Feature Article

Emergency Response Management

When people's lives are at stake, you want to be as successful as possible. A semiconductor manufacturer solved its problems with modular ERT software.

by Peter Singer

Recently, a *Fortune* 1000 manufacturing company found a better way to collect and manage Emergency Response Team (ERT) information by implementing a high-tech software solution. The company, like many other manufacturing facilities, went beyond engineering controls and employee safety programs by maintaining an on-site ERT. Regardless of the planning needed to ensure employee safety and prevent property damage, a professional Emergency Response Team can contain and stabilize an unexpected event before outside help can arrive. They often can prevent a minor incident from becoming a major disaster.

The ERT module has the tools to search historical data, analyze performance, and do other trend analyses to provide managers with the answers they were looking for.

Although there are numerous options available for collecting, managing, and analyzing information that emergencies generate, some are better than others. Organizations have used everything from paper-based systems to sophisticated software applications. Regardless, managers need an efficient system that can create accurate reports in a timely manner. Managing the data generated by an emergency response is certainly important for the safety of employees, community members, and the environment. Analyzing the information collected from recent and past emergencies can be a powerful tool to determine the situations that most often lead to emergencies. It can identify the average time it takes for an incident to be controlled, the types of incidents most likely to result in injuries, provide insight to the development of preventative plans, and much more. The manufacturer featured in this article sought a better system.

The Issue

This well-known manufacturing company wanted to be more proactive regarding its ERT data management. The on-site ERT program had been in place for some time, but data management was cumbersome and limited. The company was looking for a better way to manage and control the flow of data so it could easily get answers to fundamental questions, such as:

- What was the exact breakdown of emergency types?
- How could they consistently categorize the incident root cause?
- What was the average elapsed time of an incident?
- What was the typical response time for an incident?
- How could the ERT reports be associated with reports generated by other groups for the same incident?
- Which members were responding to the emergencies?
- What was the best approach to ensure that reports written by ERT members contained all of the necessary information?
- How could they ensure the data were accurate?
- What collected information wasn't needed because it was unnecessary or not important?

It is difficult to measure the effectiveness of an ERT program without consistent, concise and accurate data that provides the basis for useful statistics. Beyond the basics, management was looking for easy access to historical information. It wanted to perform in-depth trend analysis of the data to determine opportunities for improvement in emergency response and prevention. Utilization of past data facilitates the implementation of initiatives to prevent future occurrences.

Management realized not every incident is predictable. It also realized a successful program depends on making adjustments based on experience. When employee safety is at stake, you want to be as successful as possible.

The Old Way
Prior to the implementation of the new data management program, an ERT member filled out an emergency response form and sent it to the ERT coordinator, who verified and added information. The data was then entered into a spreadsheet, a laborious task prone to error. Accessing and analyzing information regarding past emergencies was time-consuming.

Data could be sorted, but this was not adequate to provide all information that was desired. Additionally, if information was incomplete or incorrect, it was difficult to resolve. And it became apparent that some of the information collected was not needed. The simple spreadsheet based system used for capturing, managing and analyzing ERT information was error-prone, inefficient, and untimely.

The Solution
The company already had installed an integrated, modular environmental, health, and safety software solution to which it added an ERT module. Additional automated processes also were added. The EHS system would be the repository for the ERT information as well as other critical data. Selection of a modular system allowed the company to pick and choose modules from a list of more than 100 to help manage not only ERT information, but chemical inventories, industrial hygiene sampling, job profiling, MSDS information, waste characterization, waste shipping and more.

In looking forward, as needs expand and budgets become available, the company can purchase additional pieces. Integrating different types of EHS data into one common system allows an organization to: 1) reduce duplication, 2) administer the data more easily, 3) require employees to learn just one system, 4) permit wide-ranging reporting, and 5) facilitate sharing information.

The EHS system's ERT module allows the company to maintain information about an incident's start and conclusion. It captures ERT notification and arrival times; identifies the incident commander, responding team(s), and other employees involved; documents the causal factors, evacuations,

follow-up actions; and more. It has the necessary reporting tools to search historical data, analyze performance, measure improvements, and perform other trend analyses to provide management with the answers it sought.

ERT reports ultimately need to get into the EHS information system. Emergencies aren't picky about where or when they occur, so responders needed the ability to easily enter information from just about anywhere. To facilitate the data transfer and for ease of use and deployment, it was decided that a Web-based system would be used for initial data entry and portions of the work-flow process. Various e-mail messages would provide timely notification about new emergencies, as well as allow updates so that key personnel and managers were kept in the loop and up to date.

