



## UB's President Simpson Kicks off the Third Year of Funding

At a press conference this past April, University at Buffalo's President John B. Simpson, announced the grant award of the Rehabilitation Engineering Research Center. This is the third cycle of funding for the center. He called it "important recognition both of the excellence of the innovative research being conducted at UB in assistive technology, as well as our university's ability to shape the future of vital technology transfer."

"The quality of the work in development at the T<sup>2</sup>RERC and our Center for Assistive Technology directly contributes to a better way of life for millions of people, and with this latest in a long line of grants, UB is being recognized as a true vanguard in the field," Simpson added. "I am pleased by this recognition of the important impact and real-world benefits of our research within the School of Public Health and Health Professions, and I anticipate much continued success in the future."

The center is one unit under the umbrella of UB's Center for Assistive Technology, which is part of the UB School of Public Health and Health Professions. Maurizio Trevisan, M.D., dean of the school and a professor in the Department of Social and

Preventive Medicine, said the renewal is a clear indication of the ongoing importance of the center's work.

"The fact that the center is entering its third five-year grant cycle validates the outstanding work done to date by center investigators and staff and their insights into the future," Trevisan said.

"The grant is particularly gratifying because it builds on UB's pioneering work in the field of assistive devices and technology, which exemplifies the overarching mission of the School of



*Conversing at the press conference from left to right are: Maurizio Trevisan, M.D. Dean of the School of Public Health and Health Professions, President John B. Simpson, Stephen M. Bauer, Ph.D. Director of the T<sup>2</sup>RERC, and James A. Leahy, Co-Principal Investigator, Project Administrator, T<sup>2</sup>RERC.*

# Third Year of Funding

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Public Health and Health Professions - to improve the health and quality of life of Western New Yorkers and residents of New York State."

Stephen M. Bauer, Ph.D., UB clinical assistant professor of Rehabilitation Science and director of

the T<sup>2</sup>RERC, said the new grant will support several new endeavors. "In the next five years, the center will carry out four development projects aimed at introducing new products into the market place and complete four research projects that will advance the state-of-the-art of the technology-transfer discipline," said Bauer. ■

## Introduction

This is the 2003-2004 annual report of the Rehabilitation Engineering Research Center on Technology Transfer (T<sup>2</sup>RERC), located at the Center for Assistive Technology, in the School of Public Health and Health Professions at the University at Buffalo. In the T<sup>2</sup>RERC's third cycle of funding, we are responding to the following NIDRR priority: *"The RERC on Technology Transfer must research and develop innovative ways to facilitate and improve the process of moving new, useful, and more effective assistive technology inventions and applications from the prototype phase to the marketplace. This center will be expected to provide technical assistance to all RERCs on issues pertaining to technology transfer, including the development of long-range technology transfer plans."*

The T<sup>2</sup>RERC addresses this priority through a combination of activities designed to directly accomplish the transfer and commercialization of new and improved assistive devices, and to support other stakeholders involved in the technology transfer process. We consider the Product Producers who manufacture products and the Product Consumers who comprise the market for products, to be our primary target populations. We also support the Technology Developers in laboratories (particularly the RERC's), and the Resource Providers who support technology transfer activities, due to their important roles in the overall

efforts to commercialize new technologies for people with disabilities.

This report updates our activities in four research and three development projects that facilitate and improve the process of technology transfer for all stakeholders associated with technology transfer.

### Research Projects:

**R1. Identifying Innovative Technology Transfer Practices through Case Studies** - draws critical success factors from examples of retrospective and prospective assistive technology (AT) transfer case studies in various sectors. **R2. Identifying Innovative Technology Transfer Policies through an Analysis of Federal Programs** - evaluates Federal technology transfer programs supporting AT related projects and assesses their efficacy. **R3. Facilitating AT Industry Innovation through Focused Market Research** - provides a context for transfer opportunities involving the AT industry and for public policy decision making. **R4. Assessing the Efficacy of Transferred Products** - determines the extent to which products previously transferred through the T<sup>2</sup>RERC impact the functional capabilities of consumers.

