

Minimizing Action Distance

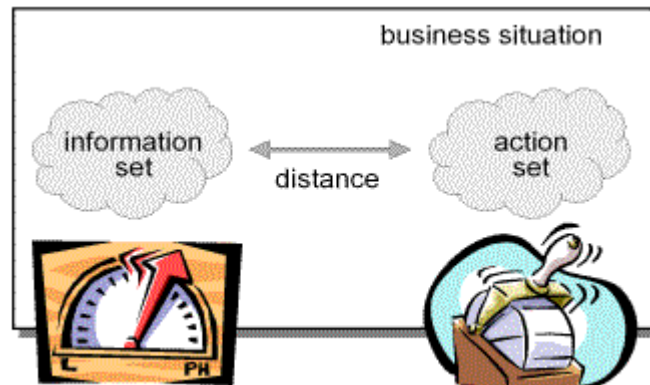
by [Richard Hackathorn](#)

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The heart of Active Business Intelligence (BI) is the challenge of making information ‘actionable’¹. When information is displayed by BI systems, users should understand the information within their business context and take the appropriate action based on that information. Simply put... If there is no action, then there is no business benefit derived from the information or the system generating the information.

Action Distance Defined

What are the factors in making information actionable? The answer involves the concept of action distance. It is the distance (latency, space, or gap) between the set of information generated by the BI system and the set of actions appropriate to a specific business situation. Figure 1 illustrates this concept by showing a business situation in which the information set is separated from an action set by some distance.



In other words, action distance is the measure of the effort required to understand information and to affect action based on that information. By reducing action distance, the information becomes more ‘actionable’.

Action distance could be the physical distance between information displayed and action controlled. Or, it could be the time between information available and action taken. Or, it could be the social gap between the person having the information and the person taking action. Action

distance involves a complex mixture of technological (dashboard design), behavioral (motivation), and organizational (authority) factors.



Consider a simple analogy. In an airplane, the instruments (gauges, dials) and controls (switches, levers) are intermixed in the cockpit. Over decades of evolution, the design of an airplane cockpit has systematically placed instruments and controls so as to ‘minimize action distance’. Information about unusual situations is quickly displayed to the pilot, and the pilot can quickly take the appropriate action. The next time you fly, thank the aircraft designers for minimizing action distance for the pilot.

What if... We place the instruments in the rear of the airplane, leaving the controls in the front. The pilot would have to walk to the back to determine where the airplane was heading, and then walk back to the front to take corrective action. Or, the copilot could sit in the rear, telling the pilot over the intercom what was happening. Would you be willing to be a passenger on such an airplane?

Yet, this is often the way that we design and manage our businesses. The people who have the information are not the ones who must take action based on that information. We often place a committee or several managers in between to ‘enhance’ the information flow.

Ways of Reducing Action Distance

There are two ways of reducing action distance. First, we can adjust the action set so that it is more relevant to the information set. Or second, we can adjust the information set so that it is more relevant to the action set.

The first way is the approach of traditional BI. The typical sequence of questions is: What information do we have in our operational systems? How can we extract, transform, and load that data into our warehouse? How can we analyze the data so that it is of use to a specific user? And so on...

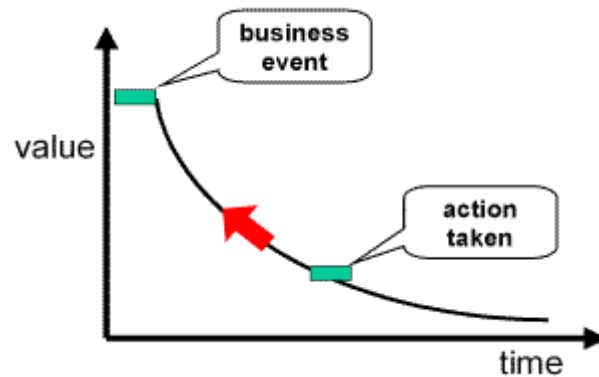
The second way is the suggested approach of Active BI. The typical sequence is: What is the business process that needs improvement? Who has the responsibility and authority for the critical points in the process? What are the possible actions that this person could take? What information is required to discern and guide those actions? How can we obtain and organize that information? And so on...

The second approach is preferred if we are serious about making information from our BI system truly actionable. This implies that BI professionals must radically change their thinking from a left-to-right data flow to a right-to-left decision flow. We need to be more concerned about the effectiveness of business processes than the efficiency of query workloads.

