TECHNIQUES AND APPARATUS FOR CONTROLLING THE TEMPERATURE OF A PERSONAL COMMUNICATION STRUCTURE (PCS)

FIELD OF INVENTION

[0001] The present disclosure relates generally to techniques and apparatus for operating a personal communication structure (PCS). Some embodiments relate specifically to techniques and apparatus for controlling the temperature of a PCS. Some embodiments relate specifically to techniques and apparatus for removing and/or installing displays modules of a PCS.

BACKGROUND

[0002] In some public or semi-public areas, various structures can be used for communication or to obtain access to goods and services. For example, telephone booths can be used to place telephone calls. Interactive kiosks can be used to obtain access to information, products, and/or services. Some interactive kiosks are self-service kiosks, which allow patrons of a business to perform service tasks that were historically performed by business employees. For example, the automated teller machine (ATM) is a self-service kiosk that allows users to deposit funds into a financial account, withdraw funds from an account, check an account balance, etc.—tasks that were historically performed with the assistance of a human bank teller. As another example, some retail stores allow customers to scan and pay for their items at self-service checkout kiosks rather than checkout stations staffed by human cashiers.

[0003] An interactive kiosk generally includes a computer terminal, which executes software and/or controls hardware peripherals to perform the kiosk's tasks. Many interactive kiosks are deployed inside buildings that are accessible to the public (e.g., banks, stores), in areas where the building operators can monitor the kiosks and protect them from unauthorized access. In some cases, interactive kiosks are integrated into walls of buildings (e.g., some ATMs are integrated into walls of banks), fastened to walls, or placed against walls, which can protect the kiosks from unauthorized access and reduce the occurrence of potentially dangerous events such as the kiosks tipping or overturning.

SUMMARY OF THE INVENTION

[0004] In recent years, public telephone booths have dwindled in number and many of the remaining booths have fallen into relative disuse and disrepair. The demise of the public telephone booth can be traced, in part, to the increasing prevalence of mobile phones and to the widespread use of communication networks for non-telephonic purposes. Many people who wish to participate in telephone conversations in public places prefer the convenience of their own mobile phones to the inconvenience of a stationary phone booth. Furthermore, in contrast to many mobile phones, conventional public telephone booths do not allow users to access Internet-based data and services. Many people who wish to access Internet-based data and services in public places use mobile computing devices (e.g., smartphones or laptop computers) and wireless networks (e.g., mobile broadband networks or Wi-Fi networks) to do so. In short, for many people, the public telephone booth is less convenient and less functional than other readily-available options for connecting to a communication network.

[0005] Despite the seeming ubiquity of mobile computing devices, many people are often left with insufficient access to telephonic or Internet-based services. In some areas, wireless network coverage may be poor or nonexistent. In areas where wireless networks are available, the number of network users or the volume of network traffic may exceed the capacity of the network, leaving some users unable to connect to the network, and degrading quality of service for users who are able to connect (e.g., degrading audio quality of phone calls or reducing rates of data communication). Even when wireless networks are available and not congested, some people may not have access to telephonic or Internet-based services because they may not have suitable computing devices or network-access agreements (e.g., a person may not own a computing device, may own a computing device but not have a network-access agreement with an Internet-service provider, may not own a mobile computing device, may have a mobile computing device with an uncharged battery, etc.).

[0006] There is a need for personal communication structures (PCSs) that enhance public access to communication networks. Such PCSs may enhance access to communication networks by expanding network coverage (e.g., making communication networks available in areas where they would otherwise be unavailable), expanding network capacity (e.g., increasing the capacity of communication networks in areas where such networks are available), expanding access to end-user computing devices and telephones, and/or expanding access to charging outlets for mobile computing devices. By enhancing access to communication networks, the PCSs may improve the employment prospects, educational opportunities, and/or quality of life for individuals, families, and communities that would otherwise have limited access to communication networks.

[0007] Public access to communication networks can be enhanced by placing PCSs in public locations, including sidewalks, parking facilities, mass transit stations, etc. For aesthetic and practical reasons, it is desirable for such PCSs to be reasonably compact. However, operating PCSs in public locations can expose the PCS components to harsh conditions, including harsh environmental conditions (e.g., extreme heat, extreme cold, humidity, unconditioned air, etc.), vandalism (e.g., etching, painting, deliberate acts of destruction, etc.), and collisions with automobiles. Thus, there is a need for compact PCSs that can operate properly under harsh operating conditions, and can be repaired quickly and easily when components fail or suffer damage.

[0008] In particular, there is a need for a compact PCS that functions properly even when operated in a harsh environment. Some PCS components can be protected from harsh environmental conditions by sealing these components in substantially airtight compartments. The inventors have recognized and appreciated that the PCS's temperature can be controlled by recirculating air in the substantially airtight compartments, and by circulating ambient air through the PCS and over a heat sink inside the PCS. The PCS's temperature control system may be more compact, less expensive, and/or easier to maintain than temperature control systems that use refrigerants to control air temperature.

[0009] There is also a need for a PCS that can be serviced quickly and easily, to address damage to or failure of PCS components. Some PCSs include display systems with rela-