### Development Projects:

Three Development projects will increase the number and quality of technologies transferred

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# Introduction

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from RERCs and other sources: **D1. Transferring New, Useful, and Innovative Products through a Supply Push Approach** - will facilitate the movement of new or improved prototype inventions to the marketplace through licenses, sales, or entrepreneurial ventures. **D2. Transferring New and Innovative Technologies through a Demand Pull Approach** - will validate technology needs within the AT industry and introduce advanced technology solutions to address those needs. **D3. Improving the Accessibility of New Mainstream**

**Products through Participatory Development** - will extend participatory research to integrate consumer's functional requirements into the design of new mainstream products.

The T<sup>2</sup>RERC continues to support the transfer activity of all RERC's by sharing research findings, brokering transfers through our development projects, and delivering technical assistance on their planning and practice activities. ■



*Products developed by the T<sup>2</sup>RERC with the help of grant funding.*

# R1. Case Studies Project: Lessons from Case Studies of Technology Transfer - Joseph P. Lane

In the process of reviewing examples of proposed and actual transfers from RERC's and other assistive technology programs, we are developing some general statements about best practices.

We recognize that researchers who attempt to commercialize innovations are entering an arena in which the assumptions underlying their academic training are no longer valid. The following four points represent critical issues for successful transfer and commercialization.

## 1. Know Your Goal.

There is a distinct difference between the academic goal of advancing knowledge through research methods and the industry goal of introducing new products into the marketplace. The processes for achieving both goals are equally rigorous.

The academic goal emphasizes empirical rigor in the methodology employed. As long as the methods have sufficient rigor, one can have confidence that the results are valid. Regardless of whether the results support or refute the hypothesis, the data contributes to the knowledge base. In academia, rigor is emphasized in the process while the outcomes are accepted as informative.

In contrast, the industry goal emphasizes business rigor in the outcomes achieved. In business, the bottom-line is the "bottom-line" - profit (revenue in excess of expense). Within legal and ethical boundaries, companies are less concerned with process than with outcomes. Employees are free to manipulate the variables to directly effect the outcomes. Those who succeed are rewarded and their methods are quickly emulated.

This distinction generates misunderstandings between academia and industry. We make three recommendations to avoid misunderstandings:

- Attain consensus on a clear goal and focus resources to achieve that goal. If the goal is to com-

mercialize new products, then the academic rigor must be subordinated to the business rigor for the specific project at hand. The academic researcher is free to continue exploring options and generating new knowledge outside the scope of work.

- Ensure this consensus involves all relevant stakeholders, as their support is essential for success. Sponsoring agencies, university administrators, clinicians, and consumers should all be aware that the project will generate a product rather than a paper.
- Use these stakeholders to help identify and overcome barriers. There are more potential barriers to progress than can be anticipated by any subset of participants. Enlist all interested parties in facilitating the process.

## 2. Know Your Customer.

Researchers who wish to improve the state of practice by improving products in the marketplace, often believe their customers are the people who either use, buy, or recommend such products. They take pride in investigating the needs of these consumers and in developing prototype devices that appear to meet their needs.

In fact, the customers for researchers involved in product development are companies doing business in that targeted market. The companies will transform prototypes into products, deliver them to the marketplace, and provide aftermarket support to the consumers. The consumers who use, buy, or recommend products are the company's customers - not the researcher's customers.

The time spent understanding the end user's requirements should be replicated in studying the company or industry you expect to commercialize your innovation. Learn about their business practices, product lines, price points, sales and marketing channels, and competition, as it will help shape your presentation to attract their interest.

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# R1. Case Studies Project

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Here are three ways to know your customer:

- Acknowledge that manufacturers are the customers for transfer and commercialization.
- Orient your presentation about your device's features and functions to match the expertise and capabilities of the target companies.
- Accept that manufacturers are best positioned to consider the opportunities and constraints for this product.

