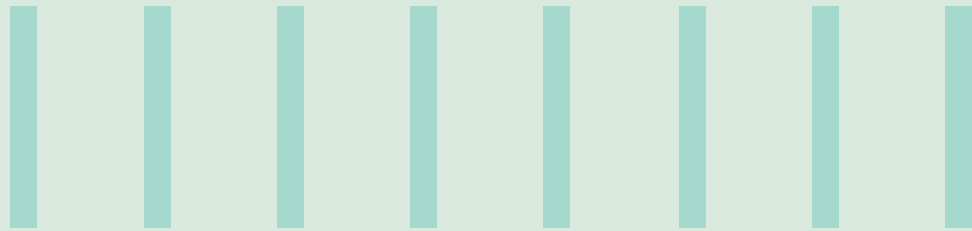




COMPLIANCE TO COMPETITIVE ADVANTAGE

Infosys Blue print for Digital transformation of your EHSQ Landscape



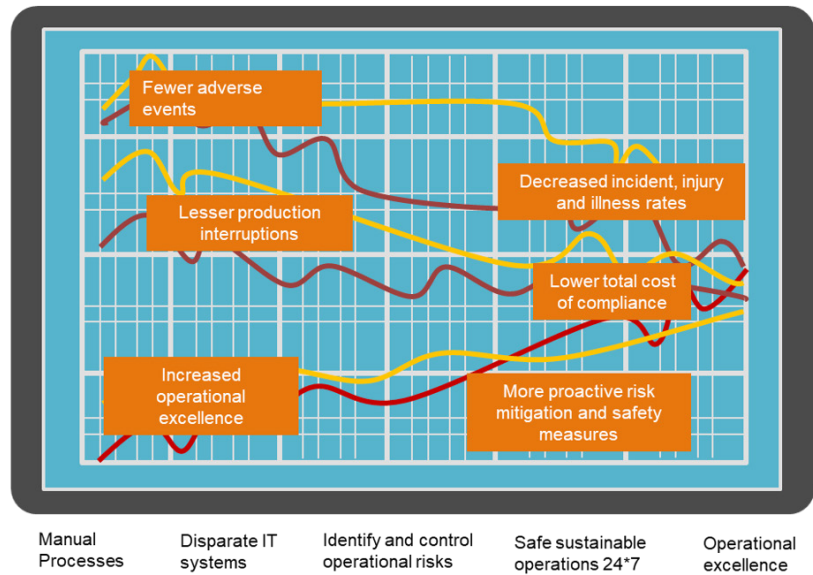


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Introduction evolution of ESHQ to an industry standard

