Executing a Multi-year Data Management Strategy Using Internal and External Systems

A Case Study Featuring Lam Research Corp.
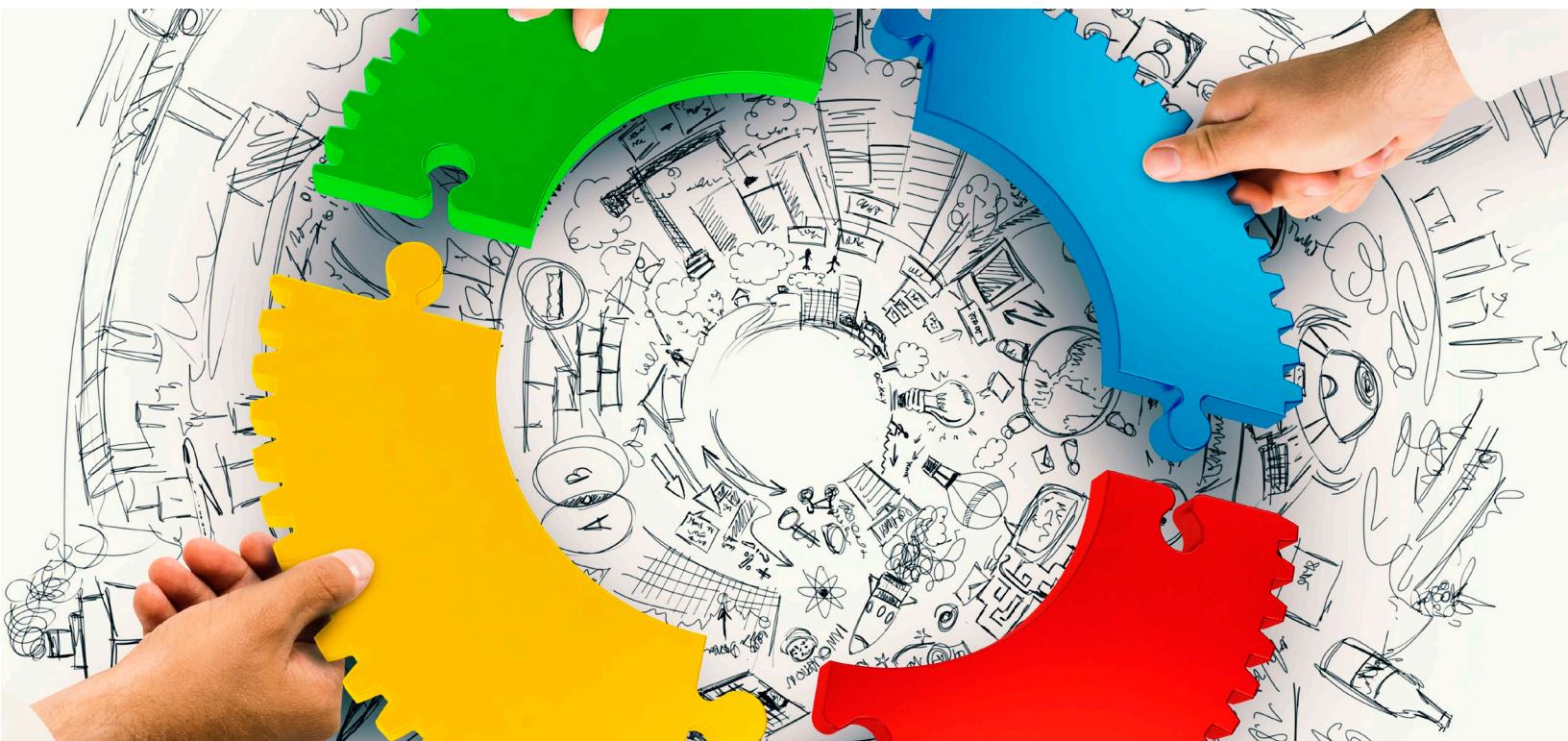
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Letter from the Executive Director

If NAEM's benchmarking research has taught us anything, it's that no two companies solve the same problem the same way. Even in a field where environment, health and safety, and sustainability programs often have similar elements, individual leaders need to understand how to adapt core concepts to the particularities of their own company's organizational structure, operations and culture. This is nowhere truer than in the area of EHS&S data management, where commercial software systems offer centralization and automation, as long as practitioners understand their organizations well enough to configure these systems to their needs.

