Incremental MES: Strategy for Stepwise ROI in MES Implementation Programs

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MES is an essential part of Industry 4.0. If it is implemented correctly, manufacturers can achieve a step change in productivity, efficiency, flexibility, and quality on the shop floor. Manufacturers aren't getting these benefits because they are not using the platform approach for MES. However, the use of this approach has certain challenges in terms of time, budget, complexity, and value creation. This PoV discusses a new trend where enterprises can implement MES in quick, cost-effective, and incremental steps using the example of the Dassault Systèmes and ITC Infotech MES Xpress solution built on the Apriso Platform.

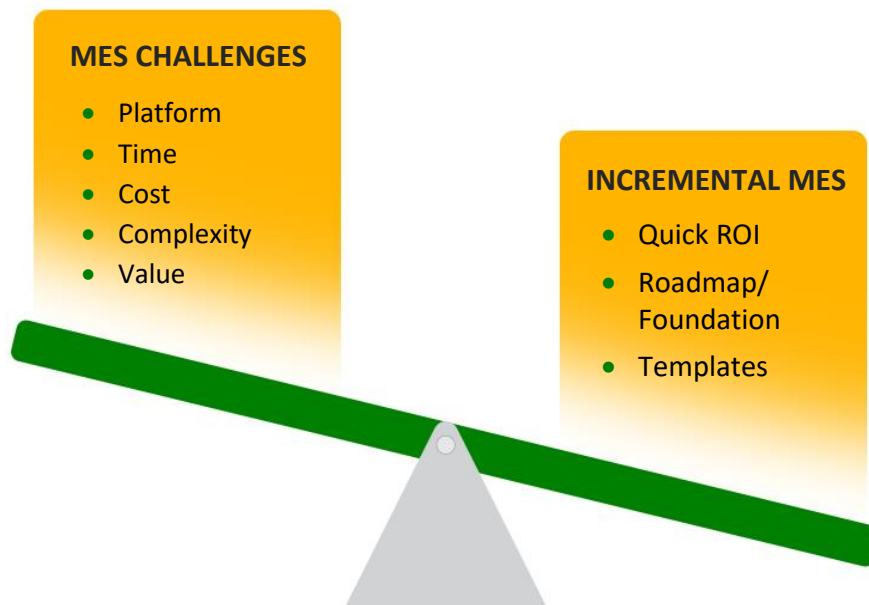## Incremental MES approach can address challenges faced by manufacturers opting for MES

Manufacturers aspire to use MES but face a few challenges in their MES journey:

- **Platform.** Many manufacturers have been trying some form of MES over the years with either homegrown tools or pointed solutions. However, they don't get the full benefit of MES. Homegrown software tools do not scale enough with evolving requirements and technological developments. To benefit from MES, manufacturers need to shift from homegrown tools to a proper MES platform across the factory and then move to the One MES platform, which can help manage multi-plant, multi-location

operations. But manufacturers find this whole shift to the platform a big exercise, which may cause disruption and uncertainty.

- **Time.** End-to-end MES programs normally take some time to implement. Pre- and post-implementation activities such as planning, preparation, vendor selection, and user training also require time. The time lag between conceptualization of an MES implementation and using it on the shop floor becomes a deterrent to MES adoption. Thus, manufacturers often explore other IT applications to solve shop floor problems that are best addressed by MES.

- **Cost.** Another big challenge to the adoption of MES is the total cost of implementation programs. Even if manufacturers consider MES, they may not have enough funds to see it through. How can manufacturers prioritize their investment? Generally, for any investment decision, firms consider the investment required and the returns expected. If the returns are in the long term, it creates uncertainty and becomes a less attractive value proposition. Hence, MES programs should give returns in the short term and the long term.

- **Complexity.** MES implementation is a complex process that aligns everyone internally and externally—from IT, OT, technology provider, implementation partner, etc. Many industry-specific or customer-specific processes may require customization and workarounds. MES implementations can go wrong for various internal or external reasons. The challenge is to minimize these complications with planning and collaboration. Implementing MES in short steps or modules decreases its complexity.

- **Value.** Getting value out of MES as part of a larger Industry 4.0 initiative is a challenge. MES is one part of the equation for Industry 4.0, and many other Industry 4.0 initiatives are directly or indirectly dependent on getting MES right. If there is a delay in MES implementation, it creates uncertainty and skepticism in the larger Industry 4.0 team. To gain the trust and confidence of executives and cross-functional teams, it is essential that MES gives quick results.

