DEPARTMENT OF EDUCATION

National Institute on Disability and Rehabilitation Research

AGENCY: Office of Special Education and Rehabilitative Services, Department of Education.

ACTION: Notice of a Proposed Funding Priority for Fiscal Years (FYs) 2001–2003 for a Rehabilitation Research Engineering Center.

SUMMARY: We propose a funding priority under the Rehabilitation Engineering Research Center (RERC) on Mobile Wireless Technologies for Persons with Disabilities under the National Institute on Disability and Rehabilitation Research (NIDRR) for FYs 2001–2003. We take this action to focus research attention on areas of national need. We intend this priority to improve the rehabilitation services and outcomes for individuals with disabilities.

DATES: We must receive your comments on or before May 18, 2001.

ADDRESSES: All comments concerning this proposed priority should be addressed to Donna Nangle, U.S. Department of Education, 400 Maryland Avenue, SW., room 3414, Switzer Building, Washington, DC 20202–2645. Comments may also be sent through the Internet: donna_nangle@ed.gov

FOR FURTHER INFORMATION CONTACT: Donna Nangle. Telephone: (202) 205–5880. Individuals who use a telecommunications device for the deaf (TDD) may call the TDD number at (202) 205–4475.

Individuals with disabilities may obtain this document in an alternative format (e.g., Braille, large print, audiotape, or computer diskette) on request to the contact person listed in the preceding paragraph.

SUPPLEMENTARY INFORMATION:

Invitation to Comment

We invite you to submit comments regarding this proposed priority.

We invite you to assist us in complying with the specific requirements of Executive Order 12866 and its overall requirement of reducing regulatory burden that might result from this proposed priority. Please let us know of any further opportunities we should take to reduce potential costs or increase potential benefits while preserving the effective and efficient administration of the program.

During and after the comment period, you may inspect all public comments about this priority in Room 3414, Switzer Building, 330 C Street SW., Washington, DC, between the hours of 8:00 a.m. and 4:00 p.m., Eastern time, Monday through Friday of each week except Federal holidays.

Assistance to Individuals With Disabilities in Reviewing the Rulemaking Record

On request, we will supply an appropriate aid, such as a reader or print magnifier, to an individual with a disability who needs assistance to review the comments or other documents in the public rulemaking record for this proposed priority. If you want to schedule an appointment for this type of aid, you may call (202) 205–8113 or (202) 260–9895. If you use a TDD, you may call the Federal Information Relay Service at 1–800–877–8339.

National Education Goals

This proposed priority will address the National Education Goal that every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

The authority for the program to establish research priorities by reserving funds to support particular research activities is contained in sections 202(g) and 204 of the Rehabilitation Act of 1973 (the Act), as amended (29 U.S.C. 762(g) and 764. Regulations governing this program are found in 34 CFR part 350.

We will announce the final priority in a notice in the **Federal Register**. We will determine the final priority after considering responses to this notice and other information available to the Department. This notice does not preclude us from proposing or funding additional priorities, subject to meeting applicable rulemaking requirements.

Note: This notice does *not* solicit applications. In any year in which we choose to use this proposed priority, we invite applications through a notice published in the **Federal Register**. When inviting applications we designate each priority as absolute, competitive preference, or invitational.

The proposed priority refers to NIDRR's Long-Range Plan that can be accessed on the World Wide Web at: (*http://www.ed.gov/offices/OSERS/ NIDRR/#LRP*).

Rehabilitation Engineering Centers Program

We may make awards for up to 60 months through grants or cooperative agreements to public and private agencies and organizations, including institutions of higher education, Indian tribes, and tribal organizations, to conduct research, demonstration, and training activities regarding rehabilitation technology in order to enhance opportunities for meeting the needs of, and addressing the barriers confronted by, individuals with disabilities in all aspects of their lives. An RERC must be operated by or in collaboration with an institution of higher education or a nonprofit organization.

Description of Rehabilitation Engineering Research Centers

RERCs carry out research or demonstration activities by:

(a) Developing and disseminating innovative methods of applying advanced technology, scientific achievement, and psychological and social knowledge to (1) solve rehabilitation problems and remove environmental barriers, and (2) study new or emerging technologies, products, or environments;

(b) Demonstrating and disseminating (1) innovative models for the delivery of cost-effective rehabilitation technology services to rural and urban areas, and (2) other scientific research to assist in meeting the employment and independent living needs of individuals with severe disabilities; or (c) Facilitating service delivery systems change through (1) the development, evaluation, and dissemination of consumer-responsive and individual and family-centered innovative models for the delivery to both rural and urban areas of innovative cost-effective rehabilitation technology services, and (2) other scientific research to assist in meeting the employment and independent needs of individuals with severe disabilities.

