



Providing Business Value by Integrating EHS and Business Operating Systems

By

**Jill Barson Gilbert, QEP
President, Lexicon Systems, LLC**

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Jill Barson Gilbert, QEP

President, Lexicon Systems, LLC

Houston, Texas

JBGilbert@Lexicon-Systems.com

ABSTRACT

As environmental, health and safety (EHS) programs developed over the past 30 years, they were placed on the sidelines as support functions, not into mainstream operations. Only recently, organizations have begun to accept that EHS compliance is a line responsibility, not a corporate staff function. Since EHS draws from all sorts of operations data throughout the organization, it makes sense to integrate EHS data and functions with day-to-day operations.

A mid-sized EHS services firm elected to integrate its commercial EHS management information systems with its business operating systems. The firm believed the integration of three existing systems into a single Unified System would place them at a competitive advantage.

The IntelligentEHS™ software manages business processes and data related to EHS functions. InteGreyted Consultants employees, GlobalNetEHS™ affiliates and Clients use this proprietary web-based Management System. The IntelligentEHS system has three components:

1. Business Operating System (BOS) – Maintains InteGreyted contacts, projects, proposals, invoices, etc.
2. GlobalNetEHS – “Interface” designed for interaction with the BOS by GlobalNet Partners.
3. Commercial Applications – Includes the Control Center (Facility Profiles, Inventories, Activities, Library, Administrator, User Profiles) as well as plug-in modules (e.g., Audits, Risk Assessment, Event Tracking). The Unified System project involved not only integrating three systems, but also enhancing the features and functionality of the software and updating the system with a common “look and feel” and navigation.

This paper presents a case study of the Unified System project and discusses the expected benefits—to all end-users—of investing in the project.

INTRODUCTION

As environmental, health and safety (EHS) programs developed over the past 30 years, they were placed on the sidelines as support functions, not into mainstream operations. Only recently, organizations have begun to accept that EHS compliance is a line responsibility, not a corporate staff function. Since EHS draws from all sorts of operations data throughout the organization, it makes sense to integrate EHS data and functions with day-to-day operations.

InteGreyted Consultants, LLC, a mid-sized EHS services firm with a global presence, elected to integrate its commercial applications used to manage EHS issues with its business operating systems. The firm believed that integration and enhancement of three separate web-based systems into a single system would place the firm at a competitive advantage.

The author will provide an update on the project status during the presentation of this paper at the Air & Waste Management Association Annual Conference & Exhibition.

THE CHALLENGE

Systems Evolution

The consulting firm already had set itself apart from its competitors by using proprietary software applications to manage its daily affairs, as well as to conduct many types of EHS projects for clients.

As the software systems evolved in response to internal business drivers and external market needs,

- the applications evolved into three discrete systems;
- some modules began to exhibit features that would be useful in other areas;
- data were not shared among the applications;
- the look and feel of the applications diverged;
- essentially all employees knew how to use the business operating systems;
- only selected people within the organization knew how to use the commercial applications; and
- few GlobalNetEHS partners had access to the applications.

Need for Revolution?

The IntelligentEHS™ software manages business processes and data related to EHS functions. InteGreyted Consultants employees, GlobalNetEHS™ affiliates and Clients use this proprietary web-based Management System. The IntelligentEHS system has three components:

1. Business Operating System (BOS) – Maintains InteGreyted contacts, projects, proposals, invoices, etc.
2. GlobalNetEHS – “Interface” designed for interaction with the BOS by GlobalNet Partners. Similar functions to the internal BOS, but designed from the perspective of the Partners.
3. Commercial Applications – Includes the Control Center (Facility Profiles, Inventories, Activities, Library, Administrator, User Profiles) as well as plug-in modules (e.g., Audits, Risk Assessment, Event Tracking).

InteGreyted recognized that a transformation was needed. The Unified System project involved not only integrating three systems, but also enhancing the features and functionality of the software and updating the system with a common “look and feel” and navigation.

