

Mouse Tracking to Assess Enterprise Portal Efficiency

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INTRODUCTION

This article advocates mouse tracking as an emerging method to include in corporate enterprise portal usability assessment. Issues of Web site usability testing are discussed, with mouse tracking as one method that should be given consideration in assessing enterprise portals. *Usability testing* is part of the process of assessing how well a machine or application does its job. *Efficiency* is in turn one component of usability, but is perhaps one of the most important components with regard to Web sites that are designed to serve as corporate enterprise portals. An *enterprise portal* is an organization's Website that functions to deliver internal employees or external partners or customers to organizational information, applications, or services.

If a portal functions as a gateway that delivers the user to something of specific interest, then efficiency of delivery is naturally an important factor in assessing that gateway. An efficient or inefficient internal corporate enterprise portal, or *intranet*, could result in worker productivity gains or losses, with a substantial collective impact on an organization's labor costs alone. An external corporate enterprise portal, or *extranet*, that services important organizational suppliers and customers could either build or erode multi-million dollar relationships through its efficiency and ease of use. A portal associated with retail sales could gain or lose substantial revenues, depending on its effectiveness in shuttling prospective buyers to appropriate products.

In this article's discussion of mouse tracking as a way to test the efficiency of an enterprise portal, the perspective is on a portal that is being used as a gateway that guides users to *their own* objectives. In some cases, a portal might be used to guide users to a target action that benefits the enterprise, as in the case of a retailer's Web site that is used by final consumers. A retail portal might be considered effective if it guides a user's interest toward high-profit products and holds the user on the Web site longer in the hopes that more revenue will be generated. In this article, however, the perspective is on an enterprise portal that assists users such as employees and business partners in finding information, applications, or services with a minimum investment of the user's time and effort. From this latter perspective on the non-commercial, utilitarian objectives of an enterprise portal, interest is in cost-cutting efficiencies, not in revenue generation.

BACKGROUND

If an assessment is conducted to find whether or not there is a positive outcome from using a Web site portal, we have to first identify the factors that cause a positive outcome or satisfactory performance. Before we can discuss methods of assessing Web site portal usability, we first have to define what is meant by a portal and what is meant by usability.

Definition of Portal

A simple working definition for this article is that a portal is a place where people go to be transported to some other place of specific interest, or in the case of an enterprise portal, a place that helps employees find information and perform their jobs (Nielsen, 2003). Adapting from definitions at IBM (Myerman, 2002; Saha, 1999), the present article is based on the following more detailed definition of a portal:

1. A gateway that is a single unifying, integrated access point to:
 - information,
 - applications, and
 - services
2. for a specific target of users, such as:
 - consumers,
 - employees,
 - customers, and
 - partners
3. who can personalize their user experiences in obtaining delivery of:
 - the right information, applications, or services (what),
 - to the right person (who),
 - in the right form, condition, and amount (how),
 - at the right time (when),
 - at the right place (where), and
 - for the right price (at what cost to the user).

This definition implies that when assessing whether or not a portal does what it is supposed to do, we have to consider:

1. what is being delivered.
2. to whom it is being delivered, and
3. the parameters of the user's needs or wants.

Definitions of *portal*, including those from which the above definition was adapted, do not include the latter part—parameters of user needs and wants; this was added here because it has important implications in the context of assessing portal *utility* and *usability*.

Definition of Usability

Usability is only one component of Web site assessment. Web site assessment consists of at least three basic components (cf., Gaines et al., 1996; Microsoft Corporation, 2000):

- **Utility:** Does the Web site have the information, applications, or services that the user needs or wants?
- **Usability:** Can the user find and use the information, applications, or services that are needed?
- **Likeability:** Does the user enjoy using the Web site and associated applications and services?

An important assumption that we might make when assessing enterprise portals is that utility and likeability are less important than usability in assessment. From our definition of a portal as a gateway, we can see that a portal is a place where people go with the expectation of being transported to someplace else. The *utility* and *likeability* of a portal, then, depend in large part on whether or not the user was able to easily reach the target of information, applications, or services that were needed. For example, an animated introductory page on a Web site might be enjoyable for some Web site users, but animated introductions are more likely to interfere with an enterprise portal user's ability to quickly locate information, applications, or services on a Web site that was designed to be an enterprise portal (cf., Nielsen, 2000). Such interference would not, then, lead to a more usable enterprise portal or to the highest user satisfaction.

Usability, as the more crucial component in portal assessment, consists of at least the following components in addition to likeability or satisfaction (cf., Bevan & Macleod, 1994; Bevan et al., 1991; Brajnik, 2000; van Wellie, 1999):

- **Effectiveness:** The accuracy and completeness of achieving a goal by the user.
- **Efficiency:** The ability of the user to achieve a goal with a minimum of time and effort.

The present article, then, uses the following definition of *portal usability*:

- The ability of a portal to provide:
 - effectiveness (accuracy and completeness of results), and
 - efficiency (time and effort expended)
- in assisting a user to achieve the goals of obtaining delivery of the right information, applications, or services (in the right form, time, etc.).

Efficiency as an Indicator of Enterprise Portal ROI

Some might take the perspective that the return on investment (ROI) in an enterprise portal could be measured with respect to cost savings or cost avoidance (cf., Ward, n.d.). The view in this article, however, is that an enterprise portal is in many cases as necessary as having, say, an enterprise telephone system. Since a telephone system is an enterprise tool, we focus on the cost of using the system, not on whether or not the system is worthy of keeping on the basis of return on investment. If a telephone system user must invest a minute of time dialing access numbers to place a call, the telephone system would be less efficient than one that allows the call to be placed immediately. A telephone system—or an enterprise portal—that consumes a lower level of human resources to achieve a given outcome would be a more *efficient* system, and would therefore return more for the resources invested into the system.

Efficiency assessment of a system, whether an enterprise telephone system or an enterprise portal, would assess the ability of the system to meet its objectives for the least investment of resources (cf., Nielsen, 2003). These resources could be financial, but from our definition of usability above, resources of efficiency could be the time and effort that individual users must expend. Across an enterprise, of course, the time and effort of individual users collectively does become a financial issue. One minute savings or loss of, say, information search time per day across 1000 searches becomes 1000 minutes per day. Over a year, this becomes 25,000 minutes, or about 417 gained or lost hours, of productivity across the enterprise through an efficient or inefficient portal search function. If the total average cost of maintaining an employee is \$50 per hour, the gain or loss in productivity from using a search function in this case would be \$20,750 per year.

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