

WHITE PAPER

The background image shows a close-up of industrial machinery with several black padlocks and white lockout tags attached. One tag in the foreground is clearly visible, featuring a red and white striped border and a black oval with the word "DANGER" in red. Below the stripes, the text "DO NOT OPERATE" is partially visible. The tags are attached to metal rings on the machinery.

CMMS & LOCKOUT/TAGOUT (LOTO) An Integrated Solution Approach

Enterprise software solutions are utilized to make complex processes more efficient, effective and safer. However, the thought that more software equals more efficiency doesn't always work. This is especially the case when software applications cross the same functional areas and are not integrated. Let us take a look at two solutions, CMMS (Computerized Maintenance Management System) and LOTO (Lockout / Tagout) software, to consider the advantages of an integrated approach.

On their own, these software applications offer significant savings in terms of both money and time. However, when operating in an independent manner, these solutions can prove to be redundant. Notice two specific areas that are highlighted in the diagram below.



Maintenance and LOTO applications will have at least Personnel and Equipment as common attributes. For the sake of simplicity, we will focus on these areas exclusively. While 'equipment' and 'personnel' may not be tracked exactly the same way in these systems, the data will likely be very similar. This is because the applications are referencing the same assets or workers. For instance, maintenance personnel are involved in LOTO procedures. Equipment is isolated by locks and tags in order for the maintenance department to work on it. Here we have identified a simple redundancy. This redundancy is created by merely having the same or similar data in separate systems with no reference to each other.

While this type of situation is a common occurrence, it is not the ideal solution. Supporting duplicate data in separate systems implies additional effort when it comes to maintaining accuracy and relevancy. This additional effort can be significantly reduced through integration.

The nature of these applications should also be noted when considering integration. LOTO software is designed for safety procedures that involve protection of life. Data integrity and the avoidance of information gaps are critical.

How does integration accomplish these goals? To answer this question, let us first define what we refer to as integration. When this document refers to integration it is generically referring to establishing a method or structured form of communication between two different applications for accurate and effective transmission of information. This concept is illustrated below.



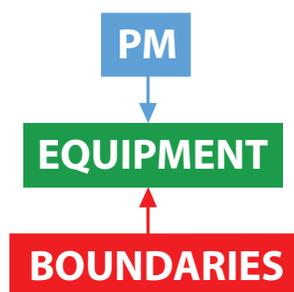
Obviously, the most seamless solution for integration would be for the applications to be developed by the same company within the same modular framework. Such applications are commercially available and some provide the desired level of integration as described in this document. However, for many companies, the reality is that the systems (CMMS and LOTO) were purchased at different times, from different companies and potentially by different groups within the organization.

So how do you integrate these applications? There are different methodologies for application integration. However, instead of focusing on the exact process to integrate these solutions by detailing software development and integration strategies, we will focus on the benefits of integration regardless of the process you choose.

The first benefit is clear; you have now established a process by which your data is updated and maintained strictly through an electronic transaction. Therefore, if a piece of equipment is added to or removed from the CMMS master equipment record, the LOTO application will be notified and updated. This will greatly simplify the way you have been managing such information.



The previous diagram fails to highlight an additional benefit of bringing these applications together. To explain, imagine we could see both applications' framework in the form of a diagram. Very likely that diagram would resemble a spider web. Each data point would have 'strands' connecting it to other data points. These 'strands' would represent the functional relationships within the system. It is these functional relationships that provide the core functionality of a given system. So, if our integration is going to share data, then why not share the functional relationships? Take as an example the shared application point of equipment.

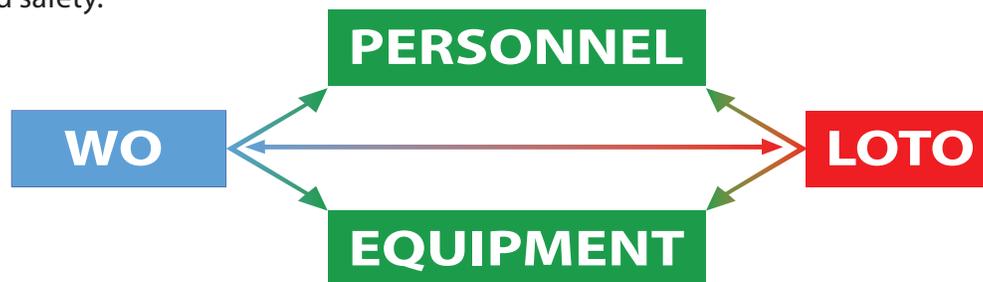


If PM's are related to Equipment and Equipment has assigned Boundaries, then Boundaries can be derived for the PM.

In the above diagram we are referring to "Boundaries" as the isolation boundaries set up in the LOTO application for equipment. "PM" represents Preventative Maintenance scheduled in the CMMS application. Consider how integrating your CMMS and LOTO software speeds up performance. When preventative maintenance activities are triggered in the CMMS, the application will flag equipment as 'requiring isolation'.

This is communicated to the LOTO application which will then prepare the associated procedures and documentation automatically as 'awaiting approval' from the appropriate Supervisors. Coordination at this level keeps the work moving steadily ahead instead of running into the common bottlenecks of data and process transfer.

Such integration also gives your planners added insight when planning work. Now they will be able to coordinate work based on shared isolation boundaries. This will reduce the amount of effort associated to locking, tagging and clearance activities. This is the type of planning that makes your job easier and more efficient. While saving time is extremely important, there are even more substantial benefits from this integrated approach. Specifically we will focus on increased safety.



The diagram above illustrates how work force safety is enhanced primarily in two ways. First, work orders within a CMMS application that require locks and tags would need to be, in a sense, locked down as well. That is to say they should be 'read only' or unalterable without the correct level of authorization. That is because if the scope of any given work order were to change, protective boundaries would need to change with it. When your LOTO and CMMS applications are integrated, business rules can be established so that the association of locks and tags to work orders will prevent any unauthorized alteration of work. This is an added benefit that keeps your workers safe.

To explain the second way safety is enhanced, let us imagine that you are logged into your CMMS analyzing a work order that is in the process of being completed. This particular work order encompasses isolated and follow up non-isolated work. The CMMS shows that the isolated work is complete and that there are no protected workers signed on to your work order. So the logical question you would ask yourself is: can I safely proceed with the non-isolation work? When your CMMS and LOTO systems are integrated, it is easy to find out. While the workers involved with this work order no longer require boundary protection, the equipment and / or other workers assigned to a different work order might. In this case, the integrated system would prevent your work order from proceeding with the additional work until the equipment was no longer isolated. Once again, the integrated approach yields a safer result.

If you are currently utilizing CMMS and LOTO software applications or are using one and considering acquiring the other, an integrated approach to these solutions will greatly benefit your company. With the right expertise and knowledgeable resources available, such integration can be practically seamless and will create for you a much more efficient and safer working environment.



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