Exhibit 1: Incremental MES – Industry Best Practices

MES CHALLENGES
- Platform
- Time
- Cost
- Complexity
- Value

INCREMENTAL MES
- Quick ROI
- Roadmap/ Foundation
- Templates

Source: EIIRTrend

Incremental MES solutions, helpful in the short term and the long term, are needed to mitigate the challenges mentioned previously. They must include the following features:

- **Quick ROI.** MES investments often compete with other priorities. So MES stakeholders need to build a business case that gives both short-term and long-term returns. Companies will require a step-by-step approach. In this respect, incremental MES can let manufacturers start small, get the benefits, and then scale.

- **Roadmap/Foundation.** A quick ROI will not help much if MES cannot be scaled up later for company-wide benefit. Incremental MES will help manufacturers start small, get results, and lay the foundation of scaling up later. It helps perform organization-wide MES implementation with full functionality and benefits in incremental steps in the right sequence.

- **Templates/Solutions.** One way to implement quick and incremental MES is to have a lot of pre-built templates or solution modules that can be quickly customized and implemented and give immediate ROI.

- **Risk Management.** Incremental MES should help manufacturers begin on a small scale and minimize risks, but ultimately scale up to a full-fledged MES/MOM, bringing in true value and helping to manage risks better across the implementation lifecycle.

Example of Incremental MES: Dassault Systèmes & ITC Infotech MES Xpress

ITC Infotech has developed MES Xpress on the Dassault Systèmes Apriso Platform, which embodies the principles of incremental MES strategy. MES Xpress is a simpler version of MES that addresses the core process needs and lays the foundation for Industry 4.0. It is cost-effective and faster to implement, utilizing ready-to-use solution components. It has preconfigured industry-specific templates to meet all the needs of industry-specific implementation. It also has the option to start with limited functionality, give business benefits, and set the foundation of ramp-up as per requirements. The functionalities of MES Xpress are:

Exhibit 2: Functionalities of MES Xpress

- In-process & FG Quality Monitoring
- Rejection & Rework Management
- Visual Quality Defect Tracking
- Quality Planning – Sampling & Inspection Plan
- Genealogy & Traceability
- SPC
- Deviation Management (CAPA)

- Breakdown Maintenance
- Equipment Performance Monitoring
- Autonomous Maintenance

- Production Order & Sub-Process Order Creation & Release
- Material Availability Verification
- FG, Rejection & Rework Booking
- Logbook Management
- Labelling of Goods
- Work Instruction, Control Plan, Drawing & Checklist Availability at WorkStation

- WIP Tracking & Management
- Kanban
- Picking, Kitting, Sequencing
- Material Replenishment Order Creation & Fulfillment
- Material Issue, Return & Adjust

- Loss Capturing
- KPIs – Performance & Trend Charts

Source: EIIRTrend, ITC Infotech

MES Xpress is not a smaller version of the regular MES. Instead, it is an innovative way to develop a quick foundation for MES programs and allows enterprises get faster benefits with stepwise investments. It lowers the hurdle for enterprises to start their MES journey. The differences between regular MES and MES Xpress are:

Exhibit 3: Comparison between Regular MES & MES Xpress

Capability	Regular MES	MES Xpress
Cost	$$	$
Time	32 Weeks+	16 Weeks
Payback Period	Medium	Fast
Applicability (Size)	Large Manufacturers	Large & SMB Manufacturers
Industries	All	All
Remote Implementation	Yes	Yes
Risk	High	Low
Process/ Templates	Custom	Standard
MES Modules	All	Selected

Source: EIIRTrend, ITC Infotech

Bottom line: Manufacturers should not delay their MES programs due to lack of funds or time. They can start their MES journey with the incremental MES strategy and lay the foundation for Industry 4.0.

Manufacturers can start their MES journey by partnering with service providers who provide the incremental MES solution approach with stepwise ROI. In the post-coronavirus world, MES will be competing with other priorities for investment. In such a scenario, the incremental MES strategy will be helpful. Enterprises can test the expertise of MES service providers with small projects and gradually scale up engagement. Manufacturers can survive the current uncertain environment and thrive later by adopting smart strategies that set the direction and are quick and cost-effective to implement.

About the Author

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Pareekh Jain is Founder and Lead Analyst of EIIRTrend and Pareekh Consulting.

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