

PERFORMANCE MANAGEMENT SYSTEMS TARGET EH&S

NEW TECHNOLOGY FOR GOVERNANCE, RISK & COMPLIANCE

Businesses need better knowledge of their financial, operations and risk performance vis-à-vis corporate strategies and plans. Fragmented information systems force many to make decisions using less-than-optimal data. Businesses find it tough to locate, use, share, and trust the information they need. This is why Performance Management, which leverages Business Intelligence, is named the most important information technology (IT) priority for 2007.¹

Top executives and boards of directors are more actively involved in their companies' core performance and value-creating activities today than they were even five years ago.² They see overlapping demands for accountability and reporting, increased risk exposure and the 24/7 demands of global operations. They face mandates that call for tighter control of financial, IT, environment, health & safety (EH&S) and security processes.

Governance, Risk and Compliance (GRC) is a powerful new business imperative. A strategic initiative that spans the business enterprise, GRC commands a new breed of Performance Management information systems. Michael Rasmussen, a GRC expert from Forrester Research, says that technology is assuming a key and enabling role in delivering sustainability, consistency, efficiency and transparency across this federated GRC process and organization:³

“Business complexity, along with increased regulatory and market security, is driving organizations to adopt a structured approach to governance, risk and compliance. The goal: to effectively define, manage, and monitor the external and internal business environments. This involves moving to a federated organizational structure where GRC is centrally overseen, but risk and compliance accountability is distributed across lines of business where it belongs.”

EH&S is one of the most highly regulated aspects of global business, exacting a heavy price across a broad range of industries, in terms of direct and indirect costs and lost productivity. EH&S compliance is a major reason for organizations to upgrade GRC. A 2007 report on corporate “GRC mandates” says that over half of organizations (58%) surveyed are concerned about “operational and general risk management” and over one third (35%) specifically cite “green compliance” as their primary concern.⁴

Environmental compliance is recognized as a critical component of stakeholder perception of sustainable business performance.

—AMR Research, *Technology Options to Support EH&S Compliance*

Any incident or event that affects employee safety or the environment can become that day's top news story—interrupting business, adversely impacting performance and company image.

For all of these reasons, more and more organizations seek a better way to apply Performance Management principles to EH&S. They seek IT solutions to collect and communicate EH&S information to achieve their GRC goals of sound corporate governance, enterprise risk management and compliance assurance.

EH&S PERFORMANCE MANAGEMENT EMERGES AS A PRIORITY

Businesses need robust EH&S Performance Management capability to drive improved analysis and action across the organization. EH&S Performance Management has emerged as a priority because

- § Information reported to stakeholders often lacks accountability (chain of custody). Data frequently undergoes multiple transformations before reaching its final form, causing a lack of confidence in the data.

- § Businesses must be able to translate GRC strategy into action. They need consistent, reliable information from a sustainable source to make good decisions.
- § Businesses need accountability, awareness, and continuity—knowledge of who is doing what, when—so that the business continues to meet legal and other EH&S obligations.
- § Companies find it difficult to deliver the right EH&S information at the right level to the right people at the right time. This frustrates operations, EH&S professionals and management and decreases productivity.
- § Companies generate too much, often conflicting, EH&S information. It is hard to identify and filter out extraneous information.
- § Companies should capture data consistently, regardless of promotions, retirements or other personnel changes.

EH&S Performance Management is a moving target with ever-increasing regulatory and other obligations and stakeholder expectations. Yet successful organizations can use new software to thrive on change through insight and action. New IT solutions help organizations to become more agile and more responsive to the changing business environment.

WHAT PERFORMANCE MANAGEMENT SYSTEMS DO

A powerful new generation of Performance Management software is now available to gather, aggregate and organize data from production systems—even data from disparate operational platforms—into user-friendly information displays that provide a near real-time view of company performance. These systems collect data from all over the enterprise, from the smallest business unit to the entire enterprise, allowing organizations to report progress towards achieving performance targets.