The New Way

The new way of managing ERT information allows ERT responders to enter initial information about an emergency from anywhere an Internet browser is available. At the conclusion of the emergency, in Phase I, a responder completes a Web-based form. Where possible, data selections are provided as pick lists, check boxes, or radio buttons to provide accurate and easy data entry.

The user cannot submit the form unless accurate information has been entered and all required fields have data. Once the proper information is provided and the user submits the form, an e-mail is generated to a distribution list of recipients. The e-mail indicates an ERT report has been filled out. Recipients of the e-mail simply click on the link to view the information.

Work-flow management has been greatly simplified and is easier to maintain and control.

This is where the work flow begins. The ERT coordinator, who is the next person in the work flow (Phase II), must verify that the information entered by the initial ERT responder is correct. The coordinator has the ability to correct errors or provide further information that initially wasn't available. The ERT coordinator then forwards the form to Phase III with a simple click of the *SUBMIT* button. A different set of recipients will receive e-mail notifications automatically. The process repeats, in that other pre-selected personnel can verify the information and amend the form with any missing or updated information.

When the last person in the chain submits the finished form, the information is sent to another location, where the EH&S data management coordinator can process it. The processing includes validating the data, reporting potential conflicts if any, and importing the data into the ERT module within the EH&S system. The data download takes a simple click of an icon to complete.

Once the data is stored in the target ERT software module, management can generate reports that look at statistics, perform trend analysis, and consequently provide data in a format that provides concise and accurate reports to management.

Benefits of the Change

Transitioning from a spreadsheet-based system to an entirely electronic solution has allowed the company to address several important issues:

- Easy entry of ERT response information for anyone responding to an emergency incident.
- Minimizing the training necessary for responders, even those with no computer experience.
- The ability to enter ERT information from any computer in a network where a Web browser is available.
- Simplifying the work-flow management.