Action Distance and Time

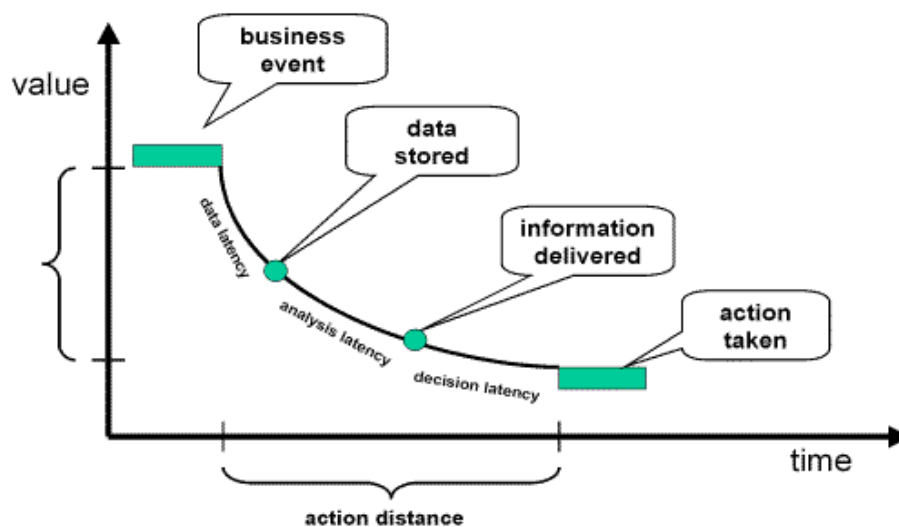
Most discussions about Active BI wander to Real-Time Data Warehousing. The assumption is that, by reducing the data latency within the warehouse, the information will be more actionable. For example, companies have boasted that, by the time the customer leaves the parking lot, their point-of-sales data is ready for analysis in their enterprise warehouse, thus implying some benefit to the company. This may be true; however, there are other factors to consider.

Consider the Value-Time Curve, as shown below.



Most people consider the relationship as a simple decay function. A business event happens; then an action is taken. Since the business value of taking that action decays rapidly after the event happens, the objective should be to 'push up' the value curve by minimizing the latency between event and action.

The actual situation is more complex, as shown below.



A business transaction occurs over some time duration and then ends with a commit (or abort). At a later time, the data about that transaction is stored within the warehouse environment. At a later time, the data is analyzed, packaged, and delivered to the proper person. At a later time, the person takes an action based on the analysis.

Action distance (from a time perspective) is the end-to-end time required to respond to the business transaction in an intelligent manner. Note that there are three different factors involved with action distance. First, there is the **data latency**, the time between the business transaction and when the data is ready for analysis in the warehouse. Second, there is **analysis latency**, the time of initiating the analysis, packaging its results, and delivering it to the appropriate person. Third, there is **decision latency**, the time required to understand the information and respond in an appropriate manner.

Reducing Decision Latency

It is important to realize that only the last one—decision latency—actually counts on the bottom line. The first two are overhead, simply infrastructure supporting the third. Technology advances are significantly reducing data and analysis latencies. Thus, decision latency will increasingly become the limiting variable.

There are three requirements for reducing decision latency.

First, the person should be **alerted**. The system should recognize an unusual business situation. For example, a profitable customer is unhappy; the bank is at fault; and the customer is engaged in subsequent transaction. Some bells and whistles should sound. The normal workflow of the person should be interrupted.

Second, the person should be **informed**. The system should display a situational-specific analysis so that the person quickly understands the business situation. The person needs to judge the priority of this situation relative to current demands and the precedence of similar situations.

Third, the person should be **guided**. The system should suggest the appropriate actions for the situation. For example, walk over to teller #6 and introduce yourself to the customer standing there.

In summary, business value of BI systems is determined by the degree to which information generated is actionable. Action distance is a measure of the effort required by the person responsible for a specific business situation to understand that information and to take proper action. We need to design our BI systems by understanding the decision situation and tailoring the information to this. We also need to focus on decision latency by alerting, informing, and guiding the person through the decision situation. Thus, the goal of minimizing action distance enables BI systems to maximize their business value.

This article was extended from a column of the same title that appeared in the September 2002 issue of DM Review.



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Dr. Richard Hackathorn is founder and president of Bolder Technology, Inc. He has more than thirty years of experience in the information technology industry as a well-known industry analyst, technology innovator and international educator. He has pioneered many innovations in database management, decision support, client-server computing, database connectivity, associative link analysis, data warehousing, and web farming. Focus areas are: business value of timely data, real-time business intelligence (BI), data warehouse appliances, ethics of business intelligence and globalization of BI.

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Dr. Hackathorn has written three professional texts, entitled *Enterprise Database Connectivity*, *Using the Data Warehouse* (with William H. Inmon), and *Web Farming for the Data Warehouse*.

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