



WHITE PAPER

Analytics to Insight The Path to Predictive EHS Management

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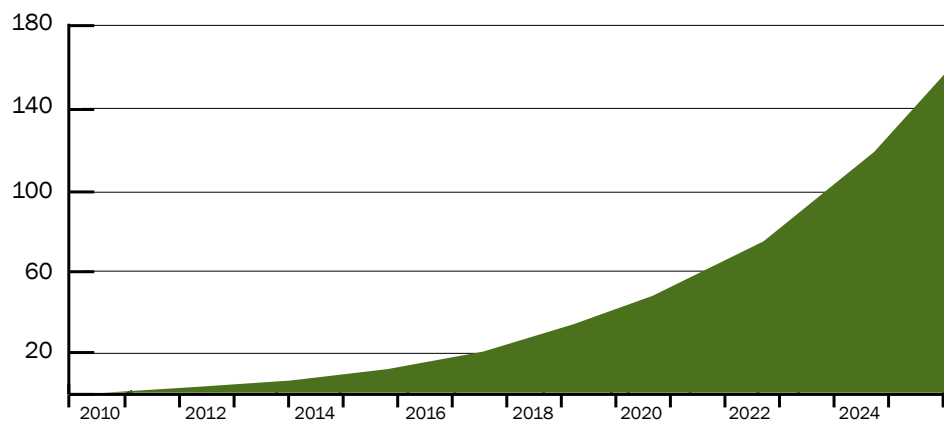
Successful business in the 21st century is based on data: gathering it, managing it, leveraging it. The importance of data to create efficient and effective operations has grown exponentially in just a few years, tracking alongside the rapid proliferation of devices and the technological breakthroughs in networks and connectivity. Concepts like the Internet of Things (IoT) or Industry 4.0 have become as routine to EHS managers as duties related to employee health and safety.

However, while EHS managers may understand the essence of big data, putting those ideals into practice is a much harder task. The sheer amount of data generated and collected is the greatest barrier. →

According to the International Data Corporation (IDC), **data is growing at a 40% compound annual rate, predicted to exceed 150 zettabytes by 2025 [1]**. Consider all the inflows of data for manufacturing and chemical companies, from external supply chain partners to internal automated factory floor robotics, and the challenge of parsing and drawing real insights from data becomes clear.

Figure 1:
Annual Size of
Global Datasphere
in zettabytes (ZB)
Source: IDC's Data Age
2025 study, April 2017

■ Data Created



Yet that ability to extract value from data is exactly what EHS managers need and are sometimes lacking. PricewaterhouseCoopers found in 2016 that **60 percent of chemical companies placed a high importance on data analytics, a number expected to grow to 88 percent within five years [2]**.

Information is data that is organized and presented in a way that is digestible.

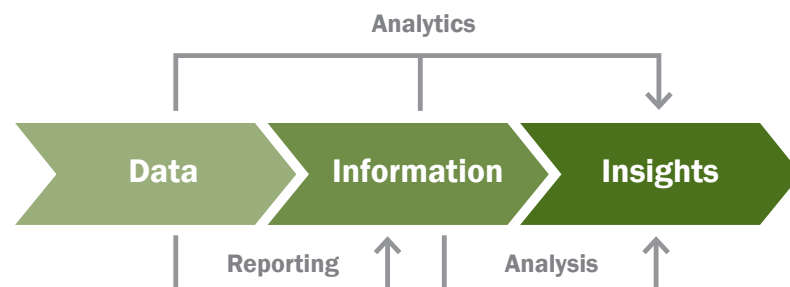
Increasingly, EHS managers need solutions that empower them to proactively address threats, hazards and risks. Pen and paper won't get this done, nor will software that doesn't have data-centric and visualization features. EHS managers need information turned into insights, and proactive analysis platforms are the primary tools for realizing the latent power of data.