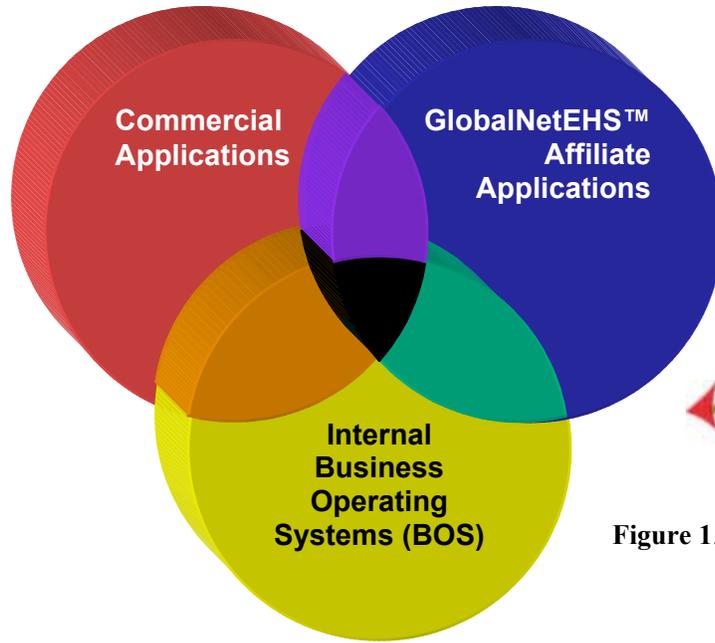


Figure 1. Unified System

THE VISION FOR INTEGRATION

Enhancements

The existing tools in the three systems—Commercial Applications, GlobalNetEHS Applications and BOS—were developed at different times, sometimes looked different, and sometimes had unique features that could be beneficial if applied to other modules. The vision for enhancements was 1) to add new EHS features and functionality, and 2) to integrate the system and revamp the software for usability. Thus the vision for the Unified System included a number of global features such as:

- tighter integration;
- enhanced navigation;
- improved usability;
- data entry improvements;
- new reports;
- offline capabilities; and

- work flow enabling.

The vision for the new UI included:

- a series of updated “home pages” aimed at the needs of different types of users— Client EHS professionals, InteGreyted Employees, GlobalNetEHS affiliates and InteGreyted Partners;
- a new “look and feel” that provided a more intuitive sense of how to navigate through the software tools;
- the use of web pages that could be customized as needed for specific consulting clients; and
- links to added features and functionality.

Finally, the vision included technical upgrades such as migrating from a “document database” to a “relational database” and using new web development tools that could provide added features.

Subject Matter Integration

The subject matter covered by the integrated system included the Knowledge Center—the heart of the EHS management systems functionality—plus optional “Add-In” modules that address specific needs such as management systems or compliance audits, risk assessments, industrial hygiene management and EHS training (Table 1).

Table 1. IntelligentEHS Subject Matter Functionality

Module	Subject Matter Functionality
<i>Knowledge Center</i>	<ul style="list-style-type: none"> ▪ Facility Profiles and Inventories – place to keep electronic inventories of general site information and specific inventories such as lists of permits and authorizations, underground storage tanks, emission sources, safety equipment, etc. ▪ Activity Tracker – system for managing responsibility and accountability, linked to compliance and/or management requirements and tied into e-mail ▪ EHS Library – electronic filing cabinet for numerous types documents that can be put into electronic format
<i>Add-In Modules</i>	<ul style="list-style-type: none"> ▪ Audit Tools – for compliance and management systems audits ▪ Risk Assessment Tools – tools to measure EHS risks and determine the feasibility to mitigate these risks ▪ Industrial Hygiene Tools – conduct IH assessments, develop work plans, and store monitoring results ▪ Training Tools – electronic training modules for various EHS programs and subjects, e.g., office safety training

Business Function Integration

The business functions addressed by the Unified System effort included several functions typical of consulting firms—Contact Management, Sales & Marketing, Proposal and Project Management, Invoicing, Quality Assurance and Customer Satisfaction (Table 2).

