Achieving Efficient Implementation of Asset Integrity Management

Common worst practices and how to avoid them

A Metegrity White Paper

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Introduction

The implementation of new Asset Integrity Management (AIM) software for companies of all sizes can seem overwhelming due to the length and cost of the process. Massive quantities of dubious data quality can slow down even the most conservative schedule. Often times, the daunting task at hand with AIM implementation – coupled with a general lack of understanding on the many advantages that such a software may provide – can serve as a deterrent from ever taking the leap in the first place.

However, in today's world it is more important than ever to adopt a sophisticated AIM program for the management of critical assets. Every year in the United States alone, equipment failures cost companies a combined excess of $4 billion dollars.[1] A recent shutdown in Kansas came with a $40 million price tag, and that was for one shutdown of one facility. [2] Therefore, incorporating proper risk mitigation strategies for the management of critical assets is not only prudent, it's crucial – and it can save owner operators tens of millions of dollars.

A good AIM software will provide an output to allow the user to initiate the required response to deteriorating equipment while improving reliability and reducing unnecessary costs tied to unplanned shutdowns, repairs and maintenance, excessive inspections, etc. It will consolidate all data pertaining to critical assets and sort it intelligently in one comprehensive database, where work and inspection schedules are determined according to calculated risk models like RBI.

Further, with the help of experienced experts, the implementation process itself shouldn't be long, costly or intimidating. In fact, by avoiding some common Worst Practices plaguing the industry and instead adopting effective strategies, the implementation process can be expedient, effective, and an immediate facilitator of significant ROI. This paper examines the most common mistakes made during AIM implementation and offers alternative solutions to gain maximized expediency and efficacy from the implementation process.

Worst Practices that Impede AIM Implementation

The following is an itemized list of the most common mistakes and challenges that impede the AIM implementation process. It identifies the Worst Practices that undermine the efficacy of implementation, making it more costly and time consuming than necessary – and it posits the best solutions to incorporate for expedient, effective implementation.

Worst Practice #1

Lack of Implementation Study and Project Plan

The first step (or lack thereof) in any process has a domino effect; it will set the stage for the speed and effectiveness of the entire implementation. The most common first mistake that companies make in the implementation process is failing to conduct an implementation study prior to commencement.

In order to ensure effective execution of any plan, the most crucial first step is **identifying what that plan needs to entail.** The only way to effectively establish a plan is to first **research and define the organization's specific areas of need.**

Implementation Studies are crucial to gathering the actionable intelligence required about an organization to facilitate a timely and effective implementation plan. They should:

- **Assess and define what the organization is working with.** What is the scope of assets? What regulatory requirements need to be considered? What are the company's objectives? What data exists, and where is it? Etc.
- **Set objectives for the implementation.** What resources are available, and what are required? What should a successful implementation look like? What are key performance indicators? What are the company's desired outputs? What are the deadlines and time constraints? Etc.

Failure to conduct an Implementation Study will result in unnecessary expenditure, costly delays, and insufficient program coverage. Don't dive into the implementation process blindly. Conducting proper assessment before

commencement equips companies with the understanding needed to establish and seamlessly execute an expedient implementation plan. Without this planning in place, operators could face costly delays as previously unconsidered elements must be worked into the process unexpectedly later on. Worse, they could end up implementing a program that doesn't fit the needs of the organization, exposing them to risk.

Solution Perform Implementation Study, Develop Comprehensive Plan with Trusted Experts

Q: *But how can I ensure that all elements have been considered in an implementation study? I've never performed one before. Where do I start?*

A: Rely on trusted experts who have a wealth of experience with successful, rapid implementation of AIM strategies and programs. Experienced consultants will assess the company's scope of assets, current data management, desired implementation plans, etc. and help establish a strategy tailored to the organization's unique needs.

Once the Implementation Study is complete, it is imperative to transform the study findings into a comprehensive project plan to ensure an expedient, smooth implementation. Following an approved project plan will enable the organization to ensure that all facets of the process are performed in an intelligent, speedy fashion. The plan should define objectives and main activities with a detailed schedule. It should assign responsibilities and include a monitoring/corrective action scheme. With proper planning in place, all players know their role and all necessary resources can be identified and scheduled, maximizing the expediency of the process.

Worst Practice #2 Desired Outputs from AIM Program Not Defined

When implementing a new AIM software, it is crucial to consider and define the desired outputs so the solution can be configured to meet these requirements. Failure to define desired outputs can undermine the entire implementation process, as correct steps and strategies might not be put in place in the early stages to facilitate those desired outputs. In order to ensure that all stages of the implementation are properly planned out and executed, it is crucial to know the desired outcome and results of the program.

Failure to define desired outputs will result in cost overruns and scheduling delays. These normally result from an insufficient understanding of the client requirements. The need to process additional change requests may critically affect the project plan to the extent that major milestones are missed. As a result, critical outputs cannot be produced in a timely and efficient manner.

