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# ENTERPRISE INTEGRITY

## Real-Time

“real-time” seems to evoke a variety of incompatible interpretations for them. The fact that they disagree and don’t present a coherent explanation surely reflects considerable confusion throughout the industry. Worse, many business users probably don’t get it at all. Rather than try to make sense of all the different meanings given to real-time enterprise, I decided to do something radical: think it through for myself (and not for the first time).

All too often, those with a technical background imagine the real-time enterprise as some sort of real-time computer operating system. Presumably, every business event would result in immediate analysis, delivery and decision-making, and the reduction of latencies and cycle times. But if perpetual vigilance in removing latencies and reducing cycle times is good, then it follows that having zero latencies and zero cycle times is extremely good. Following this approach to its logical conclusion leads to the concept of a highly reactive (and therefore very agile) *stateless enterprise*.

The stateless enterprise might be a good sound byte, but it would really make your bytes (of data and the decisions based on them) unsound. For example, imagine that a hospital ran this way. All patient care decisions would be made solely on the basis of the immediate values of monitors. The patient’s history would be ignored (historical data requires maintaining state). Such a practice might work if a complete predictive model of the patient’s health were known, all the causal parameters identified (both internal and environmental), and all the relationships among them computable. The validity of the model would further require that all health effects be predicted by non-Markov processes (i.e., they depend only on the most recent state). We aren’t nearly so sophisticated, such assumptions are known to be wrong, and the adoption of such a model inevitably has deadly consequences.

An appropriate diagnosis and treatment of any business for its future health is as dependent on its past as any patient. In fact, a stateless enterprise is just as bad as the other, more traditional extreme with its five-year cycles and high rigidity: plan-based management. By whatever name you know it, plan-based management is characterized by periodic attempts at operational realignment by researching and analyzing the past, developing new strategic and operational plans, and then managing to plan. This approach adheres to the rigid belief that the future is a version of the past, ignoring real-time events in favor of *ex post facto* research and planning. Characterize businesses that use this approach as completely *state-dependent enterprises*. But imagine doctors treating patients only according to a predetermined plan, without monitoring effects on vitals! Few business efforts can be

BY DAVID MCGOVERAN



purely state-dependent. As we all have come to understand, in this era of accelerating change and narrowing windows of transient opportunity, even the short-term future often holds surprises. The ability to react reasonably and competitively to those surprises separates success from failure.

Clearly, a compromise between statelessness and state dependence is necessary. Real-time enterprise will require balancing historical stability with reactivity, a simple lesson learned from systems control theory. Ultimately, real-time means there is never a delay in determining or being alerted to the need for a business decision, nor is there ever a delay in obtaining the information necessary to make an appropriate business decision. This policy never reduces latencies or cycle

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times to zero. Every latency and cycle time has an inherent, practical minimum. If forced lower, operations research shows that the consequences can be violently negative.

Achieving a proper balance faces difficulties. The predictive models and IT systems used for maintaining historical stability (e.g., business intelligence and data integration) and those used for operational monitoring and reacting to instantaneous change (e.g., application integration and business activity monitoring) have incompatible premises and aren’t even integrated conceptually. Technical integration can be achieved via business process management (process modeling and optimization being strategic, process instance and activity monitoring and management being operational), but we’ve no method for merging the distinct predictive models or their underlying data models. Rationalizing strategic, consolidation-oriented data models and operational, application-oriented data models must become a high priority. Unfortunately, little attention is being given to obtaining semantic coherence, or to how management decision methods should be modified to achieve and maintain *enterprise integrity* in real-time. **bij**

### About the Author

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