### 3. Know Your Market.

Market opportunities for new or improved products are defined by the features or functions not served by existing products or not served optimally. The new product may gain a share of the market by being better or cheaper than the available alternatives. The initial burden for identifying competing products or alternative solutions falls on the researcher. Reinvention commonly results from an inability to thoroughly explore the market or from the inventor's overzealous and biased advocacy.

A researcher may identify an opportunity, but the opportunity will not be addressed unless a company is willing to recognize and pursue it. The researcher should provide a thorough analysis of both the market and the opportunity. The company will then weigh the opportunity against internal product opportunities awaiting resources for commercialization. That means your device idea is competing against all devices currently in the market, all alternative ways of providing the same function, and any devices offering similar functions in the company's internal queue.

#### **Recommendation.**

- Align your commercialization goal with your customer's market position. Your objective is to help the company successfully address the market's need.
- Verify your invention's uniqueness through an exhaustive analysis of existing options available to end users. Avoid reinvention, which wastes

resources and diminishes credibility.

- Validate the functional benefits through adequate pilot testing under confidentiality.

### 4. Know Your Role.

The most appropriate role for academic researchers during product commercialization is as a consultant. A researcher who invents may exert a level of control over the development effort that actually inhibits progress toward commercialization. While important to secure ownership over intellectual property and to receive compensation for the innovation, it is equally important to relinquish control to those more qualified to move the project forward.

The innovation itself only represents a small percentage of the required investment of time and money to reach the market. Therefore, the research contribution is subordinated to the business enterprise. The researcher's role as an expert consultant is as needed and as requested. The researcher is free to continue experimenting within their own laboratory setting, if they are meeting their obligations to their sponsors and their constituents to help achieve a successful product outcome.

#### **Recommendation.**

- Investigate your institutional protocols for transferring control from the laboratory to a corporation.
- Articulate the aim and scope of your future role in the project and provide all possible support requested in a timely manner.
- Understand the respective roles of all other stakeholders in the commercialization process and find ways to help them succeed.

For more information on the Case Studies Project, please visit our website at <http://cosmos.buffalo.edu/t2rerc/research/case-studies/> ■

## R2. Public Policy Project: Identifying Innovative Technology Transfer Policies through an analysis of Federal Programs - Stephen M. Bauer

The Public Policy Project examines various Federal technology transfer programs and the impact of these programs on the availability of assistive technology in the marketplace. Dr. Stephen Bauer is the project manager while Dr. Pallavoor Vaidyanathan, a technology transfer expert and Assistant Vice President of Research at the University of Central Florida, serves as project advisor.

Each Federal program differs in its mandate, scale, resources, approach, associated legislation, and sponsoring agency. As a consequence, information gathered under this project varies from program to program. For the SBIR and STTR programs: the number of Phase I and Phase II applicants; the number and size of awards; the ratio of award winners to applicants; research areas funded; commercialized products; and average cost per commercialized product are important considerations. In contrast, for Federal labs and research universities: the number, types of technology licensed and, commercialization outcomes are relevant.

Project accomplishments include: construction of a web tool and database to organize and manipulate information retrieved from Federal databases;

and a compilation and review of relevant reports from the General Accounting Office, MIT Technology Review, the US Department of Commerce, Microsoft and other sources. Federal databases are being mined to identify SBIR Phase I and Phase 2 grant awards to assistive technology manufacturers. To date SBIR awards from the National Institutes of Health (1996-2000) and Department of Education (2001-2003) have been examined.

The Public Policy Project has garnered considerable interest from the private sector, academia and federal labs. In 2004, project data was incorporated into five conference presentations including: the Cellular Telecommunications and Internet Association; the Assistive Technology Industry Association; the State of Technology in Mobile Wireless Communication; the Center for Future Health-Thought Leaders Conference; and the Mid-Atlantic Region-Federal Laboratory Consortium Meeting.

