



2016 Connected Technologies: An Accessibility Overview for Employers

While many employers may be familiar with more traditional assistive technologies and workplace accommodations—such as text-to-speech screen readers and similar tools—a wide range of current and emerging, inclusive digital technologies are opening up a world of opportunities for employers, job seekers, workers with disabilities. **Modern, inclusive digital technologies, including smartphones, tablet computers, and wearable technologies, have demonstrated utility to job seekers and workers with disabilities.** This brief provides an overview of 1) the range of connected technologies available to people

with disabilities, 2) currently available applications to assist people with disabilities in the workplace, and 3) challenges and opportunities to increase connected technology usage in the workplace.

Current & Emerging Technologies

The Internet of Things (IoT) framework has increased the ability to obtain real-time information via handheld, wearable and other wireless devices. This framework could play a major role in assisting individuals with disabilities with work tasks. Another benefit is there is no stigma associated with its use given the universal benefit of IoT and other mainstream connected technologies.

Sensory Disabilities

- Handheld and wearable devices are being designed to allow users to personalize device displays. Examples include Apple’s Speak Screen and VoiceOver and the Android platform’s TalkBack and BrailleBack functions.
- Smart Glasses, through magnification, can assist persons with limited vision to work independently.
- Augmented reality can enhance visual information through navigational cues, environmental information, cognitive assistance, and instructional/advisory display of information.
- Virtual reality can be used to train employees, to familiarize them with the workplace, in general, and specific tasks.

- Radio-frequency identification tags can assist navigation by transmitting location information to smartphones or wearable devices.

Physical Disabilities

- Wearable technology consists of technology that can be worn like clothing or accessories, in a physically and/or informationally supportive manner. In this latter use, it could, in the future, help increase the mobility of individuals with physical disabilities and facilitate employment opportunities.
- If exoskeletons become common across manual labor industries, their ability to enable people with some types of spinal cord injury to walk and stand, could open up the labor pool to include people with disabilities previously unable to perform these tasks such as moving services, delivery services, manufacturing, and construction.
 - Data aggregated by these connected systems could lead to more effective workplace procedures or even approaches that could prevent injury.

Cognitive Disabilities

Connected devices and applications enable people with cognitive disabilities to experience greater workforce participation and integration, as applications downloaded to handheld devices aid with transportation and increased independence.ⁱ Connected devices have demonstrated utility as:

- Audio and/or visual reminders prompting movement to the next task.
- Alerting or cueing technology to assist with parts assembly.

Psychiatric Disabilities

Applications for use with handheld devices can increase mindfulness, particularly for those with anxiety or depression.

- Spire monitors a user's breath to calculate his or her stress level and prompts the user to take a deep breath upon detection of a change in stress levels.
- Other wearable technologies track physiological data and translate it to control environmental stress.

Challenges and Opportunities to Designing Connected Technology for the Workplace

Although many of these technologies are available, there are challenges associated with their use. Federal policies have not developed at the same pace as wireless technologies. Lack of explicit reference to newer technologies in legislation, like the Americans with Disabilities Act, may result in both employees and employers not recognizing mainstream connected technologies as reasonable workplace accommodations. However newer approaches to inclusive technology design are beginning to recognize the need to include policy and accessibility considerations as a key aspect of the development process.ⁱⁱ

There are, however, government agencies and employers that have executed policies for recent technologies. The Rehabilitation Services Administration has adopted Apple iPads as assistive technology in many statesⁱⁱⁱ, and many employers have implemented "Bring Your Own Device" policies. Financial factors continue to be a major aspect in the determination of such technological accommodations. However, downloadable applications to mobile devices and wearables offer low-cost assistance, compared to technologies from ten years ago.^{iv}

Takeaway

Properly implemented, connected technologies can greatly enhance workforce efficiency. Employers that take advantage of these assistive connected technologies will recognize a return on investment in terms of increased productivity, as well as an inclusiveness workplace.

ⁱ President's Committee for People with Intellectual Disabilities. (2015). [Leveling the Playing Field: Improving Technology Access and Design for People with Intellectual Disabilities](#).

ⁱⁱ Baker, P.M.A.; Gandy, M. & Zeagler, C. (2015). Innovation and Wearable Computing: A Proposed Framework for Collaborative Policy Design. *IEEE Internet Computing*, 19(5) (September-October).

ⁱⁱⁱ New Mexico Commission for Deaf & Hard of Hearing. (2013). [iPad Pilot Project Final Report: Equipment Distribution Program Breaks Down Communication Barriers with Implementation of iPad Pilot Program](#).

^{iv} Taylor Arnold, J. (2013). Give Employees with Disabilities an Assist. *HR Magazine*, 58, 1-7.