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# Continuous Computing Technologies for Improving Performances of Enterprise Information Systems

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## ABSTRACT

*Business computing has evolved into an organizational engine that drives business and provides a powerful source for competitive advantage. In order to achieve higher levels of competitiveness, business has to be continuous from a data availability perspective and agile with regard to data access. Simply put, system and application downtime are not an option in modern business since each hour, or even each minute, of downtime may generate negative financial effects. An enterprise information system (EIS) can be qualified as “high-quality” in terms of its architecture, application platform and information it can provide to users but if that information is unavailable when it is needed by customer, manager or any other end user, the value of that EIS simply becomes “zeroed” from end users’ point of view. The paper presents a framework for implementation of continuous computing technologies (CCT) for improving performances of enterprise information systems from business continuance perspective. It identifies high system availability and agile data access as two critical attributes (measures of performances) in evaluating performances of enterprise information systems. The framework is based on a MS/OR-based definition of a system given by Churchman (1968, 1971). In addition, it proposes a set of IT drivers for enhancing the performances of enterprise information systems from business continuity and business agility perspectives.*

**Keywords:** *business continuity; continuous computing technologies; downtime-uptime; enterprise informations systems; enterprise-wide agility; IT drivers*

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## INTRODUCTION

In the past, information technologies (IT) were used within traditional computer centers organized as “behind-the-scenes” organizational units for performing transaction processing operations. However, in today’s e-business

world, in many cases, the whole business is IT-dependent and data-driven. Contemporary business computing supported by the concepts and technologies of enterprise information systems (EIS) such as enterprise resource planning (ERP), supply chain management (SCM), customer relationship management (CRM), elec-

tronic commerce (EC), and business intelligence (BI), has evolved into an organizational engine that drives business and provides a powerful source for competitive advantage.

To be truly competitive, business has to be continuous and agile (adaptive, responsive). It needs an information system that enables both continuous computing and agile data access. The term “business continuance” or “business continuity” (BC) has been introduced in order to emphasize the ability of a business to continue with its operations even if some sort of disaster on its computing resources occurs. In the same time, business has to be agile in order to cope with increasing complexity in its environment.

This paper presents a framework for implementation of continuous computing technologies (CCT) for improving performances of contemporary enterprise information systems. The methodological framework is based on an MS/OR (management science/operations research)-based definition of a system given by Churchman (1968). An attempt is made to apply his concept of systems approach in developing a framework for implementation of continuous computing technologies for improving performances of enterprise information systems.

## METHODOLOGICAL FRAMEWORK

The fundamental concept of systems approach as defined by Churchman is that all systems can be defined by a common set of elements. These elements (dimensions or attributes) are as follows:

1. The system is teleological and has a *measure of performance*. The *objective* of the system represents its intended impact on its environment.
  2. The *environment* of a system is the set of entities that exist outside of the system boundary. The entities affect the system or are affected by it.
  3. System *resources* are the elements that are used in building and operating the system.
  4. The system has teleological *components* which co-produce the measure of performance of the system. These are the elements of the system that exist within its boundary.
  5. *Management* of the system as a set of activities intended for effective management.
- Churchman continues his examination of this issue in a subsequent book, *The Design of Inquiring Systems* (1971). He gives the necessary conditions that something *S* be conceived as a system as follows:
1. *S* is *teleological*.
  2. *S* has a *measure of performance*.
  3. There exists a *client* whose interests (values) are served by *S* in such a manner that the higher the measure of performance, the better the interests are served, and more generally, the client is the standard of the measure of performance.
  4. *S* has teleological *components* which co-produce the measure of performance of *S*.
  5. *S* has an *environment* (defined either teleologically or ateleologically), which also co-produces the measure of performance of *S*.
  6. There exists a *decision maker* who, via his resources, can produce changes in the measures of performance of *S*'s components and hence changes in the measure of performance of *S*.
  7. There exists a *designer*, who conceptualizes the nature of *S* in such a manner that the designer's concepts potentially produce actions in the decision maker, and hence changes in the measures of performance of *S*'s components, and hence changes in the measure of performance of *S*.
  8. The designer's intention is to *change S so as to maximize S's value to the client*.
  9. *S* is “stable” with respect to the designer, in the sense that there is a built-in guarantee that the *designer's intention is ultimately realizable*.

In the sections that follow, the first Churchman's definition will be used in order to

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