Management system certification
+ corporate e-commerce strategy
= e-assurance

On the Internet, customers and suppliers engaging in e-commerce transactions must grapple with two major issues: trust and authenticity. How can a customer trust a supplier who may be located on a different continent, and how can such a remote buyer verify that the supplier's identity and claims of conformity to management system standards such as ISO 9000 and ISO 14000 are authentic and true? This special report includes a six-point strategy for certified suppliers to consider when venturing into the cyber-market.

The Internet has completely transformed how businesses join buyers and sellers, manage supply chains and bring products and services to the market-place. Companies must undertake new ways in which to use the Internet, not only to improve the efficiency and effectiveness of their existing processes, but also to keep abreast of technological changes in today's business world.

Success in the new digital market-place will depend on effectively managing business strategy, information and communication technology (ICT) strategy and organizational culture as a singular nexus of strategic thinking and tactical execution.

Electronic commerce – e-commerce – is the future whether your company is big or small. Whether you sell directly to consumers or operate a business-to-business enterprise, an e-commerce solution not only puts you in more direct contact with your customers, it provides you with a lucrative additional sales channel that is growing in popularity every day.

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The unprecedented growth of the Internet has astonished both the technology and the business worlds and prompted many a bold proclamation concerning its commercial promise. In 2000, more than USD 433 billion of business was done by way of the Internet. This volume is expected to escalate to more than USD 8,5 trillion by the year 2005, of which 58 % will be generated outside of North America. Similarly, just two years ago, 143 million people were connected to the Internet. By the end of 2001, that number will increase by five times with more than 700 million people using the Internet.

On the Internet, customers and suppliers engaging in e-commerce transactions must grapple with two major issues: trust and authenticity. How can a customer trust a supplier who may be located on a different continent, and how can such a remote buyer verify that the supplier's identity and claims of conformity to management system standards such as ISO 9000 and ISO 14000 are

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authentic and true? These issues become particularly relevant when the customer expects its suppliers to have management systems that conform to recognized standards for quality, environmental and/or occupational health and safety management. Verifying supplier claims of conformity to relevant standards becomes critical to e-commerce transactions when a customer in these instances is required by *its customers* to verify the conformity of subcontractor processes to quality management system (QMS) and/or environmental management system (EMS) standards, such as ISO 9001:2000 or ISO 14001:1996.

> **Central to the concept of assurance is how a customer validates a supplier's claims of conformity to recognized standards**

Conformity assessment and assurance in e-commerce

A sound corporate e-commerce strategy integrates a number of core business functions (see Figure 1).

Many of these core functions have an obvious role to play within Internet e-commerce, but some are less readily relevant. First and foremost amongst these is the notion of *assurance*, whereby a supplier in an e-commerce transaction can satisfy a customer's need for confidence about the supplier's credentials and capabilities.

Central to the concept of assurance is how a customer validates a supplier's claims of conformity to recognized standards. In the new economy, this can be done through "e-assurance", with the supplier conveying via the Internet the relevant conformity assessment documents – such as ISO 9000 or ISO 14000 certificates – in a secure manner which supports validation and authentication by the customer. A well-rounded corporate e-commerce strategy therefore recognizes the critical role of conformity assessment in providing customers with assurance, making it necessary for an organization to incorporate it into the overall e-commerce strategy.

Conformity assessment is defined in ISO/IEC Guide 2, *Standardization and related activities – General vocabulary*, as, "any activity concerned with determining directly or indirectly that relevant requirements are fulfilled". Conformity assessment procedures provide a means of ensuring that the products, services, or systems produced or operated have the required characteristics, and that these characteristics are consistent from product to product, service to service, or system to system.

Conformity assessment includes product sampling and testing, inspection, and certification, and quality and environmental system assessment and registration. (Editor's note: "ISO 9000 registration" is commonly used in North America to denote

Figure 1 – Integrated e-commerce: the role of e-assurance

"ISO 9000 certification" and "registrar" to denote "certification body". In deference to the author's Canadian origins, his preferred terminology has been retained.) Conformity assessment also includes, via accreditation, assurance of the competence of third parties who provide these services and recognition (usually by a government agency) of an accreditation programme's competence.

All types of conformity assessment are important means of marketplace communication – they convey information between a supplier and customer. Indeed, it is increasingly important for customers, suppliers and other interested parties to understand the conformity assessment process, judge the real value of a particular assessment scheme and use the resulting information to make intelligent business decisions. The quality of the information conveyed depends on the following criteria:

- the impartiality and competence of the assessment body;

- the scope of the registration (certification);

- the adequacy and appropriateness of the standard against which the organization is evaluated, and

- the security with which the information is transmitted.

