THE JOHNS HOPKINS NATIONAL SEARCH FOR COMPUTING APPLICATIONS TO ASSIST PERSONS WITH DISABILITIES

PAUL L. HAZAN

GUEST EDITOR'S INTRODUCTION

INTRODUCTION

The recently passed Americans with Disabilities Act offers exceptional opportunities for millions of people with special needs to reach their full potential. The Johns Hopkins University Applied Physics Laboratory conducted the second (1991-92) National Search for Computing Applications To Assist Persons with Disabilities to help realize the exciting promise of the Act. The competition inspired hundreds of innovative computing applications to extend the reach of persons with disabilities.

OBJECTIVES OF THE NATIONAL SEARCH

The five objectives of the Second National Search were to:

1. Focus the power of computing technology on the needs of millions of citizens with disabilities.
2. Foster individual innovation and creativity throughout the nation.
3. Encourage people; professional societies; and industrial, academic, civic, and rehabilitation organizations to work together to meet the needs of disabled persons.
4. Improve the education of students with special needs through innovative multimedia and computer-assisted instruction.
5. Stimulate broad new public involvement.

THE NEED

Over 40 million people in the United States have disabilities. The National Search marshalled the efforts of tens of thousands of dedicated professionals, volunteers, family members, and friends in helping to enhance the quality of life and fulfill the potential of differently abled people.

Low-cost computer-based enabling technology, together with adaptive software and applications devices, has special potential to facilitate independent living and increase the capacities of disabled persons to learn, work, enjoy leisure activities, and integrate themselves into their communities. The National Search directly encourages thousands of computer users to think seriously about how their tools could be usefully applied to improve the lives of citizens with disabilities.

ORGANIZATION

Although the National Search had only modest seed funding, it was structured to promote individual and institutional commitments on a grand scale. The contagious enthusiasm, creativity, and dedication of thousands of contestants, organizers, and supporters turned the venture into a nationwide movement.

Figure 1 shows the overall organization of the program. The National Science Foundation, MCI Communications, and Microsoft Corporation were the primary sponsors. More than twenty other organizations contributed and participated as program associates. A hands-on program.
steering committee and an advisory board consisting of twenty-eight nationally recognized leaders (many with disabilities themselves) provided overall guidance and direction. The Advisory Board included highly dedicated representatives from the private and public sectors with expertise in helping the disabled through education, technology, multimedia applications, and rehabilitation.

The board met regularly throughout the planning, competition, and evaluation phases and formed action teams to address the following:

- Definition of the overall scope of the program.
- Public relations efforts and methodology of reaching participants.
- Contest induction/entry procedures.
- Development of criteria for selection of winners.
- Judging and awarding of prizes.
- Television promotion.
- Events planning.
- Future development/implementation of ideas.

Team assignments took advantage of the special talents and resources of individual Advisory Board members. Of significance were the many personal contacts gained from extensive involvement with field organizations dedicated to assisting disabled people. Without the support and leverage of these participants, it would not have been possible to identify and enlist the hundreds of people who did the essential work at the regional levels.

THE COMPETITION

Contestants

The National Search called for entrants from four categories:

1. Individual computer professionals (private): persons whose jobs involved computer hardware or software.
2. Individual computer professionals (organizationally supported): inventors supported by organizations having rights to the inventor's intellectual property.
3. Amateurs: those whose jobs did not involve computer or software design or application.
4. Full-time students.

These categories were intended to encompass all likely competitors and provide a spectrum of computer knowledge and skill levels. Teams were also encouraged; many entries were the result of collaborations that included the efforts of a technical contributor, a service provider, a disabled person, and a relative or friend.

Categories of Entries

Inventions were invited in three categories:

1. Computer-based devices: hardware invented or modified for the intended purpose, or working hardware/software that could demonstrate a new application.
2. Software only: specialized software programs for standard computers.
3. Paper design: a written description of an idea not yet implemented.

Tables 1 and 2 show the distribution of entries in the competition by targeted disability and category of participant, respectively, in the ten standard federal regions (Fig. 2). A summary of the 100 regional winning entries appears in this issue.

