

Beneficial Designs, Inc.

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Beneficial Designs

The Small Business Innovation Research (SBIR) program not only helps mankind explore the challenges of outer space; it also helps challenged individuals explore outdoor space. **Beneficial Designs, Inc.**, a small firm in Santa Cruz, CA is opening the out-of-doors for persons with mobility limitations and improving trail information for people of all abilities.

During a 1990 National Council on Disability hearing, **Peter Axelson**, the Director of Research and Development for **Beneficial Designs**, heard comments from several people with disabilities who wanted to access the outdoors but didn't wish to "pave the wilderness." The main obstacle people face in outdoor environments is not a lack of access - but rather a lack of information.

With a 1993 Phase I SBIR grant from the **National Institutes of Health**, Beneficial Designs began research with the goal of providing universal access information about recreation trails. "We recognized right away that we shouldn't be focusing on developing 'special' data for people with disabilities. Hikers of all abilities were interested in the information provided in our trail guides," said Axelson.

A 1994 **NIH** award enabled Beneficial Designs to develop the **Universal Trail Assessment Process (UTAP)**, a tool for trail managers and agencies to inventory their trails for maintenance and accessibility conditions. Trail data can be processed and summarized to obtain typical and maximum grades and cross slopes, minimum widths, surface types, and magnitude and location of obstacles. Termed **Trail Access Information (TAI)**, this data can be presented in signage, maps, guidebooks, audiocassettes, or computerized trail guide formats. TAI can assist individuals in making informed choices about the trails they plan to use and obtain any necessary assistance or equipment needed to negotiate the trail safely and successfully.

Beneficial Designs is currently working on **TrailWare** software for processing data and developing **TAI** into signage and maps. Trail assessment coordinators are trained through UTAP workshops and a 1999 USDA award has enabled Beneficial Designs to begin developing a program for training UTAP master trainers.

In 1994, Beneficial Designs developed **Interactive Computer Information Trail Guides**, a program that can quickly search a database for trails that match the characteristics desired by the user, and then display access data, maps, text and scenic images for each trail found.

More recently, Beneficial Designs received a 1997 Phase I award from the **U.S. Department of Education** to develop a prototype searchable “**Trail Explorer**” database of trail access information. This prototype led to a Phase II award to further develop and build this Web site in collaboration with federal, state and local trail managers to standardize trail information. The **Trail Explorer Web site** will provide information on public lands with accessibility data on numerous individual trails. This product will enable trail users to make more informed decisions about which public lands to visit and which trails better meet their interests and abilities. It will be especially useful for individuals with disabilities, older adults, parents with young children, and novice hikers. It is scheduled for completion by June 2000.

These trails related projects exposed the need for a method to assess the accessibility of trail surfaces. Through an NIH award, Beneficial Designs has been developing **portable tools for objectively measuring the firmness and stability of ground and floor surfaces**. This work has resulted in a national standard for playground surface accessibility and the development of a national standard for ground and floor surfaces has been initiated.

NIH awards have also enabled Beneficial Designs to create improved seating and mobility technologies for wheelchair users. Through the development and evaluation of the **FlexRim Low Impact Wheelchair Pushrim**, Beneficial Designs has found a way to lower the impact forces experienced by wheelchair users during propulsion. The **Back Support Shaping System** was designed to adjust to the different activities of the wheelchair user. This system is now being manufactured by PinDot Products by Invacare Corporation as the PaxBac. Beneficial Designs has also developed the **HipGrip Pelvic Stabilization Device**, which consists of contoured pads that “grip” the pelvis and provide a stable base of support from which to perform functional tasks. A **Universal Canoe Seating System** is being developed as well to provide persons who have limited sitting balance additional pelvic and back support for better comfort and stability and increased paddling efficiency.

National Institutes of Health Awards

Computerized Mapping of Trails for Accessibility	(HD29992)
Trail Data Processing Software (TrailWare)	(HD36538)
Measurement of Surface Characteristics for Accessibility	(HD30979)
FlexRim Low Impact Wheelchair Pushrim	(HD36533)
Back Support Shaping System for Wheelchairs	(HD29983)
HipGrip Pelvic Stabilization Device for Wheelchair Users	(HD36156)
A Universal Canoe Seating System	(HD36944)
Quantitative Hand Strength Assessment Devices	(HD33940)

USDA Awards

Training Program for Universal Trail Assessment Process Master Trainers
(99-33610-7523)

US Dept of Education Awards

Interactive Computer Information Trail Guides for Universal Access
(RA94129011, RW95170006)

Trails Web Site with Universal Access Information
(RW97076011, ED-98-CO-0046)