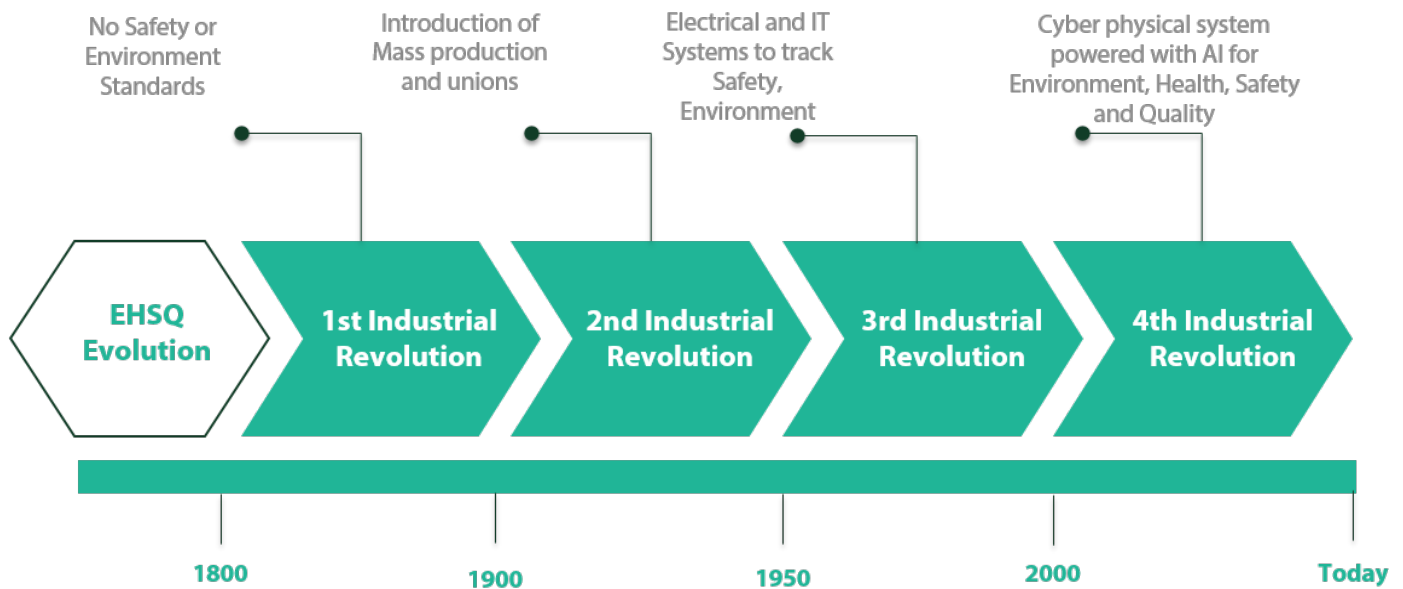
Sustainability and operational excellence are priorities for many organizations. For an EHSQ team – with lives and reputation at stake, the key is to quickly build the best of the worst-case scenario by analyzing the “what-ifs” from the limited data available. In the year 2018, it is estimated that 125 billion dollars’ worth of damage was incurred by industry plants in Houston area and this underscored how essential it is to have a robust Environment, Health, Safety and Quality (EHSQ) platform. Disasters in the industry plant, hazard on the field are

both natural and man-made.

In today’s accelerated industrial 4.0 age - environment, health, safety and quality constitute the core of every business. The concept is not just limited to meeting the compliance requirements but has become a major part of corporate strategy. To take your EHSQ program to the next level, the key is to have an integrated platform.

Industry 4.0 makes use of cyber-physical systems to connect people, machines, and data in new ways. Several critical technology changes including sensor-equipped devices, cloud computing, mobile apps, and big data enable the

overarching trend of the industrial Internet of Things (IIoT). Smart connected assets are the manifestation of cyber-physical systems in industrial operations, and will in part optimize operations with predictive/autonomous control in consideration of EHS constraints and opportunities. The increased complexity and rate of change in the business environment gives rise to new risks that companies must manage in the face of ever-growing stakeholder demands and resource constraints. The situation calls for a fresh approach to EHSQ management, and EHSQ 4.0 provides the means to harness today’s technology to do just that.



Virtually non-existent when the Industrial Revolution started, standards and ESHQ has evolved over time from an Environment Protection Agency being setup along with other local regulatory systems, and the passage of the Occupational Safety and Health Act of 1970. The 1990’s saw the emergence of

a holistic approach and role of ESHQ in industries. Companies started eliminating silos and began to merge the disciplines to create internal systems to drive EHS progress across all business operations. In addition, a handful of formal ESHQ management approaches and guidelines such as the Occupational Health and

Safety Assessment Series (OHSAS 18001) were established through international collaboration.

As the ecosystem has evolved over time, the old practices and approaches had to be revamped and revised to meet the present and future demands.

What are the challenges in building a performance-centric EHSQ?

The toughest challenges to EHSQ include silos – disparate system and disconnected data sources, poor collaboration across

multiple departments ineffective metrics, rapidly changing workforce and lack of executive support.

The traditional EHSQ with these typical challenges cause gaps in the execution of policies, procedures, and processes defined

by the management system, which in turn result in incidents and adverse events that drag down performance. Lack of visibility of high-quality data and the actionable insights they enable limit performance improvement.