Table 2. IntelligentEHS Business Function Integration

Business Process	Functionality
<i>Contact Management</i>	<ul style="list-style-type: none"> ▪ Employees and GlobalNetEHS partners share contact data on a common platform ▪ GlobalNetEHS affiliates can form peer-to-peer relationships with or without the intervention of InteGreyted employees
<i>Sales and Marketing Activities</i>	<ul style="list-style-type: none"> ▪ Project information data sharing—proposals ▪ Automated “cradle-to-grave” management of sales and marketing efforts ▪ Ability for firm’s senior management to view sale and marketing activity statistics real time
<i>Project Management</i>	<ul style="list-style-type: none"> ▪ Project information data sharing—project status, task completion ▪ Key project team contact data ▪ Bulletin board to post team data ▪ Place to post project management documents and project deliverables ▪ Project Manager links to commercial application databases for key clients
<i>Invoicing</i>	<ul style="list-style-type: none"> ▪ GlobalNetEHS invoices to InteGreyted Consultants ▪ InteGreyted invoices to clients ▪ Ability for consultants and GlobalNetEHS affiliates to view data pertinent to their projects
<i>Quality Assurance and Client Satisfaction</i>	<ul style="list-style-type: none"> ▪ GlobalNetEHS Partner Comment Forms – provide the ability to grade the performance of specific GlobalNetEHS affiliates ▪ Client Surveys – provide The ability to grade the firm’s performance on a specific project

MANAGING THE EFFORT

Planning

The company devoted significant time up front, setting the vision and planning the project. The vision was that the effort would span two years or more, with tangible results within the first year. The company appointed a senior manager to direct the project, track progress, and report progress to the Board of Directors. The effort required the talents of a person that not only could manage a large project, but also understand EHS, business, consulting and IT issues. The Project Director needed to effectively communicate with the various stakeholders, which included:

- ✓ Clients
- ✓ GlobalNetEHS Affiliates
- ✓ InteGreyted Employees
- ✓ InteGreyted Owners
- ✓ Board of Directors
- ✓ Software engineers

The Unified System included seven (7) initiatives with a number of interdependencies (Table 3). Because of the size of the Unified System initiative, Microsoft® Project was used to plan the project schedule and resources and to obtain periodic reports to track progress.

Table 3. Unified System Project Initiatives

1	Systematic Process for IT Management
2	IntelligentEHS Enhancement/Build Out
3	User Training and Support Systems
4	GlobalNetEHS System Development
5	Awareness and Distribution Systems
6	Specialized Systems (Project Work)
7	Value Cases

A project critical path was developed. For example, updated design standards (part of Initiative 1) and the new User Interface (Part of Initiative 2) had to be developed before new software features and functionality could be deployed using the new “look and feel.” Enhancements to some of the existing Business Operating Systems (Initiative 2) had to be complete before new features could be rolled out to GlobalNetEHS affiliates (Initiative 4).

User Training and Support Systems (Initiative 3) had to be in place before deployment, though Specialized Systems and Value Cases (Initiatives 6 and 7) could occur in parallel with other initiatives. Some of the communication components, or Awareness and Distribution Systems (Initiative 5) could be done in parallel with development efforts, but other components had to be completed just before roll out of specific features and functionality. In addition, some communications efforts needed to parallel the entire undertaking, to keep all stakeholders informed of progress.

Virtual Project Team Collaboration

Although the project team held periodic face-to-face meetings and work sessions, the greater part of the project was completed by a “virtual project team”. A core team

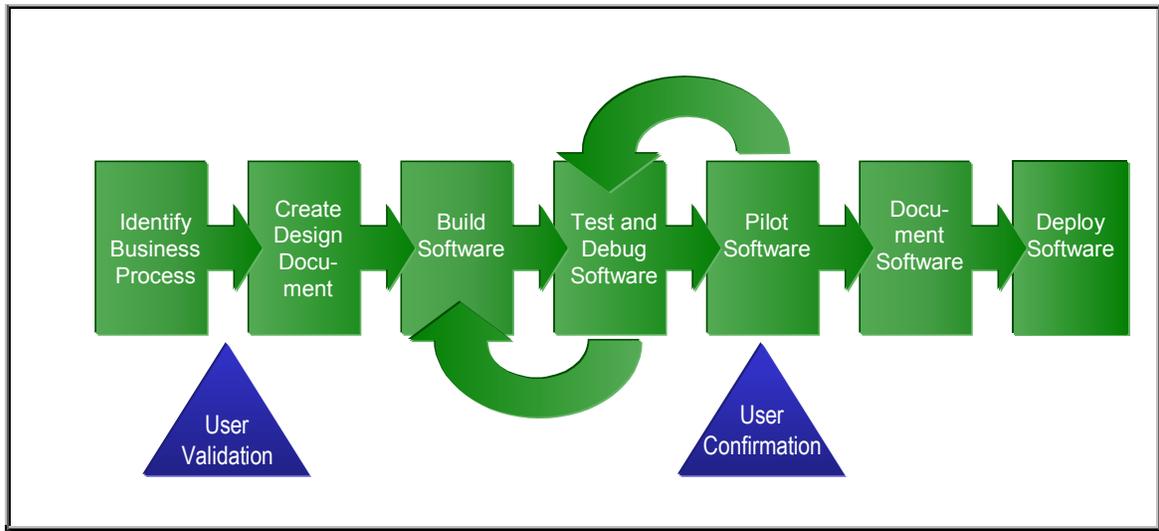
located in seven different cities in three states contributed to the effort. Others were brought into the virtual team as needed to provide input on the system’s business requirements (features and functionality), to assist with design documents and to test the enhanced software before deployment. The resulting virtual team included consulting clients, employees and GlobalNetEHS affiliates.