Think of your business as a high performance roadster. To drive it well and keep your license, you need a high-visibility dashboard that tells you at a glance if everything is running properly. You need a speedometer to alert you when you are approaching the speed limit, a tachometer to warn you when you are running in the “red zone,” a satellite communications system and maybe a GPS unit to map out your route on the road to success.

Performance Management systems have played a prominent role in financial management for many years and are emerging in the EH&S arena. Leading EH&S software providers have adapted Performance Management technologies for use by EH&S professionals and business managers.

EH&S Performance Management software can help organizations to

- § Retrieve EH&S performance information quickly and make sure it is reliable;
- § Analyze EH&S performance information, comparing results and trends to goals, and communicate it to stakeholders;
- § Feel confident that they are addressing all EH&S regulatory reporting obligations and completing tasks on time;
- § Support day-to-day EH&S functions, improving rather than hindering productivity; and
- § Identify risks and allow the business to respond and recover quickly if, despite an organization’s best efforts, an EH&S incident or a crisis occurs.

Today, few organizations have processes and management systems in place to do all of these things. Most find it challenging to manage current EH&S obligations, let alone forecast potential

business outcomes and offer visibility into the future. If your organization does not have an EH&S Performance Management system in place, you may be taking unnecessary risks, endangering yourself and others—like driving a car without instruments!

BENEFITS & CHALLENGES

EH&S Performance Management systems serve many purposes, from allowing a company to exist in the market for another year to achieving operational excellence goals. Performance Management initiatives of all kinds help companies to decrease costs, increase revenues and increase agility.^{5, 6, 7} Performance Management systems

- § Enable best practices
- § Standardize performance measurement
- § Deliver consistent information
- § Improve communication
- § Save time and money Enable better and faster decision making
- § Provide actionable information
- § Align business operations
- § Change the way CEOs think of strategy

While Performance Management systems can deliver significant results, organizations must address several challenges to gain sustainable, repeatable improvements.^{8, 9, 10} Often, they lack an understanding of the details of day-to-day business processes. They encounter organizational fragmentation, politics and culture as well as problems with system acceptance and adoption (usage).

Global businesses may use different processes to achieve the same goals, due to localization issues (culture, language, regulations). Regulatory requirements are dynamic and metrics such as Key Performance Indicators (KPIs) differ from location to location, KPIs work well only if they can be acted upon and if they undergo periodic evaluation. Only 55% of respondents to a recent survey regularly evaluated their performance metrics.

Many organizations have a complex tangle of legacy systems, including existing applications and systems that do not map to the way people work. Technology limitations and Total Cost of Ownership pose additional challenges. Technology built in-house often falls short, and business needs to align better with IT to find vendor solutions that integrate with key systems to provide the detail that EH&S users want.

Business interruptions may change the focus from proactive Performance Management to reactive fire-fighting.

Success takes time. It takes two years to develop and optimize the dashboard/scorecard process. The success rate was 84% within two years and 93% after more than two years. Having a management sponsor doubles the success rate.

On balance, there is little doubt that Performance Management information systems, including the new ones dedicated to EH&S Performance Management, will pay off. The benefits far outweigh the challenges, so demand is growing rapidly.

SYSTEM CORE CAPABILITIES

At a minimum, EH&S Performance Management Software should have capabilities in three core areas—Information Architecture, Data Analysis and Information Presentation (Table 1).

Information architecture is “the structural design of shared information environments and the art and science of organizing and labeling... software to support usability and findability.”¹¹ The software should be intuitive and consistent, integrate with data sources all over the enterprise, standardize and automate workflows, and manage documents and other attachments. A good design lets users work seamlessly without the need to know or understand the architecture.