Any type of conformity assessment may result in the deception of a customer if the performance characteristics or test methods contained in a standard are insufficient to ensure adequate product or organizational performance, or if a supplier misinforms a customer about the competence of the conformity assessment body, or the extent of the evaluation.

A customer may also be misled if documentation (i.e., product test certificates or management system regis-

tration certificates) is falsified, changed or corrupted, or the customer is unable to authenticate it. On the Internet, the potential for this to happen is significant and all parties to a conformity assessment scheme, from accreditors to customers, must play their part to ensure the integrity and credibility of the scheme during the information dissemination process.

ISO 9000 certification and Internet e-commerce

Requirements for, and use of, formal QMS's and EMS's have mushroomed since the mid-1990's, particularly QMS's. A formal QMS helps a supplier ensure it can produce products that consistently meet customer specifications. Keep in mind that product quality depends on many variables, and QMS standards such as ISO 9001/2/3:1994 and ISO 9001:2000 only deal with the processes an organization uses to manage production or service provision so as to eliminate variation that will leave the customer unsatisfied, or require more and nonvalue-added work of the organization.

In both the old and new economies, certification to ISO 9000 and or sector-specific supplemental requirements based on ISO 9001, or to ISO 14000, is becoming a major differentiator that customers use to identify and select sources of supply.

Communicating an organization's QMS or EMS registration/certification status and associated quality and environmental credentials can therefore be critical for suppliers that wish

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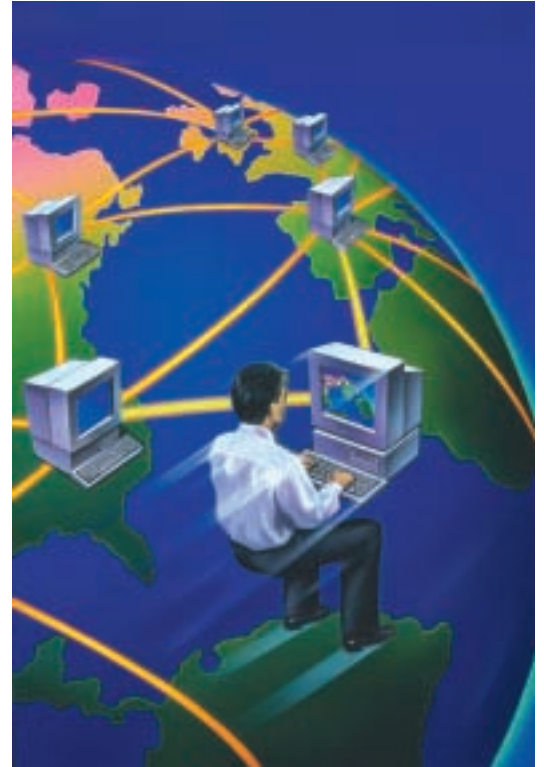
All types of conformity assessment are important means of market-place communication

to remain competitive globally. QMS and EMS registrars (certification bodies), the accreditation bodies that verify the competence of registrars and the certified suppliers themselves must now confront the issues surrounding the security and authenticity of ISO 9000 and ISO 14000 certificates reported on the Internet to support e-commerce transactions. Ensuring the security and authenticity of ISO 9000 and ISO 14000 certificates on the Internet is critical to upholding