Solution Determine Desired Outputs

Consider the unique needs of the organization that were identified during the Implementation Study. In order to ensure that those needs are met, what outputs do the company require from the AIM software? Examples of desired outputs that an organization needs to define include:

- Equipment T/A schedules
- CML inspection schedules
- API 510/570 inspection schedules
- KPIs
- Legislative reporting requirements
- Etc.

By defining these outputs prior to implementation, the company can ensure that all jurisdictional and corporate asset integrity management requirements are met, and that ongoing inspection activities and reporting are not compromised or delayed. Management review and reporting systems are not only maintained, but improved.

Worst Practice #3

No RBI Model

When it comes to mitigating risk for critical assets, no methodology is on a more upward trend than that of Risk Based Inspection (RBI). And for good reason: the savings benefit of incorporating an RBI model can be up to 20 times the cost of implementation and management over a 5-year period.

RBI analyzes the likelihood of failure vs consequence of failure to help you schedule intelligent inspection intervals. Compared to a traditional API approach to inspection timing, RBI incorporates a facility's complete modus operandi, translating to 50-90% fewer inspection points.

Without an RBI model in place, organizations are at the mercy of outdated time-based inspection approaches. This translates to excessive inspection frequencies, unnecessary expenditure, increased risk of shutdowns or equipment failure, and a more tedious implementation process.

Solution

Choose and Develop RBI Model(s) As Required

Incorporating an RBI model into a facility's risk mitigation strategies provides operators with an unprecedented understanding of the condition of a plant and all equipment therein. Risk assessment data is obtained and combined with previous inspection history, allowing for determination of the most efficient, safe and cost effective inspection scopes, methods and intervals.

A site/company specific RBI model ensures that the likelihood and consequence factors, which are embedded in the model, reflect the current jurisdictional, company, equipment and process hazard information. The resultant of the selected factors provides the operator with the most accurate equipment assessment, thereby providing the best risk mitigation possible.

Determine the type of RBI model that best suits the company. Typically, there are three RBI models to choose from: Qualitative, Quantitative and Semi-Quantitative. It is prudent to select a solution provider that can offer all three. In addition, the solution provider should provide professional consulting and analysis to help owner operators ascertain the best model or combination of models for their unique asset management strategies. Once the best RBI model has been selected, implementation strategies can be tailored

around facilitating that model and its associated outputs.

Incorporating RBI into risk mitigation strategies has a transformative impact on the success and efficacy of a company's asset integrity strategies, resulting in drastically reduced equipment failure, up to 50% reduction in unplanned shutdowns, and millions of dollars in savings on unnecessary repairs and maintenance.

A properly facilitated RBI assessment consists of a multidiscipline team of experts headed by an experienced facilitator. The facilitator is crucial to ensure that a consistent process is followed, and that the team reviews the most up to date information and selects the correct equipment risk factors, which ultimately provide the most accurate equipment assessment.

Worst Practice #4

Quality, Quantity and Type of Data

One of the largest hurdles to overcome when implementing a new AIM program is the current state (often disarray) of the company's data. Conversely, one of the most immediate benefits of an implemented AIM program is the benefit of a single, standardized database through which all of that data can be immediately accessed and intelligently analyzed.

Often times, a company's asset data can be found in all manner of disarray across a variety of platforms – be they digital or paper – and it can be difficult to know where to even begin. A critical mistake that many companies make during this portion of the implementation process is failure to do a thorough review and assessment of their data – where it is, what it is, what should be kept, what can be tossed, and how to amalgamate it into one location for conversion and upload into the AIM software.

Failure to perform in-depth data review results in missed data that may contain key information about an asset. This translates to cost overruns, scheduling delays, and – in the worst case scenario – the exclusion of critical information which may eventually be lost after the go-live date. It also takes an unnecessary toll on time and cost expenditure, as operators must manually enter more data than required to form the basis for corrosion rate calculations and the fitness for service of an asset.

Solution In-Depth Data Review, Mining and Conversion

In order to facilitate a successful, expedient implementation, it is crucial to conduct an in-depth legacy data review to determine what data is legitimate and deserves to be uploaded into the new AIM software. Not all data is created equal: an exorbitant quantity of data does not translate to quality. Experts should mine the data according to what information is pertinent and relevant to the organization's goals and strategies, and filter out all quality information accordingly.

When conducting an in-depth data review, consider the age, condition, and expected service life of an equipment. Factor the type and accuracy of the historical data – identifying all sources of data, including paper, spreadsheets, legacy inspection databases, CMMS, etc.

Look for a solution provider with experienced implementation experts who will oversee this step in the process. With the right expertise, no matter what the organization's current state of data, an efficient conversion and implementation can still be achieved.

Worst Practice #5 Incomplete or Insufficient Training

It is perhaps the easiest mistake to avoid, but it comes with the costliest consequences. Time and again companies will invest significant time and money into selecting an AIM provider, planning out and then completing a lengthy implementation process, only to have the program's success fall apart once it goes live due to a lack of training. Even the most well planned, comprehensive and user-friendly AIM program becomes useless if the personnel required to operate it once it is live are not equipped with the knowledge to do so.