TABLE 1. Core Capabilities

Core Capabilities	Elements
Information architecture	<ul style="list-style-type: none"> Common look and feel among modules Workflow and collaboration tools Document and other file management Shared security, metadata, administration, portal integration Shared object model and query engine Metadata management Software Developer Kit (SDK)
Data analysis	<ul style="list-style-type: none"> On-Line Analytical Processing (OLAP) Data mining Shared calculations Scorecards Common filters Data “cubes” for multidimensional analysis
Information presentation	<ul style="list-style-type: none"> Dashboards Advanced visualization (interactive graphs and charts) Alerts, exception thresholds Data rollup Reports Ad hoc query Microsoft® Office integration

Data analysis is perhaps the most powerful capability. Data analysis is “the process of looking at and summarizing data to extract useful information and develop conclusions. Data analysis is closely related to *data mining*, but data mining tends to focus on larger data sets, with less emphasis on making inference, and often uses data that was originally collected for a different purpose.”¹² The Performance Management software should aggregate, calculate and extrapolate data to show trends, patterns and summaries, providing insight into past, present and future performance.



Information Presentation provides high quality, consistent data in a variety of formats from raw data to trend charts, from standard reports to ad hoc reports. Newer software presents information on a *dashboard*, a visual display that lets the user to check, at a glance, the organization’s performance. Dashboards often display charts, graphs, tables, alerts and exceptions. The success of many Performance Management systems may hinge on an organization’s ability to deal with challenges related to information presentation.¹³

Businesses can use functionality native to the Performance Management system to deliver and analyze data to transform it into useful information, or they can opt for commercial software.

GUIDELINES FOR EH&S PERFORMANCE MANAGEMENT SYSTEMS

If you envision EH&S Performance Management software in your organization's future, consider the following guidelines, based upon first-hand experience, ongoing dialogues and research.

1 Understand your enterprise

An EH&S Performance Management initiative must have a strategic fit with your organization's overall Governance, Risk and Compliance initiative and meet stakeholder expectations; it cannot exist in isolation. Before starting any Performance Management initiative, understand your business processes, your data and how people use the data.

EH&S Performance Management systems must

- § Synchronize with systems throughout the enterprise that house EH&S management data. If you integrate a wide range of applications, then you can gain a more complete and focused picture of EH&S Performance.
- § Interface with larger Enterprise Resource Planning (ERP) systems as needed to bring in data from beyond the EH&S domain.
- § Align with your organization's IT vision and capabilities.

If your organization does not currently plan to implement an enterprise EH&S Performance Management system, you should select individual EH&S software applications keeping the above considerations in mind.

2 Adopt a management systems mindset

Performance management is a continuous improvement process, akin to ISO Quality Management and Environmental Management Systems (ISO 9001 and 14001, respectively). To make the greatest impact, standardize business processes, set goals and priorities and establish a performance culture. Instill a set of management practices within the organization.

Take the opportunity to streamline your business processes. Companies that undergo Performance Management initiatives see significant improvements within two years.¹⁴

3 Choose a sustainable solution

Select a vendor who supports industry standards and has a strong record of accomplishment. Select software with a proven architecture and a complete EH&S footprint. Seek a solution that is flexible and scalable, allowing you to add capabilities as your Performance Management initiative (and organization) grows.



Look for modular software that can integrate with your existing databases and collaboration tools (i.e., e-mail, instant messaging, Web conferencing, data marts, document management, etc.). To report effectively on KPIs, you must delve into a breadth of EH&S data points. If your EH&S Performance Management software is not fully integrated with the systems that capture the data you need, you may be at a disadvantage. Imagine driving a car with no dashboard—you cannot detect potentially dangerous situations.

Consider a Web-based solution with a “zero” footprint that requires no “client” software or plug-ins. Opt for Software-as-a-Service if this meets your needs, or house the application inside-the-firewall on your own servers.

Ensure that the software has multiple layers of security, particularly if the solution involves data residing outside of the Company firewall.

