements goes beyond HMI Software and places new demands on manufacturing management systems. This typically requires the coordination of disparate sources and platforms. Manufacturers also recognize that connectivity of each and every process is essential for an enterprise to achieve Operational Excellence. Fact-based analysis drives consensus and improvement, which is impossible without the real-time connectivity of both enterprise systems and the plant floor.

3 Manufacturing Intelligence is Part of an RPM Strategy

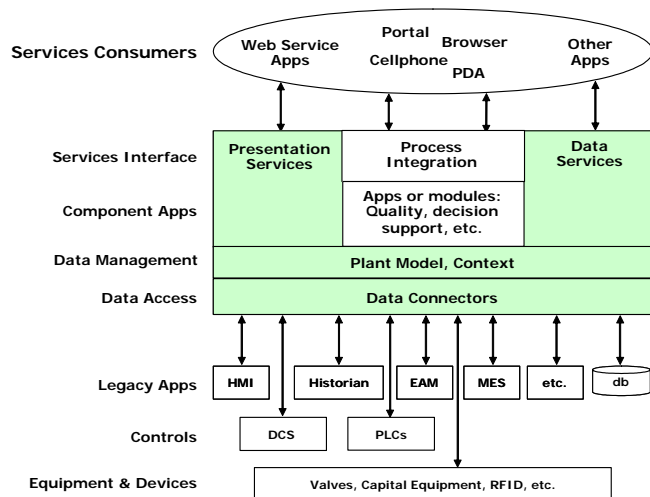
Evolving from HMI software, Manufacturing Intelligence provides visualization and information to people, processes, and applications. It delivers new performance capability to users at the plant-level and throughout the distributed manufacturing enterprise and supply network. Manufacturing Intelligence should provide real-time data collection and connectivity at the plant floor, establishes operational context, and exposes manufacturing information to the rest of the enterprise.

To address this, products such as ICONICS BizViz .NET suite of real-time performance management and manufacturing intelligence products are designed to bridge the gap between manufacturing and corporate business information systems. The core of ICONICS' BizViz suite is in its data-mining and Web portal technologies, with FrameWorX providing an underlining unified foundation for all common functionalities. BizViz is completely written from the ground up using C#, Microsoft .NET, Windows 2003 Server, and SharePoint technology integration.

The ICONICS BizViz suite enables the bridging of real-time industrial or corporate databases. Integrated information from different data sources includes Microsoft SQL Server, Oracle, SAP, OPC HDA (Historical Data Access), OPC AE (Alarm and Events), and OPC real-time information. The BizViz suite provides downtime analysis, KPIs, and OEE through manufacturing portals and digital dashboards.

Manufacturing Intelligence provides the foundation for manufacturers to run their business using an RPM strategy from the bottom up. As a plant-centered enterprise component, Manufacturing Intelligence should tap into all operational areas, including production, planning, quality, engineering, maintenance, asset management, inventory,

and materials management applications. These solutions typically scale to work across multiple plants and locations. Benefits can include higher levels of production, better asset utilization, reduced production cost, improved local decision-making, and improved service to customers.



Manufacturing Intelligence Connects to Plant Data Sources, Establishes the Context, Serves Up Information to People, Applications, and Processes, and Enables Performance Solutions

To address this, BizViz offers ReportWorX data mining technology, which takes data from different sources and turns it into information in the form of reports. Reports can be created using a .NET Microsoft Excel plug-in. ReportWorX wizards can schedule reports based on time, date, events, OPC values, or database values.

Reports can be redirected to printers, e-mail, fax machines, disk, desktops, Adobe Acrobat PDFs, and can also be published to Web servers. ReportWorX comes with regulatory report templates as well as several other industry-specific reports.

A role-based, personalized view of this information should be available to distributed users through a portal, Web browser, or wireless device. Plant managers, operators, manufacturing executives, process engineers, IT professionals, maintenance personnel and business partners need to see the plant and production information they need to make the best decisions in real time with current data.

To address this, BizViz offers PortalWorX, which is based on Microsoft's SharePoint Server .NET technology. It allows users to create and manage custom manufacturing and business portals along with visualization dashboards that provide single sign-on and collaboration for optimization of Key Performance Indicators (KPIs). PortalWorX provides tools to create a portal for real-time, historical plant and business information.

Software	Functions	Benefits
PortalWorX	Manufacturing Portals and Visualization Dashboards Based on .NET Web Parts	Provide Single Sign-on and Collaboration for Optimization of KPIs, Create Custom Layouts and Displays, Single Plant-wide Viewing Location
BridgeWorX	Enterprise Data Bridging with No Programming	Transfer Information to and from Real-time Manufacturing Devices to Corporate Business Information Systems
ReportWorX	Report Info from Any Data Source	Create Custom Reports Based on Time, Date, Events, OPC Values, or Database Values
MobileHMI	WAP/Internet, PDA, Phone Clients	Turn Data from Different Sources into Information on a Web Browser, Mobile Phone or PDA

Key Manufacturing Intelligence functionality includes service-based connectivity to a wide variety of plant equipment and legacy systems, consisting of manufacturing context information, often based on a plant model or historian, as well as the aggregation, transformation, and conditional processing of data. It also features distributed visibility via dashboards or portals, data interfaces for Web Service applications and other applications, and the ability to create new performance applications to leverage the data and systems that currently exist.

