A POST-MORTEM ON THE UNSUCCESSFUL MES PROJECT YOU ARE ABOUT TO START – Part 2 –

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GPA is a full-service industrial technology solutions provider specializing in Discrete & Process Automation, OT Infrastructure & ICS Cybersecurity, and Manufacturing Intelligence. Our vision is to leverage our expertise to build meaningful relationships with our customers while guiding them toward industrial plant digitization, IT/OT convergence, and innovations to come.

INTRODUCTION

This is the second paper in this series as I continue to highlight aspects of an MES project that can greatly impact success. Remember, it is not my intent to paint Digital Factory projects in a negative light but rather to guide you through common pitfalls I've observed over the years. While you may read this series and reflect on how obvious most of these aspects appear, the success of the project is dependent on the execution and adherence. For example, as I later elaborate on, having a stakeholder (or stakeholders) that does not represent all the impacted teams will affect how well the project is executed and the resultant system will be utilized. This paper addresses the importance of stakeholders and organizational buy-in, somewhat interactive contributing factors.

About the Author

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I'm currently the Director of Product Development at Global Process Automation (GPA). With over 30 years in factory automation including 20 years as an independent consultant/contractor, my career spans from PLC programming to working up the Purdue Model until reaching the MES/Enterprise layer roughly a decade ago. I have worked with systems such as Inductive Automation Ignition and Sepasoft MES modules. My experience in Digital Manufacturing dates back to the early 90s—long before the term "Industry 4.0" was coined. One of my earliest projects involved a SCADA system that interfaced with a mainframe ERP system to monitor production on 100 wire weaving machines for a screen mesh manufacturer.

While I do not claim to have all the answers, this broad experience enables me to share valuable lessons from past projects and to help you avoid common missteps.

IDENTIFYING THE STAKEHOLDERS: THE STRENGTH OF PERSPECTIVES

Before I get into the details on this contributing factor, I would like to point out an important aspect when it comes to stakeholders.Management and deference of stakeholders' time is important to maintain throughout the project. It is the responsibility of the project sponsor and project manager to structure meeting attendance based on the topics. This makes more efficient use of the team's time and avoids "rabbit hole" diversions that detract from the scheduled topics.That said, there is going to be a subset of the stakeholders that will attend almost every meeting to maintain project continuity.

I can't overstate the importance of project stakeholders as they are another critical contributor to the success of the project.

Again, a project may still ultimately be successful without the right stakeholders, but it does become significantly more challenging.From a high level, they are responsible for the direction and pace of the project from the customer's perspective.They coordinate representatives from different teams involved in the development and implementation of the solution.They are typically the communication contact with the vendor's team and often are responsible for keeping upper management informed regarding progress (or lack thereof). Identifying stakeholders who will be engaged throughout the project life cycle promote success as a lack of engagement can demonstrably impact the other stakeholders. The main characteristic of a successful stakeholder is they accept responsibility for the project's success. Lack of this quality usually materializes as lack of attendance during critical meetings, lack of preparation to contribute to topic discussions, consistently missing deadlines of assigned tasks due to "other priorities", and exhibition of an adversarial demeanor when interacting with the vendor team and even others within their own organization.

Below I have a list of the typical roles the stakeholders perform within the project team along with a brief overview of characteristics of and contributions by each. This is a blend between what their responsibilities are within the organization and within the team. The actual size of the team depends on the complexity and scope of the project and the size of the customer as often a single stakeholder can have the responsibility of multiple roles. The structure of the stakeholder team should be discussed with the vendor during the sales phase to ensure that momentum can be quickly attained.

Client Project Stakeholders

Project Sponsors

- Usually someone from executive management.
- Provide strategic direction and vision for the project.
- Secure the project funding, typically as a CapEx expenditure.
- Champion the project with departments and leadership.
- Tasked with resolving any organizational obstacles.
- Often the final say in any misalignments in requirements or execution.