To maximize the system's near-term and future value, find a solution that can support local and global EH&S management needs. EH&S Performance Management requires a solid framework that allows localization—the flexibility to manage information in the local language and to configure the software to meet local obligations—all while maintaining standard business processes and allowing data roll-up. If your company operates in different countries, evaluate applications that allow deployment in multiple languages, without the need for second (or nth) software copies for Japan, Germany, Canada, etc.

The software should be able to roll up data according to your enterprise hierarchy. It should aggregate and communicate information across business units in a manner consistent with your business structure and policies. It should provide tiered security so that users see the information they need according to their responsibilities.

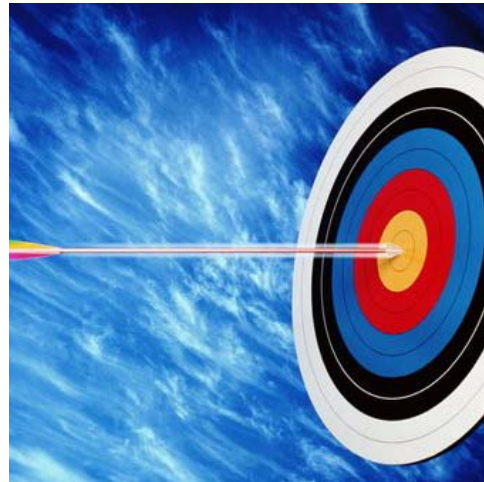
4 Make Metrics Matter

Choose a small number of KPIs that are easy to express and easy to understand at all levels of the organization. If you have more than twenty, then you have too many.

Not all metrics are KPIs. Support your KPIs with Performance Results (PRs) and Performance Indicators (PIs).¹⁵ Your business may have dozens, or hundreds, of PRs and PIs that you measure day-to-day, and these may affect or roll up into KPIs. Establish both leading and lagging indicators and set alert and/or exception thresholds. Finally, use an integrated platform to generate metrics; this promotes consistent, accurate results.

Ensure that your KPIs are¹⁶

- § **Quantitative**—KPIs must be measures that one can act upon. Measurement and estimation methods should be documented and units of measure should be standard to provide transparency.
- § **Relevant**—metrics must be strategic and SMART (**S**imple, **M**eaningful, **A**ppropriate, **R**ealistic and **T**ime-bound). KPIs should be reported relative to progress towards targets.
- § **Comparable**—KPIs should be standardized to allow comparisons over time across facilities, business, and even across industries.



Use these reporting principles to add *context*.¹⁷

- § **Transparency**—*How, Why and What* was done—describe internal processes, systems and procedures to add credibility to KPIs, especially quantitative ones. Explain responsibility for EH&S performance, and the boundaries that apply to the KPIs.
- § **Accountability**—*Who* is accountable for *What*—describes the roles within the organization responsible for EH&S management and corresponding performance measures at all levels of the organization. Also, describe roles responsible for reporting performance to stakeholders, internal and external.
- § **Credibility**—*Context*—describe how metrics fit within the larger context of EH&S Performance Management, within Enterprise Performance Management, and within the organization's GRC framework.

Many companies report progress towards KPI goals in annual reports. See page 8 for examples of these metrics.

EH&S Key Performance Indicators (KPIs)

Diverse industries share a number of common EH&S KPIs. These include leading indicators (e.g., number of Near Miss Incidents) and lagging indicators (e.g., Occupational Injury & Illness Incidence Rate). Risk and compliance often drive KPIs. Some organizations use the Balanced Scorecard approach, where sustainability, greenhouse gas emissions and the Global Reporting Initiative (GRI) drive KPIs.

The GRI provides a common framework for sustainability reporting—reporting on the “triple bottom line” of economic, environmental and social performance.¹⁸ Stakeholders representing nearly 400 organizations in 45 countries believe that greater transparency leads to improved sustainability and economic performance. The GRI identifies Core and Additional KPIs in economic, environmental and social categories.