Separating data, information, and insight



The first step to making productive use of all the data pouring in is to understand what separates data from information and insight. While seemingly interchangeable, these terms are used at different points along the pathway to informed decision-making: **Data becomes information, which can be turned into insight, which then begets more data to further analyze.**

Data consists of the raw figures that are generated by any process, equipment or personnel, which is then collected and stored by the company. Increasingly, businesses in all industries have turned to automated data capture, given the significant risk manual practices pose in letting through errors and inaccuracies, including a potential loss of data. **While statistics themselves don't immediately highlight trends EHS managers can use, finding a consistent and dependable way to aggregate, refresh and store data is essential to the next step.**



Information is data that is organized and presented in a way that is digestible. This is where analysis comes in, once data has been structured effectively, computational functions can sort and sift on their own or be programmed to specific parameters, and generate reports that grant managers more transparency into every corner of their operations. Having accessible information allows users to then detect trends, tendencies or anomalies that can further clue them into resource drags or areas of investment to focus on: **actionable insights.**

Getting ahead of the problem before it occurs is the endgame of insight. Yet the route from granular data to verified insight is not an easy one to successfully navigate without the right tools: EY in 2016 noted that **“Companies often invest in scattered programs that lack focus and organizational alignment, then abandon them when returns are not what were expected” [3].**

EHS managers need solutions that work and offer users a simple way to analyze and visualize complex data.

Setting standards and goals

All the data, information, and insight in the world won't do EHS managers any good if they don't have: 1) a structured data set 2) repeatable workflows and definable benchmarks; and 3) a plan of action. These are among the most desired needs when considering software to invest in. According to the *2017 National Association of Environmental Management EHS Software and Sustainability Buyer's Guide*, [4] the top most sought-after features are:

- Incident reporting (85 percent)
- Environmental auditing (85 percent)
- Incident tracking (79 percent)
- Corrective action tracking (79 percent)
- Performance metrics/dashboards (77 percent)

Software that allows EHS managers to calibrate highly capable data management tools to their unique needs is a valued advantage in meeting compliance, as well as sustainability goals. Data swarms from all over, often in unstructured forms, and tracking vital indicators is not easily done by hand or without added capability. This downtime complicates the eventual aim of using insights for the good of the business. Having defined targets and goals is thus a necessary action in overall data management.

The ability to direct inflows (emissions or injury and illness incidents data) toward customized buckets and deploy personalized algorithms is a priceless benefit in helping achieve progress along various company-specific missions and initiatives. But again, not all solutions are created equal in these respects.

Establishing Leading Indicators



Figure 2:
EHS Today's
2015 Safety Survey:
What Leading Indicators
Do You Track?

After defining your standards and goals, understanding why you are capturing this data is key. **EHS managers often focus on leading indicators in an attempt to predict outcomes.** While tracking leading indicators is important, there is disagreement on which indicators are the most valuable. As stated in a *2015 National Safety Survey*, the top 3 safety indicators are training, observations, and near-misses [5]. Understanding which leading indicators are most important to your organization is step one, but we can't forget that these need to be combined with their counterpart, lagging indicators, to paint a complete picture of why things are happening across the organization.