Project Manager

- I've often experienced projects where there is a PM for both the customer and the vendor.
- Plan and manage project timeline, scope and budget.
- Coordinate between all stakeholders and vendors.
- Tracks progress, manages risks, and handles issue resolution.
- Ensures timely documentation and communication flow.
- Helps customer team maintain focus on the project and final solution.

Project Manager

- Defines operational requirements and use cases.
- Validates the MES design aligns with production processes and KPIs.
- Assists in process mapping and system configuration.
- Provides context for information needed to integrate with plant floor systems.
- Guides the vendor team on how raw materials and products move through the plant floor.
- Supports user acceptance testing.

Client Project Stakeholders (Continued)

Operations / Production Managers

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IT / OT (Infrastructure, Networking, Security)

- Ensures MES infrastructure is properly set up and accessible.
- Coordinates integration with other systems (ERP, PLM, WMS, CMMS, etc.).
- Usually involved in integration to shop floor systems.
- Implements cybersecurity protocols and data governance.
- Supports deployment and long-term maintenance.

Engineering / Automation Team

- Connects MES server to shop floor systems (PLCs, DCSs, CNCs, etc.).
- Defines data collection points and integration needs.
- Supports system testing and performance validation.
- Aligns automation standards with MES functionality.

MES Vendor / System Integrator

- Acquires and documents system requirements through interviews and workshops.
- Implements the MES software based on the established scope and requirements.
- Provides technical expertise and best practices.
- The vendor project manager tracks the progress and financials of the project.
- Conducts training and knowledge transfer and provides system documentation.
- Supports solution validation and go-live activities.

Client Project Stakeholders (Continued)

Quality Assurance Team (may be part of vendor and / or customer team)

- Ensures MES solution meets regulatory and compliance standards.
- Defines traceability, audit trails, and validation protocols.
- Participates in system testing and change control review.
- Verifies data integrity and reporting functionality.

End User / Shop Floor Operator

- This is sort of a broad definition but encompasses typical system users.
- Provides insights into current operation procedures, challenges, and opportunities.
- Provides feedback during design, development, and testing.
- Participates in training sessions and user acceptance.
- Uses MES for real-time data entry and production monitoring.
- Reports issues and suggestions for post-implementation improvements.

Business Analyst / Process Owner

- Analyzes current workflows and identifies improvement opportunities.
- Translates business needs into specifications.
- Bridge communications between Operations and IT.
- Helps measure ROI (Return on Investment) and post-implementation success metrics.

ORGANIZATIONAL BUY-IN: THE WILL TO SUCCEED

As important as having a representational team of stakeholders involved in a project, unless there is an organizational buy-in to the new MES, the chances of successful implementation and long-term benefits are marginal at best. This buy-in must occur at all levels of customer organization, from plant floor users through C-level management. If there are gaps in acceptance and support, the negative impact to the project can be significant.

For instance, if the users responsible for data entry only see their tasks as an inconvenience and ignore them as a waste of their time, the lack of good data will become part of a self-fulfilling prophecy dooming the success of the implementation of the MES. It's important the project is sold based on its benefits to the company and impact to long term financial success. ROI should be presented in a way that shows how these improvements can positively impact the company's bottom line which impacts everyone. With proper change management, the system can be integrated into aspects of the manufacturing process as a procedural change, not as a random afterthought.

Communicating ROI Clearly
Framing MES as a strategic investment, not just a technical tool

Below are some strategies to focus on when working toward the goal of organizational buy-in. With each strategy point, I included some additional details describing the point further and activities to help adoption.

Strategic Benefits

- Enhanced operational visibility through real-time data improves decision-making strategies and exposes inefficiencies.
- Increased productivity resulting from optimized production schedules, reduced downtime, and improved throughput.
- Quality and compliance tools help production meet quality standards and regulatory requirements.
- Cost reduction through streamlined operations.
- Agility improvements result in the ability to respond quickly to market changes or production disruptions.

Stakeholder Analysis

- Executive leadership presents how MES aligns with the company's strategic goals in the forms of financial benefits, ROI, competitive advantage, etc.