1. Disconnected systems – Many of the companies do not have an effective integration between the ERP and EHSQ, which creates data silos making it ineffective to build and centralize the strategic platform. Also, any of the organization initiatives lose its effect as multiple sources of data can be misleading without the true picture of the current state of the organization
2. Rapidly changing workforce - Today's industry has seen arrival of the millennials, reports state that by 2030 millennials will form 75% of the workforce. It has become imperative to understand their requirements and perspective of workplace safety, health, sustainability and quality. Millennials rank safety as an issue of workplace stress higher than any other issue (and higher than earlier generations have). Employee wellness is another major aspect that drives millennials at work. This

has led to a change the way companies look at employee wellbeing, there has been a growing demand for health and wellness support from the employers as well, the focus has been to provide good corporate fitness centers, nutrition programs, coaching programs, improved safety all summing up to have a healthier, happier and efficient workforce

3. Lack of direction and executive support - Without management and executive buy-in, EHSQ platform implementation is ultimately going to stall because de-prioritization for the platform in the budgeting process. Also, it is easy to lose focus and make it a compliance platform rather than a strategic platform. While Human Resources, Payroll, Finance, and Operations are often given the green light to seek out and implement state-of-the-art solutions to 'get the job done', EHSQ usually lags when it comes to securing

management approval for new software purchases

4. Poor user experience and adoption – The most ignored parameter across any of the ERP functions is the user experience, EHSQ is no exception as there is a need to provide intuitive user experience across multiple stakeholders. For instance, the environment parameters or health parameters needs a large magnitude of data to be summarized and provided for multiple teams and aid in collaboration across stakeholders
5. Ineffective metrics and data – Cost, compliance, regulations and wellness of the employees – there are a gamut of metrics which the EHSQ should track. Many of the organizations do not have effective EHSQ design to track measure, control and align the right metrics with respect to the organization's goals

Building the next-gen EHSQ – Design blueprint

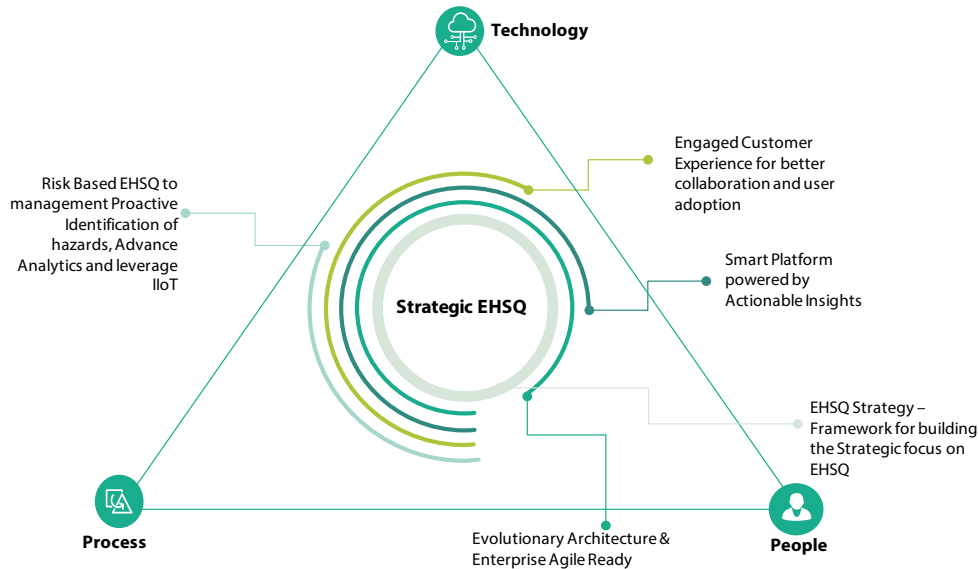
Compliance is no longer the sole motivation behind corporate EHSQ programs. Innovation and guidelines, solid challenge from competitors, and changes in customer

expectation have made EHSQ a fundamental and significant concept.

As organizations embark on a journey to implement operational excellence and other improvement initiatives, there are increased expectations to integrate the EHSQ function

to the core ERP to move it from being a cost-center to add value to the enterprise.