And there is no one practice or approach for solving a complex problem like that.

To understand a challenge like data management, it's useful to hear from a variety of peers, to learn what worked and didn't work so well, and allow their experiences to inform your own. That is what this report is intended to do. As the latest installment in NAEM's research on EHS&S Software and Data Management, this report gives you a peek inside how a diverse group of companies use software tools to organize their EHS&S information and communicate their performance.

In reading through these case studies and interviews, I was struck by what a creative a problem-solver you need to be to find the best solution for your company. Insofar as no two companies are alike, one system does not always fit all. I was also reminded of a maxim that seems to emerge at every NAEM Software and Data Management conference we've hosted since 2001: Data Management is a long-term journey that requires vision, leadership commitment and continuous improvement.

We hope that this report helps you understand how your experiences compare to those of your peers and gives you some ideas you can use to help you refine your path forward.

Sincerely,

Carol Singer Neuvelt
Executive Director, NAEM

Contents

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This research report was independently developed by NAEM in accordance to our objective research standards, and is available free-of-charge, thanks to the financial support of the following sponsors:

About NAEM

The National Association for Environmental Management (NAEM) empowers corporate leaders to advance environmental stewardship, create safe and healthy workplaces and promote global sustainability. As the largest professional community for EHS and sustainability decision-makers, we provide peer-led educational conferences, benchmarking research and an active network for sharing solutions to today's corporate EHS and sustainability management challenges. Visit NAEM online at www.naem.org.

Case Study on Data Management

For any EHS and Sustainability leader who has had to manage vast amounts of data, it's tempting to think that there might be a software tool, or one strategy out there, somewhere, that could meet all of your needs. Unfortunately, the experience of those who have selected, implemented and managed these systems suggests this is not the case.

Indeed, a number of variables help shape a company's EHS&S data management strategy, including organizational design, internal culture, types of operational risks and the level of external scrutiny to internal operations.

It's perhaps not surprising then, that among the 165 software users NAEM surveyed about their company's data management approach, 56 percent are using a combination of commercial systems, internally developed software and commonly available tools, such as Microsoft Excel.

Current Data Management Approach
Figure 1

Commonly Available Tools ONLY 1%	Internally Developed Systems ONLY 2%	Off-the-Shelf Software ONLY 2%
Commonly Available & Internally Developed 7%	Off-the-Shelf & Commonly Available 16%	Internally Developed & Off-the-Shelf 15%

Combination of all Three
56%

N=164

As the EHS&S software offerings become increasingly sophisticated, more companies are adopting commercial systems to centralize data collecting and reporting.

Common Reasons Why Companies Use More than One System

While software tools for the environmental, health and safety, and sustainability professional have rapidly matured over the past decade, more than half of those surveyed by NAEM still use a combination of commonly available tools, internally-developed software and commercial systems to manage their data. The reasons, according to research participants, may include:

- Decentralized structures may not lend themselves to a centralized reporting systems

- Diverse operations may produce a variety of data types

- Individual operations may have unique risks that require targeted solutions

- Internal culture may value decentralized decision-making

- Acquired businesses may have their own software tools

- Legacy tools may be better aligned with organizational needs

Even so, the scope of these implementations vary widely from company-to-company. A single company may use an enterprise-wide system to manage its corporate standards, for example, while its individual business units use different combination of software systems to meet their own unique needs.

This is often the case for companies that have gone through a merger or acquisition, where the new business entities bring new assets but also their own approaches to data management.

All this makes standardizing corporate processes, or adopting any single system, exceedingly difficult. But as Jason Schmitz, Director of Trinity Consultant's T3 Group points out, perfect integration and standardization may be an unattainable ideal.

"It's very easy for the human brain to say, 'We'd really like to have everything in one nice, neat, tiny bow. The fact of the matter is that these organizations are diverse; they grow; they contract; people come; people go; the organization restructures; people get new roles and responsibilities."

