# Digital Information Kiosks

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## INTRODUCTION

The word "kiosk" is derived from the Turkish word "kösk," meaning an open summerhouse or pavilion. Before the arrival of computer technologies, a kiosk was a small, rugged standalone structure often used as a newsstand or bandstand in public places. As early as the 1870s, kiosks could be found in the streets of Paris for displaying theater and gallery advertisements.

The advancement of information technologies in the 20th century gave information kiosks a new meaning. Instead of being simple post-boards for printed materials, digital information kiosks now provide not only easy and convenient access to information, but also transactional services that traditional kiosks could not perform. As the scope of digital government continues to expand, digital kiosks are becoming an important platform to support a wide range of e-government strategies.

## BACKGROUND

For the past decade, many policymakers and managers have been excited about the potential and promise of "e-government." By putting transactions and public information online, a government can give citizens and businesses more convenient and flexible access to public services and more direct interaction with public officials. This also offers significant cost-saving potential by reducing the need for office personnel and office space.

It is therefore not surprising that many governments have expanded the scope of e-government services tremendously over the past few years, especially in the areas of information provision, online feedback and complaint forms, license applications, and fee payment (Cook, 2000; Ho, 2002; Moon, 2002; West, 2000, 2002). At the same time, inequitable access to the Internet and technological opportunities among different population groups, which is sometimes known as the "digital divide," has become a rising social concern. Past studies have found that minority populations and households with lower income and less education tend to have fewer opportunities to access computers and use Web-based services (Bertot, 2003; Wilhelm, 2000). If traditional access to public information and services is gradually replaced by online platforms, those population groups who have less access to the Internet will be disadvantaged not only in public service usage, but also in their opportunity to voice their opinions and participate in democratic governance.

These are some of the reasons why public officials have expressed an increased interest in kiosk technologies in recent years. Many policymakers realize that, in addition to Web site development, part of their e-government strategy should focus on how the government can provide more equitable access to online information and services, and one of the tools to accomplish this goal is digital information kiosks.

## DIGITAL INFORMATION KIOSKS

A digital information kiosk is a computer-based device that provides an interface medium between users and a service or information provider with features designed to make it suitable for the general public (Sargent & Mclvor, 1996). It is usually composed of a hard outer shell, an internal computer, and a monitor that enables users to make selections using a touch-screen or keyboard (see Figure 1). Since the device is expected to withstand high traffic, long hours, and potential user abuse, it is specifically designed to include some fail-safe and energy-saving features, provide only limited functionality and user access, and contain stronger physical protection of the equipment. Some kiosks also have special visual or audio effects to catch the attention of the public so that certain information or advertisements can be disseminated more effectively. In addition, some kiosks are equipped with Braille instructions or voice enunciation to serve the needs of the disabled.

With the advancement of information technologies, digital information kiosks can now perform functions that traditional kiosks could not do. Traditional kiosks primarily play the role of information dissemination by posting posters or notices on a board for passers-by. The commu-

*Figure 1. A digital kiosk unit deployed by the U.S. Department of Housing and Urban Development*



nication between the information provider and readers is one-way, and the latter only play a passive role in determining what information they receive. Digital kiosks, on the other hand, can go beyond this by offering interactive or transactional services. For examples, many digital kiosks have an interface where a user can make a choice of content by pushing the buttons on a touch-screen or filling out a form using a keyboard. Some kiosks that are equipped with a credit card reader or a cash taker can also support financial transactions, such as buying tickets, paying fees, making deposits or withdrawing money.

In general, digital kiosks can be grouped into the following three major categories (Morris, Sanders, Gilman, Adelson, & Smith, 1995; Ni & Ho 2005; Tung & Tan, 1998):

- **Information Dissemination and Advertising Kiosks:** These kiosks are primarily used for information display and can be commonly found in trade conferences, showrooms, tourist spots, and visitor centers. Users may request information through a touch-screen monitor, or use voice-activation to navigate through the information menus. Proximity detectors may also be used to automatically start an advertisement module with sound and video when a potential customer is close to the kiosk.
- **Interactive Information Kiosks:** These kiosks allow two-way communication between the provider and users in order to both automate information access and collect information. They can be found in high pedestrian traffic areas, such as airports, stores, malls, and convention centers. Users may input information, such as names, codes, or dates, through a touch-screen or, less frequently, with a keyboard. Hard copy output, such as maps and coupons, can be provided if the kiosk is accompanied by a printer.

- **Transaction Kiosks:** These devices are relatively more advanced because they allow for more complex and secure transactions and information exchange. Kiosks of this type can access and update databases, and require personal identification for transactions. Besides a touch-screen or a simple keyboard, transaction kiosks need additional room and security features to allow them to accept cash or credit or debit cards.

While an advertising kiosk or a data collection kiosk may contain all the information and services internally in its hard drive, it is more common to connect the machine with a computer network. The latter allows instant update of information by content providers, enables more effective monitoring and control, and reduces maintenance burdens and administrative costs. A typical kiosk network contains the following components: one or more servers, an operator workstation, telecommunication equipment, and kiosk computers and related devices (see Figure 2).

Kiosk network technologies have existed for a long time. In the private sector, for examples, financial institutions have deployed automatic teller machines (ATM), an early form of transaction kiosks, for decades. Some retail stores have also used kiosks to provide customer and product information (Rowley & Slack, 2003). In recent years, many airlines have used digital kiosks to let passen-

*Figure 2. Kiosk system data flow (Ni, & Ho, 2005)*
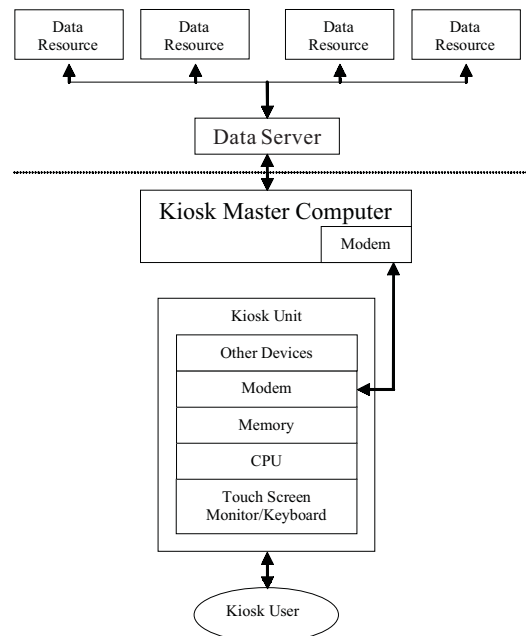
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