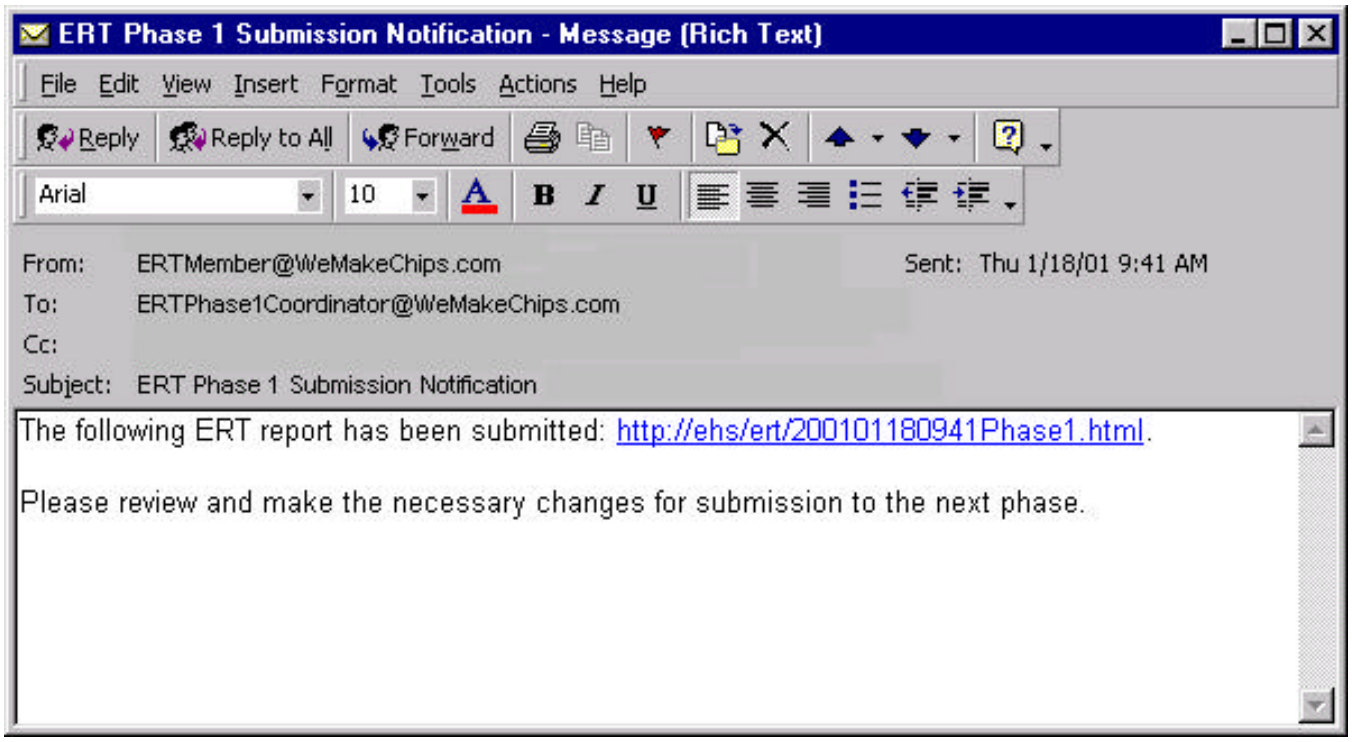

Figure 2. Sample e-mail notification

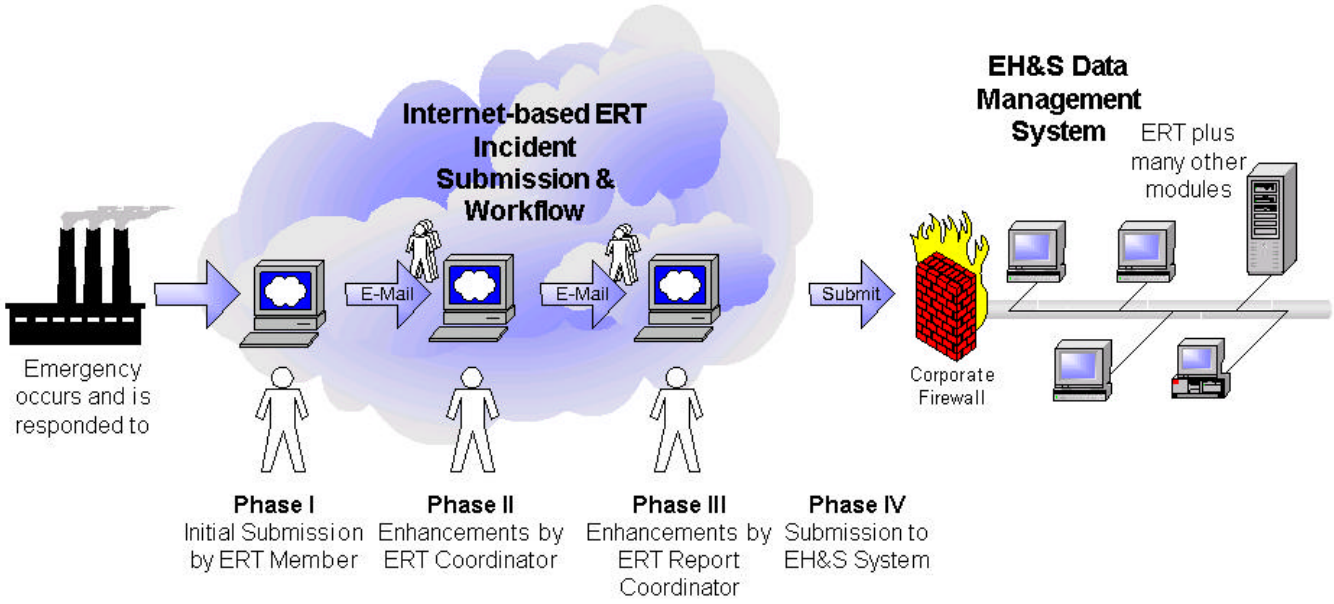

Figure 3. Workflow of ERT management systems

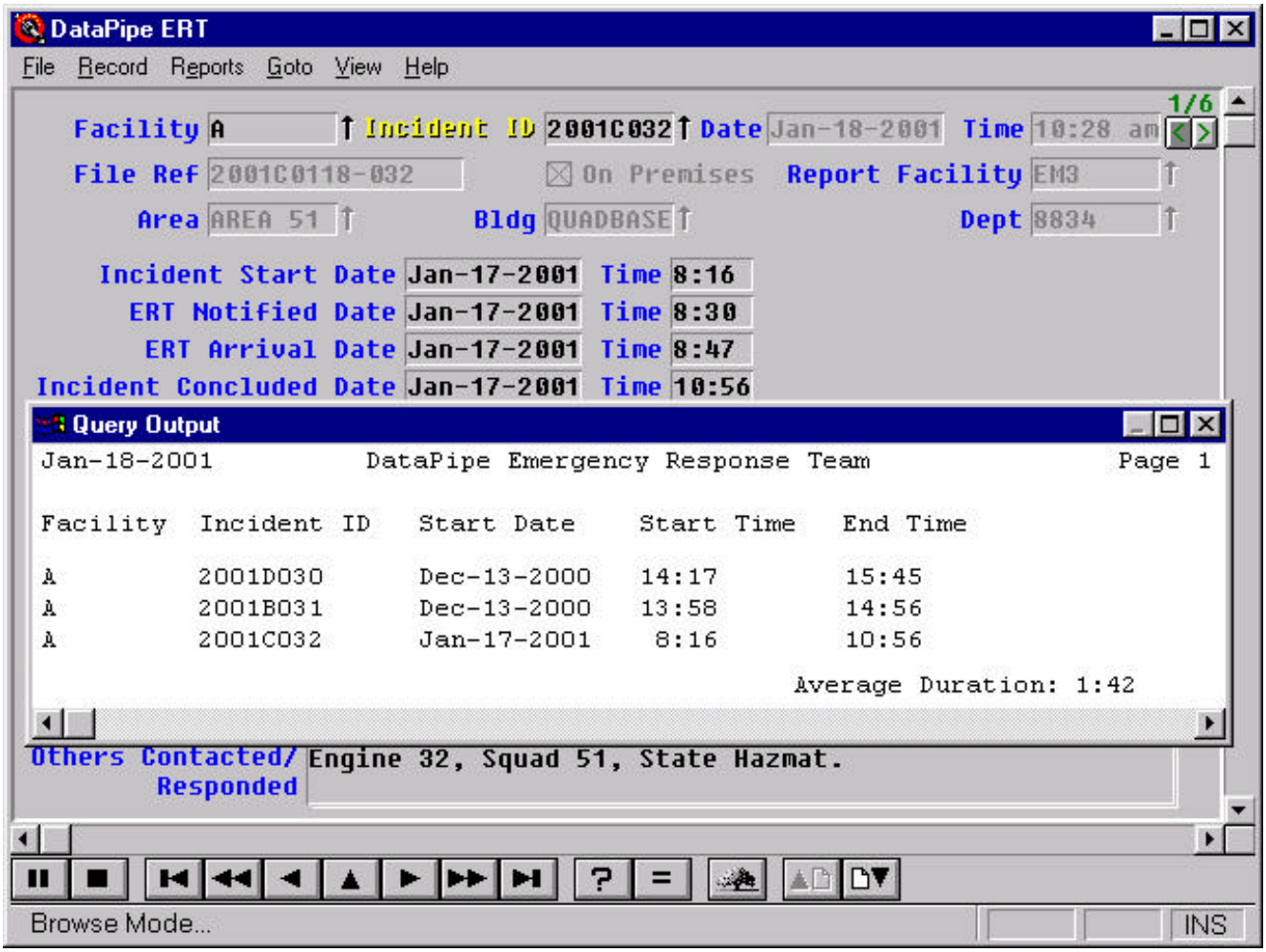

Figure 4. Sample ERT Management Report

- Easing the control and maintenance of critical data.
- Keeping key personnel and management informed immediately after an incident.
- Maintaining the confidentially and security of the information.
- Centralizing data maintenance for ease of administration.
- Generating reports that provide information about response times, types of emergencies, elapsed time, causes, and much more.
- Providing information about past incidents that can be used to measure the effectiveness of the individual ERT responders and the ERT program as a whole. This initiates the process of evaluation that can lead to continual improvement.

In doing a cost/benefit analysis, most of these improvements are measurable in terms of cost savings, such as reducing man-hours and process simplification. Other benefits can be more difficult to quantify but just as important. Data integrity, timely notifications, elimination of unnecessary data, and ensuring the required information is collected are difficult to quantify on a cost basis. This certainly will not be foreign to EHS personnel who find it difficult or impossible to quantify the cost of accidents that did not occur.

Emergency Response Teams can be vital assets for the safety of employees, the community, and the environment. Timely analysis of accurate emergency response information is critical for continuous improvement efforts. An effective database system can be a valuable tool for improving the effectiveness of such teams.

Peter Singer (petes@KnorrAssociates.com) is VP-Product Development at Knorr Associates Inc., a New Jersey-based firm specializing in occupational health, safety, and environmental information management systems. The company develops and markets DataPipe™ software.