Publicity

Comprehensive publicizing of the competition was critical to reach as many computer-capable people as possible. Beginning with a kick-off press conference at the National Press Club in Washington, D.C., on 30 January 1991, promotional work spanned eight months; strategies ranged from fourteen satellite-
THE JOHNS HOPKINS NATIONAL SEARCH
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Paul Hazan
National Search Project Director

William Buchanan
National Search Project Engineer

Louis Biggie
National Search Coordinator

Lois Craig
National Search Special Assistant

National Search Steering Committee
Edward Cochran
Assistant to the Director for External Relations
The Johns Hopkins University
Applied Physics Laboratory

A. Kossiakoff
Chief Scientist
The Johns Hopkins University
Applied Physics Laboratory

Lawrence Scadden
Director, Rehabilitation Engineering
Electronic Industries Foundation

Gilbert Schiffman
Professor Emeritus
The Johns Hopkins University

National Search Advisory Board
Ross Jones
Advisory Board Chairman
Vice President
The Johns Hopkins University

Alan Abeson
Executive Director
Association for Retarded Citizens of the United States

Kenneth Anderson
Past President
IEEE Computer Society

Michael Bainbridge
Assistant Executive Director
National Association of Rehabilitation Facilities

Warren Bledsoe
Former Consultant on Blindness
Department of Health and Human Services

James L. Caldwell
Chairman
IEEE Technical Committee on Disabilities

Gerald Engel (Ex Officio)
National Science Foundation

James Geletka
Executive Director
ADAPSO Foundation

Margaret Giannini, M.D.
Deputy Assistant Chief for Rehabilitation
Veterans Administration

Gary Goldstein, M.D.
Director
Kennedy Kreiger Institute for Handicapped Children

Nancy Grasmick
Superintendent of Schools
State of Maryland

Jerald M. Jordan
Special Assistant to the Provost
Gallaudet College

Irwin Kaplan
Manager
Rehabilitation Training Programs
IBM Corporation

Martin Kaufman
Director
Division of Innovation and Development
Office of Special Programs
U.S. Department of Education

Timothy Keen
Consultant

Richard A. Kuzmack
Chief, Information Technology Management
Office of Management and Budget

William Leard
Program Director
Maryland Rehabilitation Center

Ghita Levine
Director of Communications
The Johns Hopkins University

Carol Luszcz
Director of Youth Programs
Science Service

James T. Magee
Past President
Electronic Industries Foundation

Nancy Minghetti
Director
Programs and Corporate Development
American Speech and Hearing Association

Freda Nicholson
President
Association of Science and Technology Centers

Larry Oliver
Technical Advisor

Jean Petersen
Executive Director
Learning Disabilities Association of America

Cathy Rookard
Rehabilitation Society of North America

Virginia Stern
Director
Project on Science, Technology, and Disability
American Association for the Advancement of Science

Nick Vogel
Consultant

Stanley Winkler
President
The Winkler Group

broadcast television workshops to sending releases to over 1000 newspapers. A toll-free hot line was also established. Magazines and journals carried announcements; professional societies promoted the National Search; major technical, educational, and rehabilitation conferences included announcements in their programs; and colleges and universities featured the competition in their varied media. Announcements were made on radio and on television. Hundreds of computer clubs were contacted. In response, thousands of requests for information were received, and tens of thousands of fliers were distributed. Over 3000 entry kits were mailed, and 774 competition entries were submitted by participants from all fifty states.

Regional Organization and Activities
Regional chairpersons were appointed along with their (volunteer) staff support (Fig. 3). Local workshops, induction activities, and fairs were held in all ten standard federal regions of the United States, covering districts from Puerto Rico to Hawaii and Florida to Alaska.
Regional workshops were held in April 1991 simultaneously across the country, featuring a teleconference using the Black College Satellite Network from the CNN television studio in Washington, D.C. Through the various media, interested persons were encouraged to attend their regional workshops and participate in briefings. The briefings included the teleconference, which allowed interaction with the leadership of the program as well as experts in a wide range of disabilities and technologies.