Manufacturing Intelligence may also consist of a BPM or execution engine, and additional modules such as SPC, analytics, decision support, or execution. In addition, it should also provide integration with ERP systems, enterprise platforms and other business systems using OPC, ISA 95, OAGIS, or the like, as well as other applications such as analytics and performance measurement. To address this, BizViz offers BridgeWorX, which performs data exchange to and from a database or data source.

BridgeWorX has a visual transaction data-mapping configuration wizard that enables users to transfer information to and from real-time OPC manufacturing devices to corporate business information systems. BridgeWorX data-mining technology can access Microsoft SQL Server, Oracle, Microsoft Access, SAP and other real-time or archived

manufacturing or business data sources. BridgeWorX's scheduler triggers "transactions" based on real-time OPC data, alarms, events, time and date, database or other file attributes.

Scalability, management, deployment, and common context of data across multiple

Features	Benefits
Open Standards Based Platform	Leverages Best of Breed Solutions, Not Tied to a Supplier's Proprietary Solutions
Organic Product Development	Suite is Designed From the Ground Up, Not Disparate Products From Acquisitions
Large Software Installed Base	The Results are Real World Field Tested and Proven, with Over 5,000 Customers Worldwide
Both OPC and Non OPC Connectivity	Allows Manufacturers to Best Leverage Their Existing Connectivity Solutions
Manufacturing & Non-manufacturing Applications	Leverages Expertise in 20 Vertical Industries, plus Expertise in Financial, TT&L, Government, and Homeland Security
Building Automation and Control Networks BACnet Protocol Connector	Provides Data Communication that Enables Interoperability for Applications Such as HVAC Control and Security Management
Simple Network Management Protocol (SNMP)	Provides an Application Layer Protocol that Facilitates the Exchange of Management Information Between Network Devices and Enables Visualization of Network Performance

facilities are proving to be very important for large manufacturers. Some manufacturers look for a standardized data model to support this kind of functionality. Another approach is to integrate elements of synchronized business processes, manufacturing-initiated supply chain alerts or events, and new business processes to support operations/manufacturing based on existing sources of data.

To address this, BizViz offers MobileHMI, which is designed for wireless and Web-enabled devices such as Web browsers, mobile phones, Pocket PCs, Palm, Blackberry and PDA devices. MobileHMI turns data from different sources into information on a Web browser, mobile phone or PDA. MobileHMI supports a range of standards, including OPC Data Access, GSM, TDMA, and CDMA wireless application protocols (WAP). This provides the ability for plant personnel to acknowledge alarms and analyze real-time information about their automation operations directly from their mobile devices.

4 Conclusions

Manufacturers should utilize Manufacturing Intelligence for providing real-time data collection and connectivity at the plant floor, establishing operational context, and exposing manufacturing information to the rest of the enterprise through interoperability. This is essential to perform lean manufacturing and provide manufacturers with the tools to measure KPIs and OEE that drive operational efficiency. To meet these needs, ICONICS offers their BizViz Manufacturing Intelligence solution, which by leveraging their large HMI software installed base, makes ICONICS a formidable player in this emerging market.

5 ICONICS and Manufacturing Intelligence

Founded in 1986, ICONICS is an information visualization software company providing visualization of both real-time and historical data from the manufacturing floor to the enterprise. ICONICS focuses on two complementary offerings, the GENESIS32 HMI/SCADA Automation Visualization Suite for real-time manufacturing data, and the BizViz Enterprise Visualization Suite for bridging the plant floor to the enterprise through reporting, wireless, mobile, and data-mining portal technologies based on Microsoft .NET and Share Point Server. ICONICS BizViz falls into this emerging new category defined as Manufacturing Intelligence.

This paper was written by the ARC Advisory Group on behalf of ICONICS. The opinions and observations stated in the paper are ARC's. For further information or to provide feedback, please contact the author at cresnick@arcweb.com.



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WHY CHOOSE ICONICS?

ICONICS, Inc. is a leading provider of award-winning enterprise Manufacturing intelligence and automation software solutions and implementation services. **ICONICS** solutions deliver real-time visibility into all enterprise operations and systems, helping companies to be more profitable, more agile and more efficient. **ICONICS** products have delivered value within over 250,000 installations worldwide and have been chosen by more than 70% of the Fortune 1000.