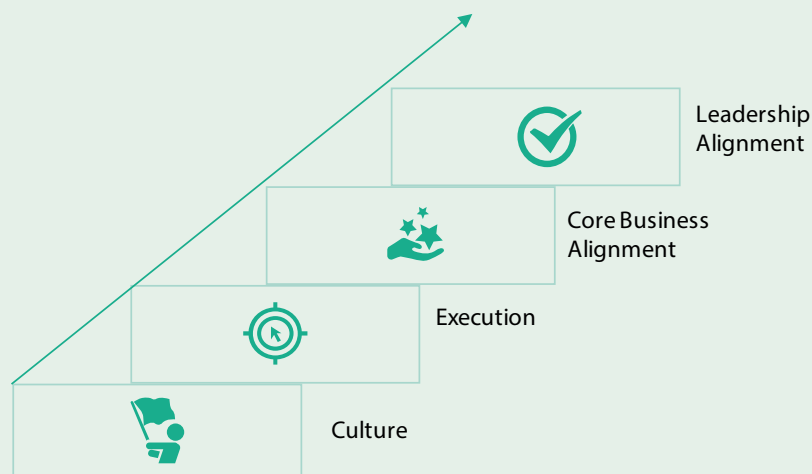
We propose to build a design blueprint based on policies, processes and procedures which enables the organizations to effectively strategize their investments on EHSQ.



Strategic EHSQ – Unfortunately, the EHSQ management is not a core value chain function. That distinction is left to those areas of the business that directly produce value for customers, such as R&D, manufacturing, and supply chain. The job of business functions like EHSQ, finance, and human resources is to support the enterprise in

meeting strategic objectives. With a historical emphasis on compliance and cost-reduction, enterprise executives and EHSQ leaders themselves challenge the EHS business function to shed the cost-center label so that the organization can view it as a source of strategic value. The focus of the EHSQ strategy should be shift the business value of

EHSQ from reactive compliance to proactive risk management. The key is to elevate EHSQ and improve awareness of it as a source of strategic value. Innovation leaders are much more likely to view EHSQ as strategic than less mature organizations. EHSQ must be top corporate priority and EHSQ objectives should be aligned to operational excellence initiatives with the following:



1. **Leadership alignment** - A clear vision for EHSQ management has to be established by top level executives, with rigorous communication and visible demonstration. Most importantly, there is a need for an executive sponsor for the EHSQ management

2. **Core business alignment** - EHSQ initiatives and programs are designed to support enterprise strategic objectives in areas such as market position, financial performance, and operational excellence

3. **Execution** - The EHSQ should be tightly coupled to the value chain of the organization. The key is to provide the ability to capture and analyze operational data. This helps leaders to better understand EHSQ performance, and its impact on the business, in a more accurate and timely manner

4. **Culture** – The last and most important EHSQ strategy alignment should happen with the culture of the organization. If the organization does not have cultural alignment on EHSQ, the strategy is bound to fail

Risk-based approach - The notion of a risk-based approach to safety and EHSQ management isn't new. What's changed is the scope and nature of the EHSQ risk management process, and how it relates to overall enterprise risk management, sustainable operations, and profitable growth. This calls for a robust risk process appropriate for each organization's risk profile. For a single-site manufacturer, a

simple paper-based job safety analysis process may be adequate. On the other hand, a large global organization operating in a high-risk industry likely needs a robust risk management process, backed by rigorous quantitative risk assessment methods. Regardless of the specific risk assessment methodologies used, companies need a well-defined closed-loop risk management process in line with the ISO 31000 risk management standard. But there is a gap between the business requirements for effective risk management and reality in the field. Despite increased awareness of operational risk and the consequences of under-managing it, most organizations still don't have a formal risk management framework in place. Innovation leaders are much more likely to have systematic risk management process in place.

This blueprint helps organizations implement a risk-based approach to managing safety and environmental business risks with these capabilities:

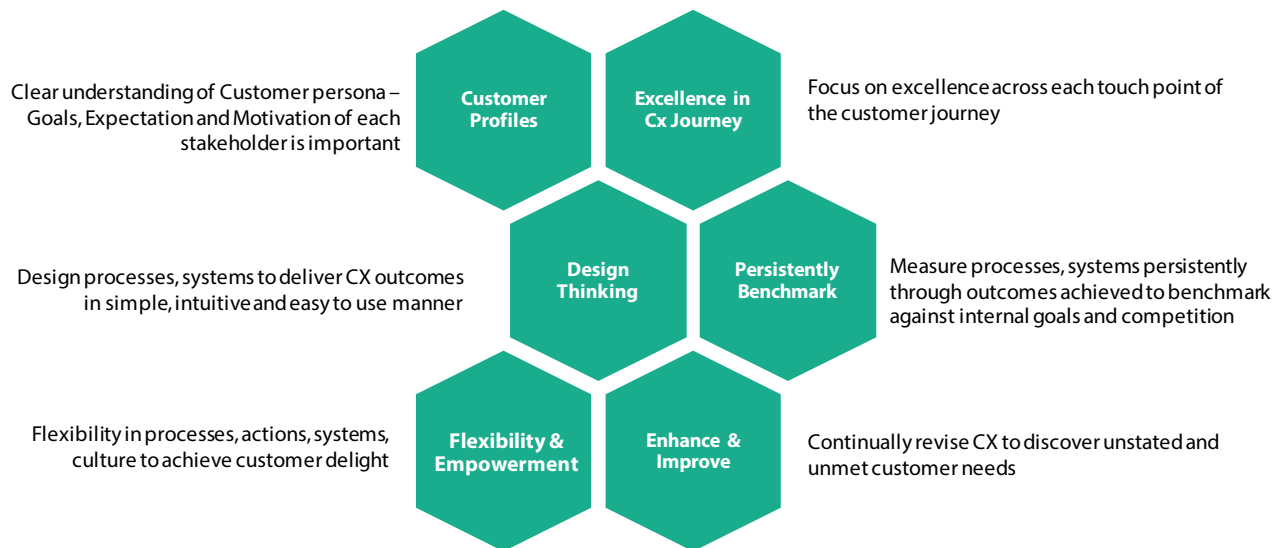
1. **Proactive hazard identification** – A proactive and systematic process to identify hazards, for risk analysis, implementing control measures, and monitoring effectiveness. Risks in industrial operations surface from three main sources: events, such as incidents; changes to processes, equipment, organization, and other operational parameters; and proactive performance management activities such as inspections and audits

2. **New technologies** help organizations better identify and manage these risks in dynamic and complex operating environments. The powerful combination of IIoT data and analytics enables new levels of risk management effectiveness

3. **Automated data collection from sensor-equipped smart assets** coupled with advanced analytics can help identify patterns and trends that lead to adverse events.

Engaged customer experience - EHSQ requirements and activities occur and impact business operations across the entire value chain. Perhaps, there is no other business function which has as many touchpoints with other business activities. This requires customer experience to be evaluated across multiple personas. As organizations scramble to put CX at the core of the business, the EHSQ CX should be structured to deal with internal stakeholders as well as customers. EHSQ implementations face both horizontal challenges in terms of silos between departments such as the quality, HR, Finance and the various processes and people. Further there are vertical barriers across the organization hierarchy between the shop floor and middle managed and senior management.

The key to break these horizontal and vertical barriers is to build a simplified CX model that enables the various stakeholder using the EHSQ to collaborate, act and simplify the process.



Smart platform powered by actionable insights

The success of the EHSQ platform is as good as the quality of data involved in the process. There is large volume of data from emissions, effluent discharges or safety incidents are used for reporting and key decision making. Traditionally EHSQ data is recorded and historic data is analyzed for insights, but this is quite reactive and does not help in decision support. The key to success is to build a data driven CX platform for EHSQ which builds diagnostic insights (why did it happen) rather than

descriptive insights (what happened). This needs a strong predictive analytics platform in combination of big data to process and analyze data from the IIoT network to proactive identify and prevent risks.

