



MESA White Papers

Overview



November 2009

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No.	Title	Date (last version)
1	The Benefits of MES: A Report from the Field Overview: <i>Manufacturers who are using MES software were surveyed to learn what kind of results they were experiencing and to quantify this information, to verify the larger business/financial benefits, and to help manufacturers by summarizing findings.</i>	May 1997
2	MES Functionalities & MRP to MES Data Flow Possibilities Overview: <i>Eleven MES functions are defined, and the flow of information between Planning systems (MRPII / ERP) and MES is clearly diagrammed. Includes: 1) background, 2) why MES?, 3) MES functionalities, 4) purpose and participation.</i>	March 1997
3	Controls Definition & MES to Controls Data Flow Possibilities Overview: <i>This paper is designed to create a functional architecture for the data flow possibilities, and composition of, the MES to Controls Layers in an overall integrated Enterprise. It includes: 1) purpose and participation, 2) participants, 3) background, 4) MES in an enterprise data flow diagram, 4) components, and 5) definition of terms.</i>	February 2000
4	MES Software Evaluation / Selection Overview: <i>The purpose of this white paper is to assist manufacturers and associated support organizations in evaluating and selecting Manufacturing Execution System (MES) software. Various definitions portray MES as an integrated suite of products with dynamic interaction and real-time responsiveness. The paper offers a systematic, team-based process of evaluation, with recommendations for each step of the process.</i>	1996
5	Execution-Driven Manufacturing Management for Competitive Advantage Overview: <i>Discusses the evolving nature of manufacturing systems, and how execution-driven systems interface with planning and other systems to improve performance, competitiveness and profitability.</i>	1997
6	MES Explained: A High Level Vision Overview: <i>This paper provides background and nine graphical models depicting the context, role, functions, software options, benefits, and technology trends for MES. It addresses the general needs of the manufacturing community, with information targeted for corporate executives, financial management, IS professionals, operations and manufacturing executives, plus others who use specialized information systems.</i>	September 1997
7	Justifying MES: A Business Case Methodology Overview: <i>This white paper presents a well-constructed business case on how an MES program can be used by potential users of MES, as well as vendors, service providers, consulting firms and others to provide rapid ROI. The focus of this white paper is to lay the foundation for developing a business case for investing in MES solutions.</i>	May 2000
-	Assessment Tool (with White Paper 7) Overview: <i>The Manufacturing Diagnostic is a very detailed tool for assessing all aspects of manufacturing. This tool is broken down into multiple sections, beginning with a higher level analysis of practices employed, down to detailed data collection on manufacturing performance, cycle times, yields, and so forth.</i>	May 2000
8	MESA's Next Generation Collaborative MES Model Overview: <i>The Next Generation c-MES model explained in this paper describes the functions within production operations that are to interact within the CM practices across the extended enterprise. The c-MES Background, Trends, and Need are described prior to the model discussion.</i>	May 2004
9	Collaborative Manufacturing Explained Overview: <i>The concept of Collaborative Manufacturing is described - the market-drivers, implications, goals, and the Manufacturing Enterprise Solutions that support it. Provides an overview of how the concept was driven by the marketplace and why it is important for manufacturers.</i>	2003