It cannot be stressed enough: Without proper training of the appropriate personnel on the new AIM program prior to going live, owners risk **losing all return on the investment they have poured into implementation.** Poorly trained users commit critical errors that compromise the inspection schedules or integrity management of assets, resulting in unplanned shutdowns and unnecessary expenditure. Or, without sufficient training in the best practices and procedures of the program, they might simply perform tasks in a less efficient manner, equating to wasted manpower and increased labour costs that could easily be avoided with proper knowledge. On the flip side, properly trained personnel can help the new program operate like a well-oiled

machine, embodying the fruits of all of the planning that went into a thorough implementation and turning that investment into a goldmine.

Often times training will be provided, but it will be insufficient for its target audience. Introductory training might be given where advanced is required. Training might be provided too early in advance of the "Go-Live" date, making it difficult for students to remember by the time that date arrives. The training might not be hands on enough, equipping students with actual practice of the procedures and best practices. Dedicated training time is not provided, requiring students to perform day-to-day activities while trying to learn, hindering their ability to process information. The list goes on.

Solution Detailed Consultation and Training Prior to "Go-Live"

The simplest step in the implementation process is among the most crucial, as the success of the program depends largely upon it: proper training prior to "going live." Knowledge is power. Once the program has been implemented and goes live, it is up to the people supporting the day-to-day integrity activities to ensure that they are carried out according to the goals, procedures, and strategies defined during implementation. The better a user knows the AIM software, the more efficient its application. When personnel are thoroughly trained on the ins and outs of a program prior to being expected to use it on a daily basis, they are more likely to adhere to best practices, and less likely to cause unexpected or unnecessary shutdowns due to misunderstanding of due process.

In addition to user training, there should also be detailed consultation and introductory training for company stake-holders to ensure a synergic implementation plan is developed. Consideration should be given to having additional training after a period of time (e.g. 9-12 months) to reinforce areas that are not quite understood, as well as to provide new training for functionality not covered in the previous training.

Talk to your solution provider prior to implementation to ensure that detailed consultation and comprehensive training are part of the implementation package. Ensure that dedicated training is provided at multiple levels according to the target audience – introductory, intermediate, advanced, operator-based, manager-based, etc. Plan the timing of the training as closely to the "Go-Live" stage as is feasible to ensure it is fresh in the trainees' minds when real-life application comes into play.

Worst Practice #6 Lack of Planning for "Go Live" Stage

A successful implementation is decided not by how smoothly the steps during it go, but rather how smoothly things operate once it is over. Often companies will focus so heavily on the implementation process itself that they fail to plan for what comes afterward; that is, how to roll out the AIM program and commence daily operations once implementation is complete and the program "Goes Live".

Failure to sufficiently plan for the "Go Live" stage can translate to missed inspections and the failure to create timely inspection reports. System failures could also erupt due to the result of heavy usage. Improper data input could require additional reviews and subsequent corrections.

Solution Creation of Timely and Effective "Go Live" Plan

Prior to going live with the new AIM software, establish a timely and effective plan for this stage of the implementation process. Conduct a complete accounting of all open recommendations, work memos, etc. to complete the loop and ensure no critical activities will be dropped once the system goes live. Ensuring continued, seamless reliability is crucial.

To formulate an effective "Go Live" plan, consider the following steps:

- Required training is completed and current
- Procedures are written, reviewed and available
- Equipment data and history have been uploaded and checked for accuracy
- Real-life system testing to ensure the IT infrastructure is capable of supporting heavy usage
- Administrators are trained and available to meet needs
- Incident procedures in place to provide timely issues resolution
- Audits and advanced training to ensure accuracy and compliance
- Dedicated personnel are made available/hired to ensure that data is being updated on a regular (daily) basis so qualified personnel can review/analyze the results

Conclusion

While implementation of a new Asset Integrity Management system can seem a monumental task, that needn't be the case. Many of the factors that impede success or unnecessarily draw out the implementation process are simply a result of poor industry practices. Failure to thoroughly assess an organization's current legacy data and develop a comprehensive plan of action results in unnecessary cost overruns, schedule delays, or crucial data being missed during the process and forever lost thereafter.

By following the Best Practice guidelines listed within this whitepaper, companies can rapidly accelerate their implementation processes while maximizing the efficacy of the new AIM program. A successful implementation should:

- Perform an implementation study.
- Develop a comprehensive plan with trusted experts.
- Determine desired outputs of the AIM software/program.
- Choose and develop RBI model(s) as required.
- Conduct in-depth data review, mining, and conversion.
- Conduct detailed consultation and training of personnel prior to "Go-Live".
- Create a timely and effective "Go-live" plan and followup.

To further simplify the implementation process and ensure optimal success rates, don't try to go it alone. Seek professional consultation from a trusted solution provider with experience in such processes. The right experts will come in, assess your organization's needs and the current state of all asset data, and tailor a strategic implementation plan to best suit your company. They will then oversee and support the entire implementation process from commencement to completion and beyond. With the proper professionals to guide you, and these Best Practice tools in your arsenal, the AIM implementation process will no longer be daunting – it can actually be a rapid, smooth, and fulfilling endeavour that results in increased protection of your critical assets and reduced exposure to risk.