"It's okay to not have perfect data because you're not going to have perfect data…you've got to figure out what you can tolerate," he said.

Regardless of a company's EHS&S program maturity, business objectives or budget, software tools remain just that—a conduit for collecting information. It's how well an organization aligns around a vision and commits itself to continuous improvement that truly holds the key to success for any data management program.

"The hope is that you master one area and then you go onto the next top priority and master that," Mr. Schmitz said. "Data management is an evolution."

In the interviews and case studies that follow, we will examine how different companies evaluated unique data management challenges, and identified solutions to address their business needs. We'll also explore how they solved problems today while positioning their programs on a long-term path for growth.

Executing a Multi-year Data Management Strategy Using Internal and External Systems

In the wake of a merger, Lam Research Corp. established a four-year strategy to invest in its EHS management information systems. In this case study, Corporate EHSMS Manager Thochan Nguyentan explains how the company assessed its needs, weighed the costs and identified the right combination of solutions.

Company Overview

Lam Research is a leading semiconductor company, with operations that include plasma etch and single-wafer clean equipment. In June 2012, the company merged with Novellus Systems Inc., another semiconductor company specializing in thin film deposition. The combined company now has about 8,000 employees and contractors, with facilities across North America, Asia, India and Europe.

Description of our Data Management Needs

In addition to using data to manage our EHS risks (Ergonomic, product compliance, chemical compliance, biological and environmental), we also use data to assist with maintaining internal conformance to our standards, which align with industry standards. Additionally, our company conforms to ISO 140001 for environmental management and OHSAS 18001 for health and safety.

In addition, our system help us with meet our customers' requirements. Intel is one of our top-tier customers and they have specific requirements, so our management system needs to be able to make and exceed these standards.

The Business Challenge

Before we began to invest in our systems, we had 37 different spreadsheets and databases that we were using to help us manage our information management system. Efficiency and transparency were issues. It was also very time-consuming to run performance metric reports or try to present on our data.

After the merger with Novellus, the company established a four-year roadmap to develop our EHS management information systems. Our needs included: EHS compliance management, material safety data sheets (MSDS), key performance indicator tracking and auditing.

How we solved the problem

Before we could identify the solutions we had to evaluate the current state of our systems. Both Lam (pre-merger) and Novellus had their own systems, and not all of them were scalable for the new combined company.

We've identified the pros and cons for each system based on the cost, based on ease of use, based on efficiency gain and then from a long-term standpoint. From there we would make the decision about which system would be more scalable and more consistent with our process.

For safety data sheets, for example, Lam was using a third-party vendor. We adopted this system to replace a homegrown solution that was built using Sharepoint. We now pay $20,000 a year, but it's been a huge efficiency gain because it has eliminated the need for manual upload and classification of the different hazard types. We can also easily run reports and use it for chemical inventory management. Based on our tradeoff analysis, we decided that Novellus should migrate from the system they were using to Lam's commercial system.

When it came to tracking EHS events, on the other hand, we adopted the Novellus system. Lam did not have a system to manage incident reporting. We were using a homegrown word document to capture the incident report and then perform the root cause analysis and corrective actions. However, it's really hard to track corrective and preventive actions, and follow up to closure. And performance metrics are also a nightmare when you try to pull this data during management review.

That's why we decided in favor the Novellus system that is now scalable for the larger company. We're performing some upgrades so it's scalable for the combined company and we will continue to make enhancements but it's a homegrown system similar to some of the commercial incident investigations and reporting systems.

One of the newest systems is the EHS event tracker system, but the development has been a challenge. We might have underestimated the total effort required, so once we got deep into the development we realized that we now have to spend a lot more time and effort to design a system that would be more scalable. There were a lot of upfront challenges, but now we continue to perform enhancements to the system to make it more scalable, and more user-friendly.

The development of a performance metric report is the next phase. Each year we establish an annual operating plan for EHS to make sure that we can reach the KPI in alignment with each business unit. In the past, the business unit leaders came to us to ask for the total recordable cases, injuries and near misses for their group. Now they can generate their own business intelligence reports and measure their own performance by running these type of reports.