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10	<p>Manufacturing Enterprise Solutions Support for Demand Driven Enterprises</p> <p>Overview: <i>Manufacturers worldwide are striving to change their core strategy for operating to become more demand driven. This means that beyond operating purely for low costs and high throughput, companies must deliver superior value to their markets. Demand driven leaders are using software to support both achieving and sustaining progress toward their core goals.</i></p>	September 2004
11	<p>MES Selection: Best Practices</p> <p>Overview: <i>This paper is based on the results and experience of a large number of selection processes in various industrial branches. Typically, the throughput time of a selection process went down from 6 - 8 months to 6 - 8 weeks.</i></p>	September 2004
12	<p>Benefits of an Integrated Quality Solution</p> <p>Overview: <i>Leading edge companies are choosing to implement comprehensive, tightly integrated quality and manufacturing systems that raise quality levels, improve cycle-times, and enhance the long term corporate bottom line while meeting FDA regulatory requirements. This paper explains how the seamless integration of CAPA, DHR and Manufacturing Control will ensure the highest return on investment.</i></p>	September 2004
13	<p>Levering Process Data</p> <p>Overview: <i>Many companies suffer from inefficiencies with their Manufacturing Control Systems because they do not have the adequate production information about their process from which to improve operations. They do not know where process changes need to be made to positively impact production efficiencies and product quality.</i></p>	September 2004
14	<p>ISA-95 Overview: A 21st Century Manufacturing Tool for Performance-based Management & Engineering</p> <p>Overview: <i>If you want to know: What are the most common MES fallacies? How are MES technology and its standards changing? What does the future hold for MES? Then read this article, where we expose common MES myths; explore evolving MES technologies; and take out the crystal ball to see what's on the horizon for MES.</i></p>	September 2004
15	<p>Next-Generation e-Manufacturing Solutions: Myths, Morphs & Trends</p> <p>Overview: <i>If you want to know: What are the most common MES fallacies? How are MES technology and its standards changing? What does the future hold for MES? Then read this article, where we expose common MES myths; explore evolving MES technologies; and take out the crystal ball to see what's on the horizon for MES.</i></p>	September 2004
16	<p>ISA-95: The Enterprise-Plant Link to Achieve Adaptive Manufacturing</p> <p>Overview: <i>Adaptive manufacturing flexibly develops, produces, and delivers demand-driven products, while optimally leveraging existing resources. However, in order for adaptive manufacturing to happen, manufacturers must seamlessly transfer knowledge for defining, scheduling, and producing products between their enterprise systems and shop-floor systems. For the majority of manufacturers, this integration is the weakest link in their supply chains</i></p>	March 2006
17	<p>ISA-95 Business Case Evolves Through Applications and Methodologies</p> <p>Overview: <i>Business-to-manufacturing (B2M) data exchange applications and system life cycle methods are being developed from ANSI/ISA95, Enterprise-Control System Integration Standard, to adapt and optimize manufacturing in the 21st Century "Pull" marketplace. The MESA/ISA95 Best Practices Working Group shall publish an annual ISA Technical Report to document these evolving applications and methods with an explanation of ISA95 business case.</i></p>	April 2006
18	<p>When Quality Demands – Can MES Measure up?</p> <p>Overview: <i>Ask any company how important quality is and they'll all give you the same answer – very! Having said that, some companies face more of a challenge managing quality than others</i></p>	November 2006

