

OSH Management Systems: The Plan-Do-Check-Act Cycle

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Are your occupational safety and health (OSH) management systems powered with Relational Database Management Technology (RDMT) or equivalent technology?

That is, do they share OSH compliance management data *relationally* within and between multiple programs?

In the previous two issues of *Journal of System Safety*, I introduced two important aspects of effective occupational safety and health (OSH) management systems (MS):

- Content: i.e., they are built on Federal regulations and official guidelines only
- Structure: i.e. they manage multiple programs based on or similar to the Plan-Do-Check-Act (PDCA) model of “continuous improvement.”

But there’s one more component that makes a management system a *system* in every sense of the word: relational database management technology (RDMT) or equivalent technology, such as Microsoft’s SQL Server or Access for databases. Typically, systems that employ these types of technologies are sophisticated and robust, yet easy to use. More importantly, these types of technologies *integrate* data and programs and, consequently, make everything about OSH compliance management within an OSH MS so effective and efficient.

RDMT allows management systems to store large amounts of compliance management data — data *external* to the organization (e.g., Federal regulations and voluntary guidelines from OSHA and other agencies and institutions, etc.) and data generated from *within* the organization (e.g., program plans and reviews; self-inspection findings and corrective actions; training schedules and lesson plans, etc.).

RDMT is similar to a library of books, where the information is categorized and “shelved” according to subject area or type of use. When users visit a library, they typically want to find the information that interests them — and fast. The Dewey Decimal System makes this possible.

Similarly, users of an OSH management system may want information specific to their jobs or their

worksites only. For example, “Help me find the OSH maintenance, inspections and testing requirements that pertain to my worksite, for the purposes of inspecting my worksite.” Systems powered with RDMT easily retrieve this information from huge lists of data and, more important, obtain only the information desired. What’s more, as data changes daily — i.e., data *external* to the organization and data generated from *within* the organization — all the parts of the management system, and the reports using those parts, are “changed” *relationally*.

The opposite of RDMT is the flat file database — a giant table of individual records. (Examples include OSH management systems built on Microsoft’s Excel for spreadsheets and tables in Word for word processing.) When users need to add information, they have to re-enter the information in a new record in the flat file database’s table. Re-entering the same or similar data repeatedly is not only inefficient, but it also causes data redundancy, data inconsistency and poor data integrity [Ref. 1].

In addition, a flat file management system is “less secure, it can only be used by a single user, and it cannot be shared on a network or the Internet” [Ref. 2]. Management systems built on RDMT, on the other hand, can be shared online, allow multiple simultaneous users and support much larger sets of data. What’s more, developers can easily customize, expand and enhance such management systems.

Most OSH management systems are *not* powered with RDMT; the majority of these “systems” employ flat file and word processing technologies, such as Microsoft’s Excel and Word. These types of systems are inadequate for querying large amounts of data in the ways often required by OSH managers. What’s more, data is *not* shared relationally within or between programs.

This is not to say that these types of systems should be abandoned, nor diminished in value; they have their rightful places in the OSH manager’s “toolbox.” However, the difference between flat file management systems and RDMT-based systems is like the difference between using a hammer and nails and a pneumatic nail gun — both are used by builders, but