The team leveraged various collaboration technologies, including the IntelligentEHS tools, to conduct the project. A secure, internal instant messaging system; Internet collaboration software; and several shared databases helped the team work together in separate locations.

Development Methodology

The Unified System effort involved using a documented development process. Subject Matter and Technical enhancements were developed in parallel using rapid development cycles and rolled out module by module. Figure 2 depicts the Software Development Process used for each major project initiative.

Figure 2. Software Development Process



For each initiative, it was important to first identify the business process, and resulting needs or requirements, before moving forward with the software enhancement design and build phases. Testing and debugging was important before deploying the enhanced software to the end-users. The project team conducted multiple test cycles and compared the software to the design document. Documentation included two distinct types; technical documentation of the software programming and user documentation such as interactive Help files.

One of the project initiatives addressed development and documentation of the project management process and methodologies. This included developing and updating standards to be applied throughout the project.

PROVIDING BUSINESS VALUE

Use of commercial applications by InteGreyted staff and GlobalNetEHS partners allowed the firm to deliver results rapidly, consistently and globally. One example was a major EHS due diligence effort that required teams to be deployed around the globe to thirty (30) facilities in thirty (30) days. Completion of such a project in such a short time frame required rapid turnaround of findings, and the IntelligentEHS system allowed this to happen. And the findings were delivered over the Internet, without generating paper. When the project was completed, the client not only had the results of the due diligence effort for this potential acquisition, but gained a valued database as a result of the project. These efforts are recognized in the Merger & Acquisition (M&A) community.¹

Another example is the use of the Risk Assessment tools to assist a pharmaceutical company's evaluation of workplace EHS risk. This approach and set of tools provided and organized, consistent methodology for identification and analysis of risk, made visible important EHS risks that required management by the Company, and included features and functions that support the management of actions taken to reduce or mitigate identified risks.^{2,3}

Use of commercial applications by the firm's consulting clients allowed the clients to not only manage their EHS data day-to-day, but also allowed them to quickly determine the status of active and completed consulting projects. The "Premium Client Services" web page, part of the integrated system, provided links to project management information, with software security settings to protect confidential data from others. Further, the Unified System allowed the firm's project managers to manage projects from cradle to grave, that is, from concept through proposal through invoicing and client follow-up, all in one system. The system allowed clients and consultants alike to spend less time on project administrative issues, focusing more on value-added issues.

CONCLUSIONS

The Unified System Project was a major undertaking that required several things to be in place (and documented) to ultimately provide business value to Clients, GlobalNetEHS affiliates, InteGreyted Employees and InteGreyted Owners. From a process perspective, these included a project management process, a development process, development standards, procedures to manage scope changes, communications systems and project evaluation methods, to name a few. From a capabilities perspective, the effort required the talents of a multidimensional team. From a management perspective, the project required the solid support and sponsorship of the firm's senior management and its Board of Directors.

The various stakeholders—Clients, GlobalNetEHS affiliates, InteGreyted Employees and InteGreyted Owners—have already realized value from individual components of the IntelligentEHS system, and are beginning to realize value from recently added enhancements. At the time of this writing, the project remains underway; the intent is to provide an update when the paper is presented.

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KEY WORDS

Business Process

Business Management

Business Operating Systems

Environmental Management Information Systems

EMIS

Information Management

Information Solutions

Information Systems

Information Technology

IS

IT

Management Information Systems

Management Systems

MIS

Technology