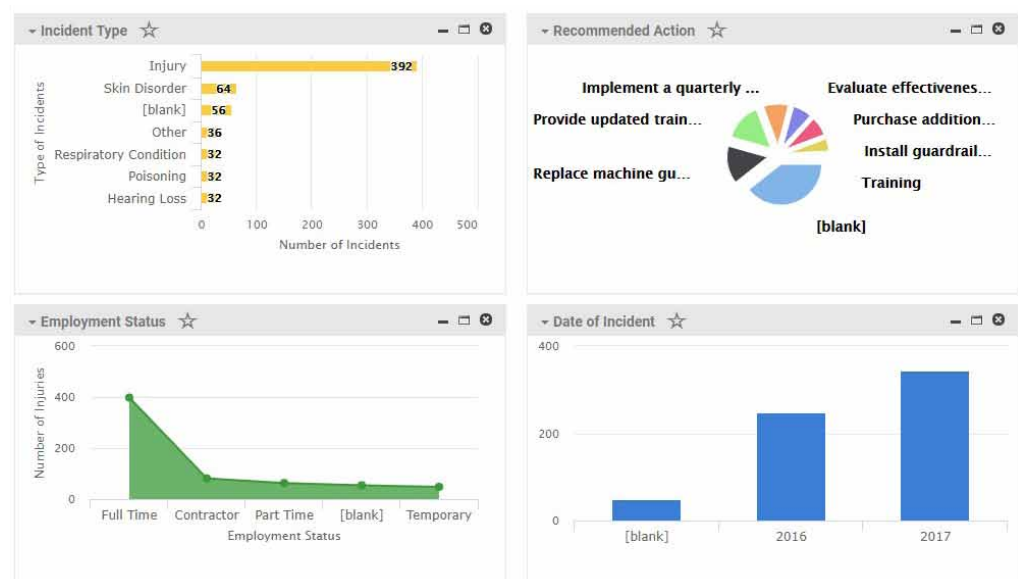


Combining the metrics gathered from your lagging and leading indicators enters into the world of Predictive Analytics. **Predictive Analytics is using advanced methods to make predictions about unknown future events.** While no organization may be able to predict when incidents will happen, we may start to understand the trends that lead to them. When we combine training frequency, near misses recorded, and unsafe observations and then correlate to our incident statistics, we gain a better grasp of the reasons behind the incidents.

Parametric Filtering empowers EHS managers

High-level EHS data management doesn't end with the organization of data (though it is important); **managers need further capacity to develop intuitive processes that identify patterns and inform decision-makers on the right moves to make before a crisis happens.** With Dakota Software's platform, managers have the ability to act proactively, starting with customizable reports, dashboards, tables and graphical representations that make it possible to process raw data. EHS users can set up filters for real-time analysis of expansive data sets as they come in, as well as configure dashboards according to roles and applications.

Figure 3:
Dakota Software's
Interactive Parametric
Filtering Dashboards



Having an intuitive and navigable interface that consolidates and outlines information points across the company is a pillar of efficient data management. Besides laying a strong foundation, these tools can gain companies a competitive advantage: NAEM highlighted having data-focused solutions as being one of the critical five strategies to staying ahead of the regulatory curve in 2017 [6].



Unique to Dakota's solution — building off its base of customized reporting — **is the capability, through Parametric Filtering, to dive deeper into the connections and correlations present in data**, but buried, and which drive intelligent decision-making. For instance, EHS managers may be able to see how different locations of a facility are hotspots for injuries (adjusting for variables), or how different employee types are affected most by illness. This ability extends to being able to monitor productivity and catch the pitfalls (holiday time periods) before they have a negative impact.

EHS managers need solutions that work and offer users a simple way to analyze and visualize complex data.

The bottom line is this: EHS managers need tools to deal with data.

The global reach of business and the cascades of data containing hidden insights predicate dependence on manual processes to guide forward-thinking action, let alone short-term management. Such ideals are available, however, when EHS managers have access to customized reports and the means to large-scale analysis. Capable solutions can help deliver on critical company goals, like targeting injuries or meeting waste reduction goals, but the key is investing in the solutions that can facilitate these needs on a personalized level. ■



About the Author

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Jeff Kortis is Dakota's Senior Product Specialist and is responsible for designing new applications, product demonstrations, and working with Dakota's clients to assess their product-related needs. He has extensive knowledge of data management processes and software technology trends; helping the organization position their software suite atop the EHS Information Management sector.



About Dakota Software

Dakota Software is a leading provider of compliance-based EHS and Risk Management solutions. Our ProActivity Suite combines a comprehensive regulatory library with enterprise-level software tools for mapping relevant requirements and monitoring related activities. With a combination of forward-looking analysis and snap-shot auditing, Dakota's tools help put EHS efforts in-step by providing visibility and guidance where and when it's needed.

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