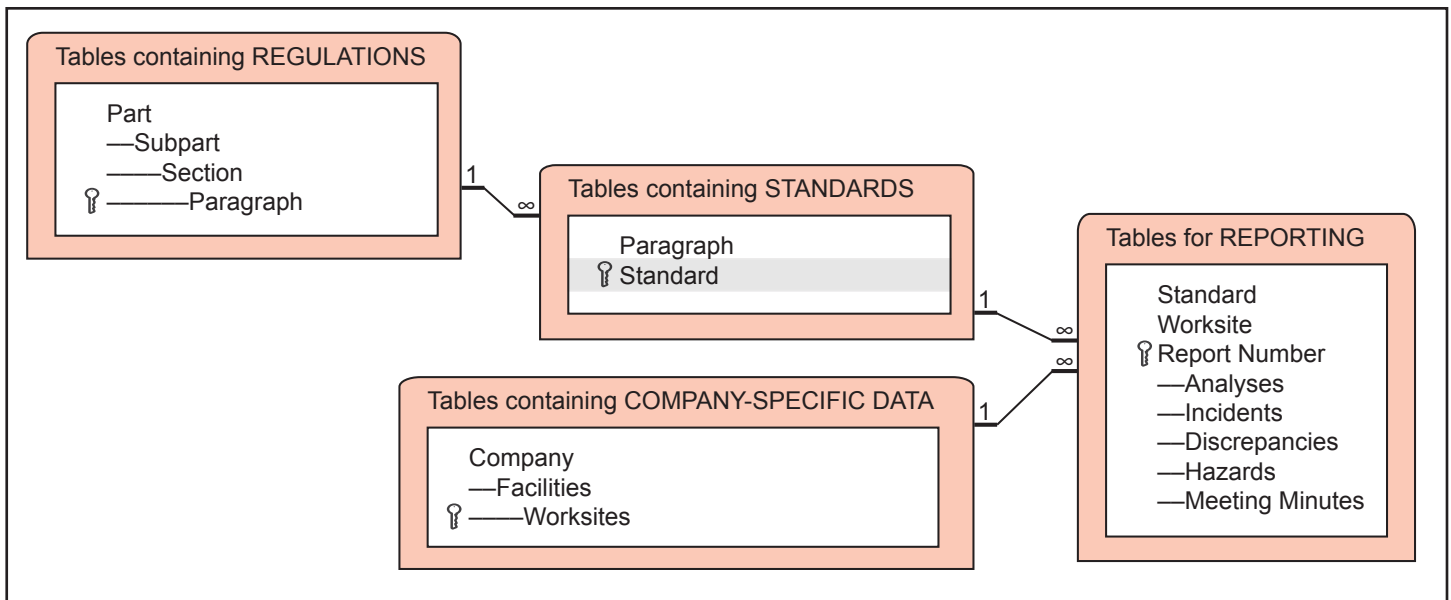


Figure 2 - An example of hierarchical data relationships within a relational database management system (RDMS).

the latter is much more efficient. It's the *relational* aspect of the "tool," then, that increases the speed and effectiveness of OSH compliance management. That aspect is what makes these types of systems superior to the others.

OSH management systems built on RDMS:

- Reduce redundancy of information
- Provide consistent data flow
- Provide security and user privileges
- Provide ease of application development
- Allow integration and sharing of data, *relationally*

Of these benefits, the last one — *relational* data management — is the most beneficial; simply, it allows managers to manage OSH compliance requirements with ease, speed and accuracy.

Conclusion

In this and the previous two issues of *Journal of System Safety*, I shared the three essential components of efficient and effective OSH management systems:

- *Legal* standards
- *Multiple* programs
- *Advanced* technologies

References

1. Bianca, Audra. "Advantages & Disadvantages of a Relational Database Model," *eHow*, <http://www.ehow.com/>, retrieved November 1, 2012.
2. Saxena, Vivek. "Major Differences between a Relational Database Management System and a Database Management System," *eHow*, <http://www.ehow.com/>, retrieved October 13, 2012.

Together, these articles will help you determine if your company's OSH management systems are missing — in whole or in part — one or more of these essential components.

In the next issue of *Journal of System Safety*, I'll share "How to Use Your OSH Management System to Achieve Awards and Recognitions in Two Steps." Simply, the types of systems I have described in my articles easily generate the types of documents and other "tangible evidences" necessary for a strong Federal awards application package, such as the coveted OSHA's Voluntary Protection Program (VPP) Star and Merit recognitions, and the EPA's "Environmental Merit" award. I'll show you how and why in the next issue of *Journal of System Safety*.

About the Author

David A. Wise holds an MS in OSH/EM from Columbia Southern University and an undergraduate degree in Health Care Management from the Community College of the Air Force. He is the author and developer of The Relational ESH Management System, a relational database management system used by general industries to manage environmental, health and safety compliance requirements. For more information about Wise and the information systems he shares with general industries, visit his LinkedIn profile at www.linkedin.com. ●