Each RERC must provide training opportunities to individuals, including individuals with disabilities, to become researchers of rehabilitation technology and practitioners of rehabilitation technology in conjunction with institutions of higher education and nonprofit organizations.

Proposed Priority: RERC on Mobile Wireless Technologies for Persons With Disabilities

Background

The information technology (IT) revolution is fundamentally altering the way Americans work, purchase goods and services, communicate, and play. Today, one can access information using any number of electronic devices and networks, including computers connected to "plain old telephone lines" (POTS), televisions connected to cable or digital satellite networks, cellular telephones, or wireless hand-

held personal digital assistant devices. Unlike earlier information technologies (i.e., print, radio, telephone, television and telefax), mobile communications networks, the Internet and the World Wide Web did not enter into our daily lives gradually—rather, they exploded onto the scene. While the economic impact of this transformation has not been fully evaluated at either the individual or systems level, it is significant.

The proliferation of information technologies, including wireless technologies, does not guarantee accessibility for persons with disabilities. According to a recent study, only 23.9% of people with disabilities have access to a computer at home compared to just over half (51.7%) of their non-disabled counterparts. The gap in Internet use is even more striking: roughly 10% of people with disabilities connect to the Internet compared to almost 40% of those without disabilities. Elderly people with disabilities are even less likely to make use of these technologies. Among those 65 years of age or older, only 10% of individuals with disabilities have computers at home and, of those, only 2.2% use the Internet (Kaye, H.S., ''Computer and Internet Use Among People with Disabilities,'' *Disability Statistics Report (14),* U.S. Department of Education, National Institute on Disability and Rehabilitation Research, Washington, DC, 1999).

Chapter 5 of NIDRR's Long-Range Plan (64 FR 45768) discusses the importance of making information technology accessible to persons with disabilities of all ages, and includes a discussion of universal access and the need for continued research and development in this area. Unfortunately, while advances in computers and information technologies create new opportunities for some individuals, they create barriers for others. The proliferation of electronic visual and tactile displays (i.e., LCD, LED, and touch screens) on home appliances, business equipment, and public access terminals also poses a major problem for individuals with sensory and motor deficits unless alternative methods for accessing and using these devices are made available. Conversely, audio cues (beeps) cannot convey information to individuals who are deaf or hard of hearing. Of particular concern is that an increasing number of functions are being integrated onto single chips or motherboards, obviating the need for third party accessories such as sound cards or voice input devices. This makes changes or modifications to these built-in features difficult or even impossible.

Cellular communications are wireless communications that occur in small ''cells'' or geographic areas on land. When one talks on a cellular phone their voice is transmitted to a nearby tower (usually within ten miles). Cellular phone calls are then passed from tower to tower as cellular users move from one geographic area to the next. To manage all the communications, the cellular phones and towers must ''speak'' the same language. The Internet and World Wide Web revolutions began in the 1990's and, in less than a decade, have been responsible for reshaping the way information is accessed and the way commerce is conducted (Hjelm, J., *Designing Wireless Information Services,* Wiley Computer Publishing, New York, pg. 2, 2000).

Technologies that launched the digital revolution are undergoing rapid changes, resulting in a new generation of mobile information systems. The Wireless Application Protocol (WAP) was developed in 1997 by numerous wireless companies in an attempt to make a common interface for wireless devices to access the Internet (Hjelm, J., op cit., pg. 293, 2000). This standard is currently being implemented into cellular phones and personal digital assistants and includes the technology to transmit data back and forth using ''micro-browsers.'' Micro-browsers are analogous to Internet browsers used on personal computers but have far fewer features so only the most relevant information is communicated using WAP (Mock, D.L., ''Wireless 101: A Guide to Wireless Investing for Newbies and non-Techies,'' Rev. 2, pgs. 13–14, July, 2000). A new technology that is poised to revolutionize the IT industry is the Bluetooth Protocol Architecture, the name given to a new short-range radio frequency technology that could ultimately replace data wire connections on just about any electronic device. Bluetooth technologies will enable electronic devices within about 30 feet of each other to communicate over a high-speed wireless connection and could transcend any environment (Hjelm, J., op cit., pg. 292, 2000).