For more information on the Public Policy Project, please visit the T<sup>2</sup>RERC website at <http://cosmos.buffalo.edu/t2rerc/research/public-policy/>. ■



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Federal Laboratory Consortium



National Institutes of Health

SBA Technology - SBIR/STTR

U.S. Small Business Association



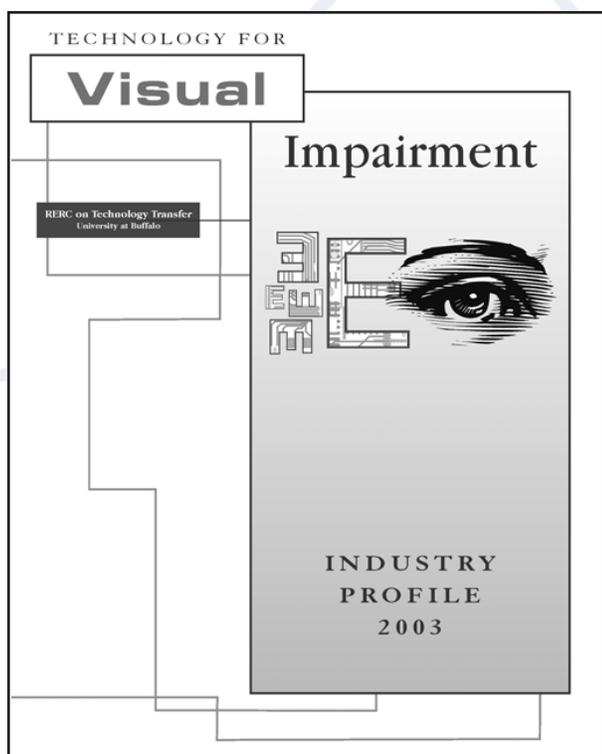
MIT Technology Review

*Sources of public information to be reviewed under the Public Policy Project.*

## R3. Industry Profile Project: Facilitating AT Industry Innovation through Focused Market Research - Wendy A. Strobel

Reliable market data allows manufacturers to identify consumer needs and business opportunities, develop products to satisfy these needs, prepare grants, and secure investment capital to carry out research and development. With a few notable exceptions, publicly available disability market data is incomplete, lacks specificity, is difficult to obtain, or is difficult to interpret. Assistive technology manufacturers are generally small companies with insufficient resources to contract for market research or who lack the time and expertise to conduct such research themselves. Over the five year grant cycle, the T<sup>2</sup>RERC will carry out primary

and secondary market research for five assistive technology industries. These include wheeled mobility, hearing, visual impairments, communication, and education technology. Market research will be compiled into "Industry Profile" drafts. To ensure content quality, each draft will be evaluated internally by T<sup>2</sup>RERC staff and externally by academic and industry experts. The "corrected" profile will be provided to a representative sample of assistive technology manufacturers. Each manufacturer will be surveyed to determine the impact of the market research on new product development, product refinement, grant development, strategic and business planning, reference, and other uses. Industry Profiles will also be provided to SBIR program managers to determine its impact on grant solicitations, as a reference, and for other uses.



*The front cover of the most recent Industry Profile, the Industry Profile on Vision.*

The T<sup>2</sup>RERC has completed work on the Industry Profile on Visual Impairment. An on-line survey has been constructed and a sample selected to seek input from industry experts, funding agencies, and researchers. The T<sup>2</sup>RERC is beginning to draft an Industry Profile on Education Technology. This IP will focus on technology for Students with Learning Disabilities, as LD is termed a "high incidence" disability in American schools. As the Industry Profiles in each area are completed and tested, they will be made available to interested parties.

