

Inclusion of the audit process in a re-engineered enterprise system

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ABSTRACT

The major impact of information systems on accounting began with the automation of transaction processing. It was a simple process to punch a card for an inventory item (or group of items) and read, sort and accumulate the cards. Auditing such a process included selecting cards (or lines from a listing), tracing them to the physical goods, and conversely selecting physical goods and tracing them to a card listing. The process of auditing inventory continues to require verification of goods, but today the cards have been replaced by scanners for barcodes or RFID chips. Such technologies enable organizations to significantly increase the volume and complexity of the transactions processed, but concurrently complicates the audit process. In today's environment, the increased volume and complexity will best be dealt with through an easily auditable automated enterprise system.

Today's organization expects online real-time information for many business processes. This expectation is supported by the need for managers to have up-to-date information for decisions. When using tightly integrated supply chains or operating

independently in a global economy, information delay can be detrimental to the success of an organization. To inspire confidence in and ensure the validity of this real-time information there needs to be a mechanism for assurance. Traditionally, this assurance comes in the form of a financial audit, performed annually by independent certified accountants. Another important component of assurance is performed by internal auditors; their assurance includes the focus of effectiveness and efficiency of operations, in addition to financial processes.

Over the past several years, there has been interest by some academics, certified accountants, and organizations to investigate “continuous assurance”. This has been followed by isolated implementation of the concepts, primarily by internal auditors. Part of the difficulty in implementation is interfacing with traditional ERP systems. This abstract describes components of a stream of research that examines how auditing could be conducted if the design of an enterprise system considered auditors’ needs. This research considers the re-engineering not only the client information system, but in many cases, the audit process.

For nearly two decades, there has been a growth of interest in identifying and implementing audit processes in real-time, or near real-time mode. Professional organizations in North America have defined *continuous audit* as, “*a methodology that enables independent auditors to provide written assurance on a subject matter... using a series of auditors’ reports issued virtually simultaneously with, or a short period of time after, the occurrence of events underlying the subject matter.*” (CICA/AICPA 1999) From the scholarly perspective, one of the earliest academic papers in the area was written by Vasarhelyi and Halper (1991) describing a system to detect anomalies in telephone call billing data. Their system was not for external auditors, but rather from an internal corporate view. One key result of that work is the recognition that by auditing close to the business process, there is a better opportunity to detect and correct problems in their early stages,

before the problem escalates. This result is key to the minimization of financial losses for organizations. Since the publication of the Vasarhelyi and Halper paper, there have been many articles suggesting tools and processes to assist in assuring accounting data continuously. Generally speaking, for real-time data to be assured continuously and for that assurance to be feasible, monitoring and audit tools need to be tightly incorporated within an enterprise system.

From the regulatory perspective, there is also support for reporting (and hence assurance). In the United States, the Sarbanes Oxley Act of 2002 requires public disclosure, on a “rapid and current” basis, material changes in an organization’s financial condition. There are strong assurance implications of this requirement. How can the public be confident that these disclosures are occurring and that they reflect the underlying condition change, without independent assurance? Enterprise systems should include the capability to address such regulatory requirements and the related assurance needed to inspire confidence in the reporting process.

Today, state of the art continuous assurance includes database replication or mass extraction routines (such as SQL queries) to a data warehouse for additional analysis. While this method has proved to be beneficial to the information users, it should be much more efficient for auditors to follow a “client-server” model for data acquisition/analysis, with the application (enterprise system) including embedded audit tools. These tools must be accessible and configurable by the auditor, to allow automated data extraction. The data extraction would not include massive data transfers to a data warehouse, but rather a transfer of “items of interest”. One overriding goal of this model is the reduced “system impact” footprint of the auditor.

This stream of research will look at the existing published research in the continuous auditing literature and describe how appropriate techniques may be implemented in a reengineered enterprise system. Furthermore, since continuous auditing/assurance can be viewed as simply a specialization of the more general area of quality assurance, we plan to examine the quality assurance literature for potential additional audit processes that could apply to a re-engineered enterprise system. For example, statistical quality control and control charts have shown promise (Dull and Tegarden, 2004; Walter, Higgins, and Roth, 1990). We believe that the application of these parallel literatures to the financial information systems model will provide significant support to the assurance process for auditors of future enterprise systems.

SELECTED BIOGRAPHY

- Alles, M G, Kogan, A., & Vasarhelyi, M A (March 2002). Feasibility and economics of continuous assurance. *Auditing: A Journal of Practice & Theory*, 21, 1. p.125(15).
- Alles, M., Kogan, A., Vasarhelyi, M., & Warren, J D (Feb 2006). Guarding the auditing guards: new technology and a total quality approach can reengineer the PCAOB inspection function. *Strategic Finance*, p.30(5).
- Debreceeny, R., Gray, G., Ng, N., Siow-Ping, K., Yau, L. (2005). Embedded Audit Modules in Enterprise Resource Planning Systems: Implementation and Functionality. *Journal of Information Systems* 19(2): 7-27.
- Dull, R. Tegarden, D. (2004). "Using Control Charts to Monitor Financial Reporting of Public Companies," *International Journal of Accounting Information Systems*, 5(2): 109-127.
- Dull, R., Tegarden, D., Schleifer, L. (2006) ACTVE: A Proposal for an Automated Continuous Transaction Verification Environment. *Journal of Emerging Technologies in Accounting* 3(1): 81 – 96.

- Elliott, RK. (2002) Twenty-first century assurance. *Auditing: a journal of practice and theory*, 21(1): 139-48.
- Greenstein, MM; Ray, AW. (2002) Holistic, continuous assurance integration: e-business opportunities and challenges. *Journal of Information Systems*, 16(Supplement): 1-20.
- Helms, G L (March 2002). Traditional and emerging methods of electronic assurance. *The CPA Journal*, 72, 3. p.27(4).
- Hunton, J E (March 2002). Blending information and communication technology with accounting research. (Commentary). *Accounting Horizons*, 16, 1. p.55(13).
- Pathak, J., Chaouch, B., & Sriram, R S (Jan-Feb 2005). Minimizing cost of continuous audit: counting and time dependent strategies. *Journal of Accounting and Public Policy*, 24, 1. p.61(15).
- Rezaee, Z., Sharbatoghlie, A., Elam, R., & McMickle, P L (March 2002). Continuous auditing: building automated auditing capability. *Auditing: A Journal of Practice & Theory*, 21, 1. p.147(18).
- Vasarhelyi, M.A. and F.B. Halper. 1991. The continuous audit of online systems. *Auditing: A Journal of Practice & Theory* 10 (1): 110-125.
- Vasarhelyi, M A, Kogan, A., & Alles, M G (July 2002). Would continuous auditing have prevented the Enron mess?. *The CPA Journal*, 72, 7. p.80(1).
- Walter RM, Higgins MM, Roth HP. (April 1990). Applications of control charts. *CPA Journal* , pp. 90-95.
- Woodroof, J., Searcy, D. Continuous audit; model development and implementation within a debt covenant compliance domain. *International Journal of Accounting Information Systems* 2/3: 169-191.