GRI environmental KPIs include thirty Core and Additional metrics in nine reporting areas—materials; energy; water; biodiversity; emissions, effluents and wastes; products and services; compliance, transport; and overall. Examples of Core KPIs are Percentage of materials used that are recycled input materials (EN2), Emissions of ozone-depleting substances by weight (EN19), and Total number and volume of significant spills (EN23).¹⁹

TABLE 2. Transportation KPIs (2006)

KPI	Units
Truck and Engine Shipments	thousands of units/yr
Toxic Release Inventory (TRI) Releases	
Offsite	Tons/yr
Recycled	Tons/yr
Hazardous Waste Generation	
Disposed	10 ⁶ pounds/yr
Recycled	10 ⁶ pounds/yr
Non-Hazardous Waste Generation	
Disposed	10 ⁶ pounds/yr
Recycled	10 ⁶ pounds/yr
Energy Consumption	10 ⁶ mmbtu

TABLE 3. Electronics KPIs (2005)²⁰

KPI	Units
Greenhouse Gas Emissions	
CO2 Emissions	10 ³ tonnes/yr
Waste Mgmt (Packaging Materials)	
Recycle Rate	Percent
Reuse Rate	Percent
Landfill Rate	Percent
Energy Consumption	
Total Energy Consumption	KWh
Energy Consumption vs. Revenue	KWh / \$ Revenue

TABLE 4. Food Industry KPIs (2006)²¹

KPI	Units
Production volume	10 ⁶ tonnes product/yr
Inputs	
Water consumption	10 ⁶ m ³ /yr m ³ per tonne product
Energy consumption	10 ¹⁵ Joules (PJ)/yr 10 ⁹ Joules (GJ) per tonne product
Outputs	
Waste water generation	10 ⁶ m ³ /yr m ³ per tonne product
Air acidification potential	10 ³ SOx equivalents/yr kg SOx equivalent per tonne product
Ozone depleting substances	tonnes R-11 equivalents/yr g R-11 equivalent per tonne product
By- and co-products	10 ⁶ tonnes/yr kg per tonne product
Waste (for disposal)	10 ⁶ tonnes/yr kg per tonne product

TABLE 5. Other EH&S KPI Examples

KPI	Units
Chemicals/Hazardous Substances	
Material Usage	Tons/yr
Material Recycled	Percent
Emissions	
Greenhouse Gas (GHG) Emissions	Tons/yr
VOC and HAPs Emissions	Tons/yr
Total Hazardous Waste	Tons/yr
SOx and NOx Emissions	Tons/yr
Flared and Vented Gas	Tons/yr
Controlled discharges to Water	Tons/yr
Energy/Natural Resource Usage	
Energy Usage	MM KWh/yr KWh/ sq ft
Water Usage	MM gallons/ day MM gallons/ ton product
Occupational Health & Safety	
Injury and Illness Incidence Rate	(No. of I/I x 200,000) / Employee hrs worked
Injury/ Illness Cases with Days Away from Work, Job Transfer or Restriction	No./yr
Recordable Injuries/ Illnesses Cases	No./yr
Administrative Measures	
Number of Spills, NOVs, Permit Exceedances, Permit Violations	No./qtr, No./yr

5 Resist the temptation to develop your own system

Performance management solutions support common business processes. While there is no “one-size-fits-all” solution, find one whose footprint meets your near-term and longer-term needs. Resist the temptation to develop your own system, as you will lose the benefits of adopting industry best practices, while accepting unnecessary risks.

If you capture performance management data from hundreds of other systems, then integration with each of these systems is not the answer. Find a solution with an integrated platform to ease your interoperability burden and to create business value.