The future generation of wireless technologies, commonly referred to as ''third generation'' systems, will ultimately have the capacity to transmit data, text, voice, and graphics between terminals that may be fixed or moving, with bandwidth that varies according to the instant demand and is charged for on that basis (Shipley, T. and Gill, J., ''Inclusive Design of Wireless Systems,'' Royal National Institute for the Blind, London, England, pg. 27, 2000). Third generation systems will provide Internet

access as well as point-to-point communication, and will ultimately merge with other wireless technologies, such as Bluetooth (Ibid).

The ubiquitous nature of mobile wireless communications brings with it a host of opportunities as well as challenges. For example, a cellular telephone cannot present information in the same way that a laptop or desktop can. Furthermore, different environments require different types of input and output. It is difficult to use a keyboard when walking, difficult and even dangerous to use a device that requires visual attention when driving, and devices that require speech input or output are not practical in noisy environments.

People with disabilities should be able to benefit from the evolving digital revolution on equal terms, freed from the barriers of inaccessible technology (Ibid, pg. 27). This will happen only if the new wave of wireless communications systems are designed to accommodate a broad range of abilities among users (Ibid, pg. 2). Without an inclusive approach to design, large segments of this target population will find themselves precluded from accessing and participating in the new information driven society (Ibid). The infrastructure to support the new era of wireless technologies will be complex and expensive, and because of this there will be reluctance to make changes once systems are operational. Therefore, it is imperative that the design of both systems and equipment be considered carefully at the outset of development.

Further, there is a critical shortage of engineers and product designers who are capable of providing expertise to developers and manufacturers about incorporating accessible and universal design features into their IT products. Achieving this goal will require product designers and IT experts to collaborate more closely with clinicians, service providers, and consumers to identify potential applications of new telecommunications devices and systems that support independent living, employment, and community integration. Finally, more individuals need to be trained to educate consumers, customer service professionals, technical writers, web developers, marketers, and other IT related professionals about accessible and usable information technologies.

NIDRR currently funds RERCs on Information Technology Access and Telecommunications Access. The RERC on Mobile Wireless Technologies for Persons with Disabilities will be required to coordinate with these two

RERCs on relevant policy and regulatory activities and other activities of mutual interest.

Priority: RERC on Mobile Wireless Technologies for Persons With Disabilities

We propose to establish an RERC on mobile wireless technologies to investigate promising applications of, and facilitate equitable access to, future generations of mobile wireless technologies for individuals with disabilities of all ages and to expand research and development capacity within this subject area. The RERC must:

(a) Investigate, develop, and evaluate technological solutions in collaboration with industry to promote universal access and usability in future generations of mobile wireless technologies;

(b) Investigate, develop, and evaluate applications of mobile wireless technologies that could benefit persons with disabilities in independent living, employment, and community integration such as healthcare monitoring, environmental control, emergency location signaling devices, scheduling maintenance, mobile communications, etc.;

(c) Investigate, develop, and evaluate innovative and flexible multi-modal interface methods for accessing and using future generations of mobile wireless technologies such as home appliances, mobile communication systems and portable information terminals, office equipment, health-monitoring devices, and public access terminals;

(d) Identify, implement, and evaluate, in collaboration with the wireless IT industry, professional IT associations, and institutions of higher education, innovative approaches to expand capacity in accessible IT studies including design, research and development;

(e) Monitor trends and evolving product concepts that represent and signify future directions for mobile wireless technologies; and

(f) Provide technical assistance to public and private organizations responsible for developing policies, guidelines and standards that affect the accessibility of mobile wireless technologies and systems that are manufactured and implemented.

In addition to the activities proposed by the applicant to carry out these purposes, the RERC must:

• Collaborate with industry, industrial consortia, and professional and trade associations on all activities;

• Develop and implement in the first year of the grant, and in consultation with the NIDRR-funded National Center for the Dissemination of Disability Research (NCDDR), a plan to disseminate the RERC's research results to disability organizations, persons with disabilities, technology service providers, businesses, manufacturers, and appropriate journals;

• Develop and implement in the first year of the grant, and in consultation with the NIDRR-funded RERC on Technology Transfer, a utilization plan for ensuring that all new and improved technologies developed by this RERC are successfully transferred to the marketplace;

• Conduct a state-of-the-science conference on accessible information technologies in the third year of the grant cycle and publish a comprehensive report on the final outcomes of the conference in the fourth year of the grant cycle; and

• Coordinate on research projects of mutual interest with relevant NIDRR-funded projects such as the RERCs on Information Technology Access and Telecommunications Access and the Information Technology Technical Assistance and Training Center, as identified through consultation with the NIDRR project officer.

Applicable Program Regulations: 34 CFR part 350.

Program Authority: 29 U.S.C. 762(g) and 764(b)(3).

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