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19	<p>Applying a Phased Approach for a Successful MES Project</p> <p>Overview: <i>As industrialized nations must compete more often against low manufacturing costs in developing countries, manufacturing businesses are implementing Manufacturing Execution Systems (MES) to increase productivity, improve quality and reduce downtime. Typically MES solutions are associated with improvement initiatives such as LEAN, Six Sigma, TQM, TPM, among others.</i></p>	November 2006
20	<p>ISA-95 Based Change Management</p> <p>Overview: <i>Change is a fundamental reality of the manufacturing environment. Shortened product life-cycles, the trend towards mass customization, the move away from the traditional supplier-manufacturer-distributor supply chain to the more dynamic demand-driven supply networks (DDSNs), and increased competitive pressures are all forcing manufacturers to change more frequently than was the case in the past.</i></p>	November 2006
21	<p>ISA-95 Implementation Best Practices: Workflow Descriptions Using B2MML</p> <p>Overview: <i>This whitepaper focuses on the best practices to describe Workflows using B2MML Applications based on the ISA-95 Standards. ISA-95 and B2MML, like any standards, are subject to interpretation. MES and ERP vendors could interpret these standards differently, which could result in variants of the implementations, thus leading to interoperability issues.</i></p>	November 2006
22	<p>Manufacturing Information Systems – ISA88/95 Based Functional Description</p> <p>Overview: <i>Manufacturing plants control encompasses many tactical and operational functions, addressing several types of manufacturing related operations from receipt of raw material to shipping of finished goods, from production itself to equipment maintenance through inventory movements and material quality tests, from customer order lines to work dispatching in addition to controlling the manufacturing operations themselves.</i></p>	November 2006
23	<p>ISA-95: As Is / To Be Study</p> <p>Overview: <i>The ISA-95/MESA Best Practices Technical Report explains how the ISA-95 Enterprise-Control Integration Standard, is applied to lower total cost of ownership (TCO) of manufacturing operations management systems and their enterprise and plant interfaces.</i></p>	November 2006
24	<p>ISA-95-Based Operations and KPI Metrics Assessment and Analysis</p> <p>Overview: <i>ISA-95 Part 2 and Part 3 provide a valuable data definition framework when applying best practices for managing operations and related key performance indicators (KPIs).. The data definition framework is able to serve as the KPI source of information for supply chain scoreboard systems. An example is Production KPI inputs into a MAKE process element of the Supply Chain Operations Reference Model (SCOR) by Supply Chain Council. Designing and implementing these systems require using a process that ensures information alignment with business strategy through construction of financial metrics from operations metrics. Key points necessary to building successful supply chain scoreboard systems include: 1. Understand key stakeholders needs and expectations 2. Summarize and document those needs and expectations through a Statement of Needs (SON) document 3. Identify critical success factors (CSFs) and relevant metrics that align with the SON 4. Prioritize options (oor projects) through the use of a value chart. The value chart quantifies benefits versus risk. 5. Derive appropriate operations KPIs, establish a baseline, and periodically measure identified KPIs based on operational priorities 6. Define the Data Standard Information Layer to normalize manufacturing information and align with Supply Chain metrics 7. Measure, visualize and analyze operations KPIs against baseline 8. Review SON periodically with key stakeholders and adjust operations KPIs based on evolving needs or when the corporate business models or markets change.</i></p>	October 2007

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25	<p>On Overview And Comparison of ISA-95 and OAGIS Overview: <i>This comparison paper is White Paper #1 of the ISA-95 and OAGIS Manufacturing Integration Standards White Paper Series. White Paper #2: OAGIS, ISA-95 and Related Manufacturing Integration Standards - A Survey explains the related standards that overlap or work in conjunction with ISA-95, Enterprise-Integration Standards, and OAGIS, Open Application Group Integration Specification, in developing manufacturing system architectures. White Paper #3: Possible Convergence Directions for ISA-95 and OAGIS presents a convergence path and alternatives for manufacturers currently constructing application integration architectures and for standards committees and working groups working through convergence discussions.</i></p>	October 2007
26	<p>Related Manufacturing Integration Standards, A Survey Overview: <i>Manufacturing organizations attempting to integrate the plant floor with ERP, supply chain, scheduling, quality, and other systems in their enterprises today have difficult choices to make to base that integration on standards – specifically, what standard to choose. Unfortunately (or maybe fortunately, depending on your point of view) there are several choices available, all of which have strengths and weaknesses, and all of which overlap to some extent.</i></p>	October 2007
27	<p>MES Harmonization in a Multi-Site, Multi-Country and Multi-Cultural Environment Overview: <i>A whitepaper co-branded with Atos Origin, focused on the benefits and challenges of harmonizing the approach and implementation of MES across multiple sites, countries, and cultures. This paper offers actionable insight on how to harmonize across the various boundaries, while reaping the benefits of standardization.</i></p>	October 2008
28	<p>SOA in Manufacturing Guidebook Overview: <i>Manufacturing companies are facing many new challenges today to become more flexible and agile as business models change. One technology or architecture that helps companies with these challenges is called Service Oriented Architecture (SOA). When used in combination with appropriate industry standards and continuous improvement methods, SOA allows for a plug-and-play type of architecture for IT systems. Basically, IT system's functionality can be added, changed or removed quickly as market demands require business changes.</i></p>	May 2008