For more information about the Industry Profile Project and the Industry Profiles, please see the T<sup>2</sup>RERC website at <http://cosmos.ot.buffalo.edu/t2rerc/research/industry-profile/>. ■

## R4. Efficacy Project: Assessing the Efficacy of Products Transferred through the T<sup>2</sup>RERC - Vathsala I. Stone and Douglas J. Usiak

Over the past decade, the T<sup>2</sup>RERC has transferred many products to the A/T marketplace, each intended to either meet an unmet need or to improve upon the features/functions of existing products for end users of A/T. We demonstrated satisfactory transfer and commercialization by noting manufacturer's product introductions. However, we did not evaluate the long term impact of these products on consumers. In this cycle of funding we address this concern and verify if they are indeed improvements over existing devices. Do the new products improve the functional capabilities of people with disabilities? Do they offer to consumers a viable and better alternative to methods they use, or to devices present in the market at the time the product was transferred?

In October 2003, we initiated an efficacy-oriented research study which seeks to determine the impact, on consumers, of several selected products transferred to the market through the T<sup>2</sup>RERC. To ensure that we assess efficacy in the context of consumers' functional capabilities, the WNY Independent Living Project is leading the data collection effort. Dr. Vathsala I. Stone and Douglas J. Usiak are Co-principal investigators on this project.

### **Intent of the Study:**

The study's **purpose** is to assess, through laboratory and home trials, the quality and value of products transferred through the T<sup>2</sup>RERC in terms of how they affect the consumer's functional capabilities, as compared to products and alternative strategies available to them at the time of transfer. Correspondingly, the study addresses the following two Research Questions:

1. *How do products commercialized through the T<sup>2</sup>RERC's process perform, as compared to the performance of other products/methods available to consumers with disabilities at the time of transfer?* The focus of this question is the product's usability, and it is mainly assessed through onsite trials by consumers.

2. *To what extent do end users with disabilities value the products transferred through the T<sup>2</sup>RERC, compared to alternatives available to them?* This question addresses product relevance to consumers and is assessed through actual use of the product in home trials.

Comparative evidence from the efficacy trials should allow us to verify how well products commercialized through the T<sup>2</sup>RERC actually benefit end users with disabilities.

### **Target Populations:**

Consumers with disabilities (that are potential users of our transferred products) are our primary stakeholders. Other stakeholders for whom the study results will be of interest include Product Development Managers, Product Designers, and Researchers/ Evaluators engaged in similar investigations.

### **Method:**

The study is implemented in three phases: In Phase I, we develop the indicators and the instruments/protocols that help guide the data collection planned for Phases II (laboratory trials) and III (home trials). In Phase II, a sample of 50 consumers will each individually assess both the T<sup>2</sup>RERC product and another product selected as its most equivalent competitor in a laboratory situation. We observe consumers as they try out the product and its competitor. We also obtain consumer ratings of the two products' performance

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## R4. Efficacy Project

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*Wendy A. Strobel, Director of Training, is consulting with the Efficacy project team Katie Beaver, Consumer Coordinator and Sajay Arthanat, Graduate Research Assistant, and Co-PIs Douglas J. Usiak and Dr. Vathsala I. Stone as they set up the clinical laboratory.*

and usability. In Phase III, the consumers will actually use the T<sup>2</sup>RERC product at home. Data will include comparative judgments of consumers based on their actual use of the T<sup>2</sup>RERC product against alternative methods they have so far used. The entire trial period for the study of each product lasts about six months. Consumers are compensated for their participation.

### **Current Status:**

At the outset, we acknowledge and welcome Dr. Michael Scriven aboard our advisory board. Currently director of the Multidisciplinary Doctoral Program in Evaluation at the Western Michigan University, where he is also associate director of the Evaluation Center, Dr. Scriven is the founding figure and leading scholar in the field of Evaluation. We are highly honored to have him as our advisor. We also welcome aboard our external consultants to this project: Molly Story, Co-Director of the Rehabilitation Engineering Research Center on Accessible Medical

Instrumentation with expertise and extensive experience in Universal Design, Product Usability Assessment and Instrumentation; and Dr. Arun Jain, Professor and Chair of the UB School of Management, our advisor and consultant for our Consumer & Market research efforts over the years.