Results

We're now in year four of our road map, and we believe that the investments we've made will allow us to save a lot of time. Our company has grown in total headcount, so resourcing has always been an issue for EHS so we don't have the bandwidth to support individual data requests from the different business groups.

Our new systems have also improved transparency. We introduced a dashboard tool, where it can look at real-time data. That's an improvement that we are actually working toward. We also started developing different EHS dashboards right now at the corporate level and started working with the different business groups to build their own dashboards.

Key Takeaways

The solution you decide on really depends on the resources and funding. Building these homegrown systems have had certain business benefits, but for some applications and business needs, it may not to be appropriate to build it internally.

For our corporate audit system, for example, I would be in favor of buying an off-the-shelf software because it would be much easier for us. Building it in-house would be a massive undertaking and we'd still need to utilize third-party regulatory updates anyway.

The full cost of using a third-party solution goes beyond the implementation, though. Annual licenses can be quite expensive, depending scale of your organization. In our case, we felt that it made sense for us to build some of our systems this internally because we had the resources and funding approved.

No matter the maturity of your data management program, there are certain lessons that seem universal to all companies. These include:

1. **Data management begins with establishing a basic set of standardized work flows:** "If you don't have the processes where we have a common definition and terminology for how we do things and what information we collect, and what exactly that information means, you can't deploy any software much less an off-the-shelf version."

2. **Every EHS&S data management system will need cooperation from other functions to be effective:** "The art of organizational change management is huge for putting in new data management systems, especially if you're relying on a network of people or upstream business processes."

3. **A data management system is only as accurate as its users:** "If executed properly, [most business processes] produce high-quality information. The problem is that without the knowledge, the skill and the capability, people sometimes just get it wrong."

4. **Each solution has its quirks:** "There's no system that users say: 'It's so great, I really love it,' People always have their complaints."

5. **Data Management is a journey of continuous improvement:** "Sometimes you've got to put a stake in the ground and move forward and use that mark as your starting point for [further improvement]"

6. **Don't rush into a decision:** "Take your time to review what is out there because an EHS software platform is a long-term commitment. It's not a project that you do for one or two years: This becomes a corporate solution."

7. **Know your Audience:** Work for the target audience or customer base. Know who will be using the system and what it will be used for. Organize data or information that makes sense to the user and helps them make decisions in a timely manner and take action.

8. **A complicated problem doesn't require a complicated solution:** "It is best to match your organizational requirements and assess as to what solution works for you. The solution must be cost-effective relative to the compliance risk. Don't buy "Cadillac" if the need is not there."

9. **Progress is not always a straight line:** "As you continually improve, you get the curveballs of change that may take you two steps forward, one step back. Whenever you're in the middle of that, it might not look so pretty but as long as you're vectoring in the right direction, I think that's the most important thing when it comes to data management."

10. **The more data, the more work:** "Once you create more data for yourself, you create more problems for yourself. You never used to know about those incidents that occurred. Now that you've got that granularity, you've got a problem that you've got to deal with. The overwhelming amount of data that you're going to create might actually make your job harder, so you've got to be cognizant of that."

Download NAEM's Approaches to EHS & Sustainability Data Management report or read a case study from the series by visiting www.naem.org

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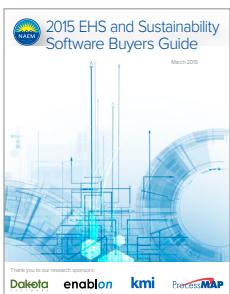
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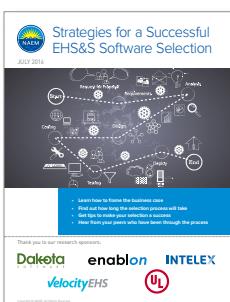
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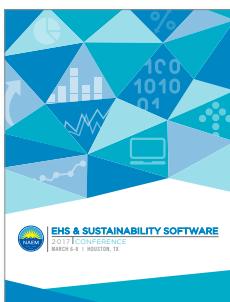
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