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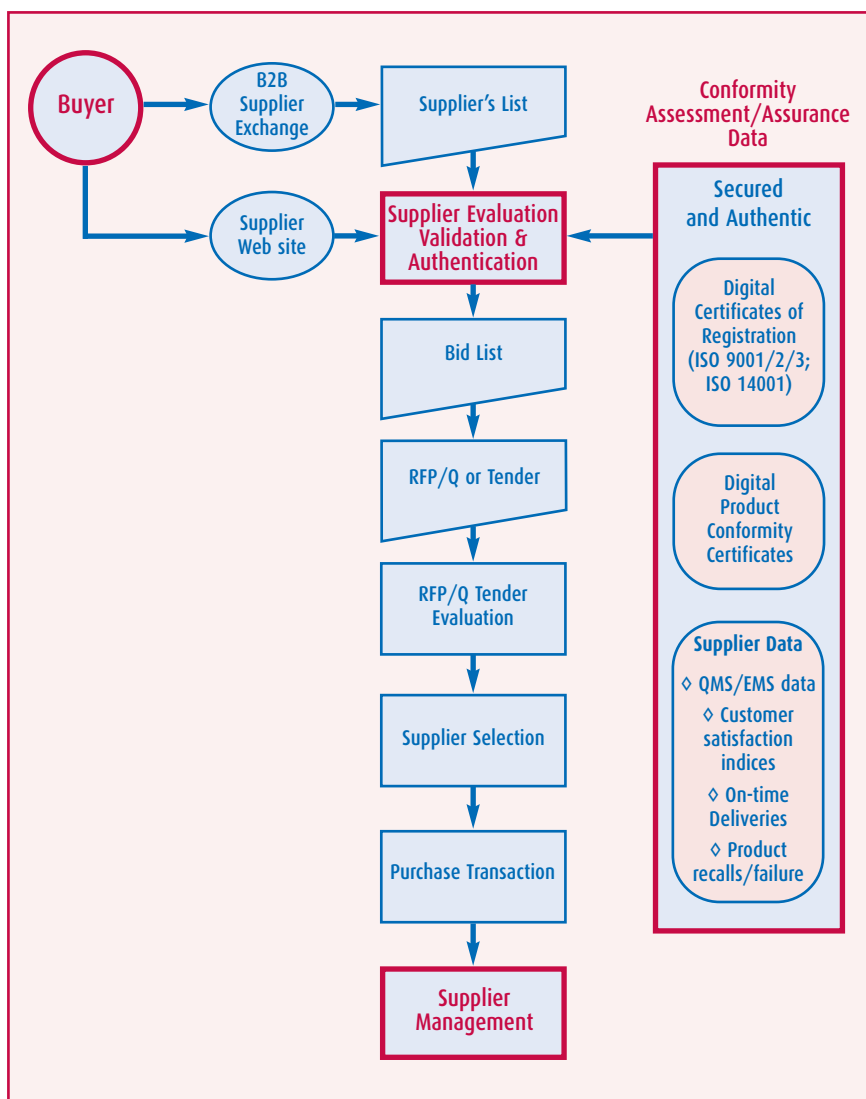
the integrity and credibility of the conformity assessment system as a whole.

Registration bodies who verify a supplier's management system conformity to ISO 9000 or ISO 14000 standards, the accreditation bodies who verify the registrar's competence, and the registered suppliers themselves, must now confront the issues surrounding the security and authenticity of ISO 9000 and ISO 14000 certificates of registration deployed on the Internet in support of e-commerce. Ensuring the security and authenticity of ISO 9000 and ISO 14000 certificates of registration on the Internet is therefore critical to upholding the integrity and credibility of the conformity assessment system as a whole.

Ensuring online security and authenticity

The certificate of registration, signifying verified conformity by a registrar, is the de facto informational instrument through which a registered (certified) supplier communicates its quality assurance credentials to the outside world. Ownership, use and display of certificates of registration have traditionally been controlled and governed by guidelines published by the registrars which issue such certificates. While these guidelines have, for the most part, proven practical with paper-based certificates of registration, they are inadequate when dealing with the new issues of trust, security and authenticity presented by the use and display of these certificates on the Internet.

Figure 2 – **e-commerce supply chain management – integrated e-assurance**

On the Internet, the security and integrity of certificate of registration information, and its resistance to corruption, alteration or falsification by another agent, is both fundamental and critical. Hard copy certificates which are scanned and displayed as images on supplier Web sites are highly vulnerable to downloading, alteration and redistribution by external agents, leading to the circulation of falsified certificates and unsupported claims of registration.

To understand some of the issues involved, consider how registration to ISO 9000 is typically conveyed on the Web. A random survey of Web sites belonging to registered companies reveals that the following methods are typically used for displaying statements of conformity or certificates of registration on the Internet:

1. *A statement of claim (e.g., "ISO 9002-registered") displayed on a supplier's Web site*. The statement does not provide details, placing the responsibility on a prospective customer to prove the claim is true. Thus, the customer must contact the supplier or its registrar to verify that the registration is in good standing, the registrar is qualified/competent to audit the supplier and the scope of registration covers the product and/ or service the customer seeks. In short, Web-based statements of claim cannot be immediately validated and authenticated without additional work.

2. *A statement of claim accompanied by registrar and accreditation body marks*. While these represent an improvement in credibility over a plain statement of claim since they direct a customer to a registrar and indicate from whom the registrar obtained accreditation, they still require validation and authentication by the customer.