Evolutionary architecture and enterprise agile ready

EHSQ functions constantly undergo changes from pressures from internal and external stakeholder's expectations, changes in business models, market changes and regulations. Building an enterprise-level EHSQ is complex, hence

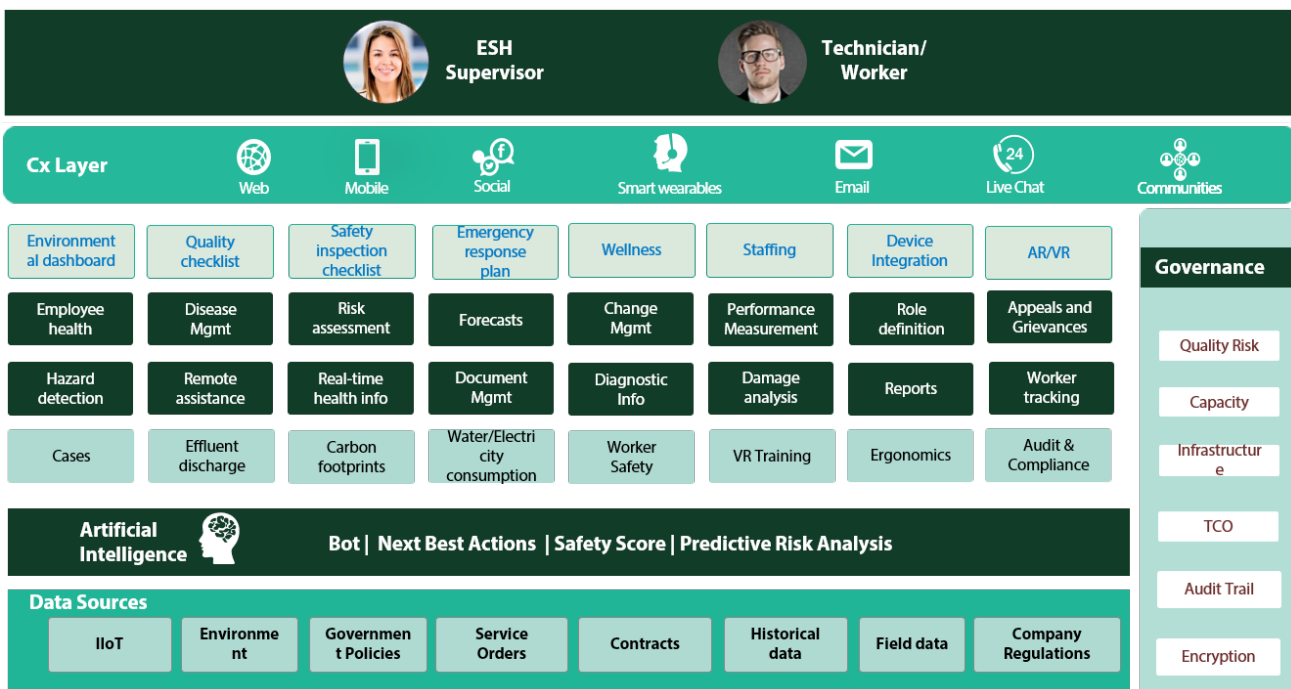
the key is to identify changes and assessing potential risks while implementing changes. Organizations can acquire software-as-a-service like Salesforce, easily adding capabilities and users, data and building configurable functionalities with the flexibility to scale up and down with the organization changes. This flexibility to scale up and down with organizational changes requires us to build an agile delivery pipeline. This delivery pipeline for the EHSQ enables us to adopt to new changes and quickly innovate on the platform.

The future of EHSQ and path forward

Industry 4.0 has opened greater avenues to innovation in order to facilitate improved quality of work aiming at a futuristic delivery. The key trends influencing the EHSQ space are as follows:



Infosys recommends building a smart EHSQ-based on the digital blueprint which focusses on building a strategic equipment-related injury, process safety incidents, and environmental emissions management on a smart platform.



1. **Design EHSQ** – Core business operations have led the digital transformation wave in most industrial companies, with use cases such as asset reliability, production efficiency, and product quality. When it comes to digitalization the overall market has passed through the early adopter phase and into the early majority phase
2. **Identify opportunities across the value chain** - EHSQ initiatives and programs are designed to support enterprise strategic objectives in areas such as market position, financial performance, and operational excellence
3. **Get executive buy-in** – There is a need to have a clear vision of EHSQ with the top executives, with rigorous communication plan
4. **EHSQ as an organization change** – Although the application of innovative technology is not merely an IT transformation but a business transformation initiative, success will depend on the organization culture and comprehensive change management
5. **Getting started** – Organizations are already undergoing digital transformation and the focus on the EHSQ should be a proactive early start rather than a reactive implementation post incident

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