The decision to build or buy a solution hinges on several factors—the complexity of user needs, the organization’s culture, skill sets, resources, etc. Good arguments exist in both the “Build” and “Buy” camps, and often a hybrid of the two is the best answer.²²

6 Find a solution that people will adopt

Software adoption can be a greater challenge than deployment. To be adopted, technology must have a purpose—specific business objectives—and must provide the appropriate content—features and functions. It must resonate with the intended audience. The probability of software adoption relies upon four factors—Design, Performance, Security and Usability, with Usability possibly the most important factor.²³



People are more likely to use an IT solution that has meaning to their job. Seek an IT solution that provides personal and shared business intelligence content. Look for software features such as interactive analysis, drill-down capability and self-service reports.

Seek out Performance Management software that has a familiar interface, is configurable, intuitive and simple to use. The solution should be seamless; Users should not need to switch from Web to Windows interfaces, or from one application to another to complete their work. For a strong indication of which solutions are more adoptable, try to find vendors with a large, satisfied customer base. Talk with their customers.

7 Involve key stakeholders early; keep them involved

Set the stage early. Get senior executives sponsorship and determine their objectives. Involve EH&S, IT, financial and line-of-business executives in software concept discussions, requirements definition, evaluation and selection. Include technology-savvy business experts. Consider adding external users to the project team if they will have access to the software. If you lack adequate internal resources, then identify and involve third-party assistance early.

8 Hold people accountable

Day-to-day work must be meaningful within an overall strategic context. Hold people at all levels of the organization accountable for EH&S performance. Make Performance Management a positive process and reward people for innovation and extraordinary achievements.

Design your information workflow with as few data handoffs as possible. Let people who generate the information enter it into the system (often operations personnel). This helps to capture data at a lower cost and frees EH&S professionals to assess and analyze the information.

Assign tasks at the appropriate level and track tasks through completion. To monitor progress, seek a solution that offers or works with enterprise-wide task management tools. This can help the organization share lessons learned, improve processes and elevate EH&S issues to the C-level and Board level.

9 Anticipate and manage change

Performance Management solutions change how people do their jobs. Do not expect the solution to sell itself, to be a success because Management declares that it will be, or to sustain itself based on a grass-roots initiative. Instead, put in place a change management initiative that anticipates resistance to new systems.

Use communications and training to help manage change. Establish a Communication Plan to prepare management, operations, staff and software users for the system rollout. Develop a Training Plan that and speaks to different software user needs. Tailor the training to audiences such as power users, casual users, management and system administrators; do not overwhelm users with too much information. Provide documentation and support to help users embrace the new system.



10 Evaluate periodically

Keep in mind that Performance Management is a continuous improvement process; as the business changes, the information flow may need to change as well. Consider periodic, perhaps annual, evaluations to gauge business alignment. Evaluate KPIs, metrics and scorecards, as well as your overall solution, against the organization's strategic plans. If certain aspects of the solution no longer make sense, then revise them. And remember to communicate these changes!

CONCLUSIONS

EH&S Performance Management plays a strategic role in enterprise Governance, Risk and Compliance, and that role will continue to grow. Lessons learned through EH&S Performance Management can help organizations to manage and reduce overall business risk, even those that do not employ enterprise-wide GRC solutions.

EH&S Performance Management is in its early stages, and only a few independent software vendors provide focused, integrated solutions. Compliance, business sustainability, continuous improvement initiatives and operational risk management drive demand for these systems.

If you are considering an EH&S Performance Management solution, take these guidelines to heart. You may be surprised at how quickly you realize performance and productivity gains.

About the Author

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Gilbert is a thought leader on EH&S management information systems. She conducts ongoing research and writes the "IT Insight" column for *EM* magazine. She is listed in *Marquis Who's Who in America* and *Marquis Who's Who in the World*. She is a member of Women in Technology International (WITI), as well as a Fellow Member and past Vice President of the Air & Waste Management Association. Gilbert earned an M.S. in Environmental Management from the University of San Francisco and is a Qualified Environmental Professional (QEP). For more information, visit www.Lexicon-Systems.com or call +1 281-280-8106.

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