3. *Display of certificate of registration.* Some suppliers choose to display a scanned image of their certificate of registration upon their Web site as hard evidence of their quality or environmental system registration. Because such scanned images are not secure, they can be easily downloaded and appropriated by another party. Therefore, when viewing a scanned certificate on a Web site, a customer cannot have absolute confidence in its validity,

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authenticity and ownership. Once again, the onus is on the customer to validate the certificate as genuine and that the owner of the certificate really is the supplier he/she wishes to do business with.

By validating and authenticating a supplier's certificate of registration, a customer gains the trust and confidence that the supplier is genuine and that the claims of conformity are supported by a legitimate certificate of registration issued by a registrar. Both the lack of security

Ensuring the security and authenticity of ISO 9000 and ISO 14000 certificates on the Internet is critical to upholding the integrity and credibility of the conformity assessment system as a whole

and authentication surrounding the use of certificates of registration on the Internet is a real exposure point for the conformity assessment industry and presents a definite threat to the integrity and trust which underpins the system.

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With more than 400 000 certificates of registration to ISO 9001/2/3:1994 and more than 23 000 to ISO 14001 issued to companies worldwide, and more and more of these firms deploying Internet e-commerce strategies, all registered companies should consider how to integrate the e-assurance aspect of their business within their overall corporate e-commerce strategy. Figure 2 shows where e-assurance via conformity assessment data integrates within e-commerce supply chain management and where in that process customers will increasingly expect suppliers to provide this data.

Hard copy certificates which are scanned and displayed as images on supplier Web sites are highly vulnerable

Recommendations for registered suppliers

The immediacy and reach of the Web provide customers with a potential pool of suppliers at their fingertips. However, its anonymity requires customers that seek to rely on e-commerce to acquire confidence and trust about prospective suppliers and their capabilities. Likewise, suppliers that claim conformity to recognized standards will have to consider how they can provide customers with this required confidence and trust by providing their credentials in a secure manner that supports online verification and authentication. ISO 9000 and ISO 14000-registered

organizations clearly face this dilemma, since QMS and EMS registration are major differentiators employed in selecting suppliers.

Suppliers holding certificates of registration to ISO 9001/2/3:1994, ISO 9001:2000, or any of the ISO 9001-based sector requirements (QS-9000, AS 9000, and TL 9000), or to ISO 14001, should address the following six points when developing their corporate e-commerce strategy:

1. Consider the role of e-assurance within the overall corporate e-commerce strategy. Assuring customers about claims of conformity and providing the necessary evidence via a trustworthy and secure means is an integral part of the overall corporate e-commerce strategy.

2. Consider how you will satisfy Internet buyers' need for trust and authentication. To instil confidence you will need to provide evidence that your certificate of registration is valid and that you are indeed the real owner of the certificate. While some buyers may check registration credentials with the issuing registrar, most will want the convenience of a hard validation "at source."

3. Ensure that certificates of registration deployed on the Internet are resistant to theft (downloading), falsification/corruption and recirculation by external parties. Using "Internet ready" digital certificates of registration which are encrypted, signed and secured under a public key cryptosystem minimizes the risk of unauthorized certificates being put into circulation and upholds the integrity of the conformity assessment system.

4. If your firm is supporting e-commerce business, you must deliver the highest levels of trust and security so your customers can be certain that your site is genuine, and that the information they send you via Web browsers, and other devices stays private and confidential. In addition, you must ensure that certificates of registration and associated claims of conformity are served from a secure server whose identity and authenticity can be verified. Using trust services provided by a recognized Internet certificate authority such as Verisign or Entrust is one way to build in this level of assurance.

5. Develop an e-assurance strategy for "going beyond the certificate". Buyers faced with choosing among suppliers who all hold valid certificates of registration will be looking for other objective evidence in

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support of superior performance. This will require providing quality or environmental system and other objective data which supports the level of quality, reliability and environmental care being claimed.

6. Seek your registrar's input when developing and deploying an Internet strategy for giving visibility, security and authenticity to your registration credentials. Remember that ownership of the certificate of registration rests with the registrar and any e-assurance strategy you develop should be aligned with terms of use for the certificate specified by the registrar. Registrars are only now becoming aware of the need for digital certificates of registration, but most will be willing to offer guidance as to how conformity to management system standards can best be conveyed over the Internet. ◼

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