Stakeholder Analysis (Continued)

- Operation managers illustrate how the new MES can simplify daily management and increase efficiency.
- IT department addresses concerns regarding integration with existing systems, cybersecurity, data management, etc.
- Frontline employees describe expectations of impact on daily routines and training on the new system.
- Financial department publishes cost-saving potential and projected ROI.

Communication

- Customized messaging addresses concerns for different stakeholders (pain points, expected benefits, support).
- Feedback channel promotes formal and informal feedback throughout the project communicating concerns and suggestions.

Business Case

Benefits

- Quantifiable ROI documentation highlights realistic expected savings, throughput improvements, reduced scrap, etc.
- Short-term and long-term benefits provide immediate wins and long-term benefits.
- Risk mitigation assistance with production halts, quality issues, compliance failures, etc.

Roadmap

- Pilot projects provide proof of concept which can validate assumptions, provide quick wins, and build momentum of success.
- Phased approach executes the project in smaller releases to minimize disruptions and promote an iterative process.
- Clear key milestones and KPIs serve to measure success and align expectations.

Costs and Resource Allocation

- Budget details with transparent cost estimate based on well-defined requirements help avoid financial surprises.
- Changes in scope procedures should be well-established at the beginning of the project.
- Resource planning in collaboration with the project stakeholders help maintain project progress. I've seen projects come to a standstill waiting for a server or other hardware.

Change Management

Executive Sponsorship

- Champion sponsorship in the form of an influential executive sponsor who advocates for the MES project.
- Leadership engagement early in the planning stages promotes alignment.

Change Management

- Communication plan answers the why, what, and how of the MES implementation.
- Extensive training and support for different user groups can help generate excitement.
- Proactive approach to identifying potential resistance with change agents addressing concerns.
- Continuous improvement methodology continually refines the system after implementation based on usage and business needs.

Practical Implementation Tactics

Early Wins

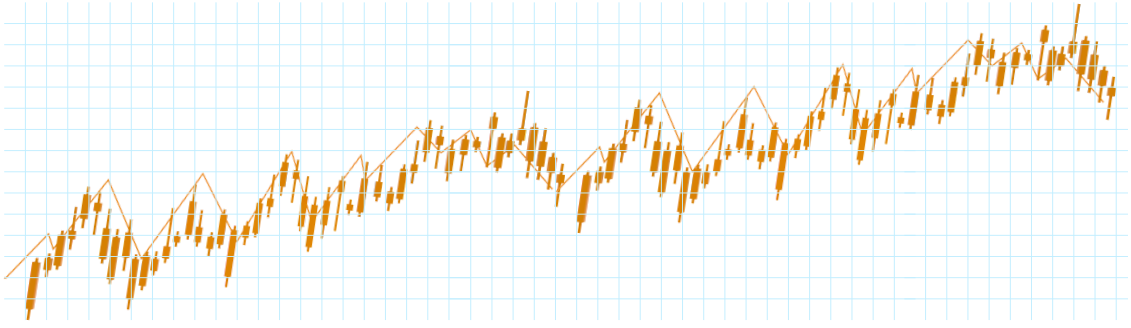
- Pilot projects in a controlled environment can provide a quick win and create project momentum.
- Case studies from similar organizations or internal projects show realistic outcomes.

Stakeholder Involvement

- Involve stakeholders in defining requirements.
- Cross-functional team strategies help ensure all perspectives are considered.
- Collaborate with users throughout the project for insights and buy-in.

Communication and Reporting

- Regular updates clearly share progress, challenges, and milestones.
- Visual dashboards show timelines and progress on the MES project.
- Internal success stories about improvements resulting from the project can go a long way to help gain traction for the remaining efforts.



Long-term Considerations

Continuous Support and Improvement

- Post-implementation reviews assess the system's performance against goals established during creating the project charter. Improvements are planned as necessitated by results.
- Ongoing training as the system evolves. I tend to lean towards the "Train the trainers" approach.
- After successfully completing the MES pilot, plan the strategy for scaling the solution across other lines, areas, and sites.

Cultural Shift

- Use real-time data for decision-making strategies to foster a data-driven culture.
- Strive to create an environment where innovation and input is encouraged and rewarded.