The regional fairs in December 1991 were staged so that entrants could demonstrate their inventions to the public and to the judges. Fairs were held at prestigious public sites such as the Exploratorium in San Francisco, museums of science in Chicago, Boston, and Dallas, the Children’s Museum in Denver, and the Columbia Uni-

\[\text{Table 1. Distribution by disability category.}\]

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<th>Category</th>
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<td>12</td>
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<td>22</td>
<td>25</td>
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<td>Total</td>
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\[\text{Table 2. Distribution of competition level.}\]

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<th>8</th>
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<td>Professional (private)</td>
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<tr>
<td>Professional (organizationally supported)</td>
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<td>25</td>
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<td>21</td>
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<td>2</td>
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<tr>
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<td>29</td>
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<td>8</td>
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<td>262</td>
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<tr>
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<td>11</td>
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<tr>
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<td>126</td>
<td>28</td>
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</tr>
</tbody>
</table>

Figure 2. The ten standard federal regions.
University Medical Center in New York. U.S. Senator Paul Sarbanes keynoted the Region 3 Fair held at APL (Fig. 4). Other dignitaries officiated at fairs around the country.

The public attended and interacted enthusiastically at these grass roots events. The regional judges selected the local winners, whose entries were then qualified to compete nationally.

Judging

Evaluation of entries was a feature of the program that required and received much attention. Competition entries were judged on the basis of both technical and functional merit. An effective approach and appropriate criteria had to be devised to ensure that all entries would be evaluated fairly. In addition, it was necessary for all persons involved in the evaluation to understand the judging scheme. Each entry received multiple reviews. More than 250 volunteer judges, including many with disabilities, were recruited from technical, educational, and rehabilitation organizations to conduct the evaluation and judging activities.

Numerous awards, including personal computers and cash prizes, were presented to regional winners. From these, thirty national finalists were selected to exhibit their inventions at the National Fair (Fig. 5), held on 1-2 February 1992 at the Smithsonian Institution in Washington, D.C. Inventions were on public display (Fig. 6) for final judging. Thousands of interested visitors attended. The event was telecast worldwide on CNN and received in-depth coverage by National Public Radio, The New York Times, The Washington Post, and extensive regional and national media.

Prizes

More than 100 prizes were awarded to the National Search contestants, including a $10,000 Grand Prize. The Awards Program, including the presentation of many regional and national prizes (Fig. 7), was made possible by contributions in cash and other items by twenty-four National Search Program Associates representing a broad spectrum of private sector organizations.
THE FUTURE

A two-day “National Search Workshop,” held at APL on 4-5 February 1992, was attended by competition participants and representatives from government, industry, academia, and many organizations dedicated to serving persons with disabilities. Invitees were selected for their expertise and ability to carry results of the National Search to their respective organizations. They provided valuable insights and guidance to help competition entrants accelerate the transfer of their “inventions” to the people who need them. The challenge of moving from prototype to product was addressed in detail by knowledgeable speakers, and several related issues and approaches were explored. An edited transcript of the discussions that occurred at the workshop appears in this issue. The National Search Advisory Board, which has recommended that a National Search be conducted every four years, will continue to plan and pursue future enterprises involving both the public and the private sectors in the quest for computer applications to assist disabled persons.

CONCLUSION

The National Search has done much to help focus technology and public awareness on the needs of persons with disabilities. It created a very special partnership that brought together the creativity of computer users, the indomitable spirit of people with disabilities, and the commitment of those involved in rehabilitation and education. This, in turn, coalesced thousands of volunteers and specialists in all disability categories to produce a nationwide interdisciplinary grass roots movement.

The Americans with Disabilities Act has laid a strong foundation that promises a new era of opportunity. In the end, however, it is the powerful partnership between creative, committed people and enabling, empowering technology that will turn this promise into reality and provide unprecedented fulfillment for people with disabilities.

REFERENCE


ACKNOWLEDGMENTS: The Johns Hopkins National Search for Computing Applications To Assist Persons with Disabilities was co-sponsored by the National Science Foundation, MCI Communications Corporation, and Microsoft Corporation. Many other organizations participated as Program Associates. Finally, the dedicated headquarters team and volunteers at JHU/APL and throughout the country helped to make this a highly successful venture.

THE AUTHOR

PAUL L. HAZAN is Assistant to the Director for Advanced Computer Technology at The Johns Hopkins University Applied Physics Laboratory. He was the Director of the National Search for Computing Applications To Assist Persons with Disabilities. Mr. Hazan served as a member of the Board of Governors of the IEEE Computer Society as Director for Micro and Mini-computers, and was founding chairperson of the IEEE Personal Computer Technical Committee.