We plan to select and test four products over the current funding period. Our first product to be tested in the study is the Lids Off Jar Opener by Black & Decker. It is highly successful in the mainstream market in terms of sales, although its value to consumers with disabilities is not yet established. Additionally, its transfer path followed our idealized technology transfer process very closely such that its efficacy would thus also vali-

date (or not) the model. During the laboratory trials, consumers will also test the most equivalent commercial product present in the market at the time the T<sup>2</sup>RERC product was transferred. Consumers will use their current alternative jar opening strategies for their home trial comparisons.

The first year's activities included developing and testing out the methodology, as well as initiating the testing of the first product. Using empirical observations and a task analysis of "jar opening", we (a) developed efficacy indicators and instruments to be used for the onsite and home trials and (b) established an operational methodology for these trials. More specifically, the outputs were: (1) consumer, observer, and interview questionnaires for the laboratory setting; (2) weekly log sheets and a questionnaire for the home setting; and (3) protocols for the actual conduct of the laboratory and the home trials that were developed

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## R4. Efficacy Project

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and described at the same time as the instruments. Expert input and review refined these outputs.

The empirical data enhanced the findings from our review of literature and from the Consumer Ideal Product (CIP) studies of our previous funding cycles and led to the identification of core indicators of efficacy (quality and value). In the "task analysis" approach we followed, a team of design experts and the study team independently observed the "task of jar opening," analyzed the "user-device-environment" interactions, and came up with relevant indicators. The research team actually interviewed consumers in their homes and video-recorded these scenarios, for which five consumers with disabilities who have limited hand function were recruited. This gave us a chance to

obtain user insights. The research team then observed the video recordings and derived a set of preliminary indicators, first individually and then by triangulation. The user perspective primarily shed light on these indicators. In a later session, three design experts observed the same video recordings and systematically working through the five cases, arrived at sets of indicators. By triangulating among these, the researchers drew a unified set of indicators. This set especially took the designer insight into account.

Drawing from human factors literature, as well as from previous work on product evaluation and universal design, we combined both sets of indicators that resulted from the above task analyses into a single consolidated listing. First, we classified them under the eight consumer need categories previously developed and used by the T<sup>2</sup>RERC. Then, checking them against the seven Universal Design principles as a second dimension, we roughly separated the indicators into "usability" and "use" orientations. We distributed them between the laboratory and home settings accordingly, generated questions, and developed the instruments noted earlier. After final input and review by our two external expert consultants, we arrived at the set of instruments and protocols mentioned earlier, our outputs for Year One.

We have started the development of a Product Evaluation Resource Guide for completion over the project funding period. A pilot testing of the instruments and protocols in the laboratory and home settings is scheduled for early December 2004.

For additional information on the Efficacy Project please visit our website at <http://cosmos.buffalo.edu/t2rerc/research/efficacy/>. ■



*Efficacy Study Clinical trial has consumers facing off with the "Open-Up" and the "Lids Off" automatic jar openers.*

## D1. Supply Push Program: Transferring New, Useful, and Innovative Products to the Marketplace through a Supply Push Approach - James A. Leahy

In our last newsletter, we described how our ongoing Supply Push technology transfer project is being utilized to fulfill the 2003 NIDRR priority for our Center. We also discussed the various paths or approaches the T<sup>2</sup>RERC utilizes in bringing products to the marketplace. In this edition of our newsletter, we will look at some of the accomplishments of this program during the past year.

Every NIDRR RERC must have the capability to design, build, and test prototype devices. In our Supply Push development program, several internal assistive technology design projects were identified and initiated early in year one of this funding cycle. An automated pill crusher, institutional and home versions of a mechanical height adjustable shower chair, and a one handed can opener, were projects identified as solving unmet needs for a significant number of people with disabilities and their caregivers.

All three projects proceeded through our consumer oriented design and development process and resulted in two working prototypes being fabricated and a fairly refined concept model of a one handed can opener being built. Commercialization packages on these devices have been generated, and we have begun shopping these devices to potential licensing entities.

In addition, the Supply Push Program has been directly involved in the commercialization of a variety of new and unique devices from outside our organization. Two devices have been transferred/licensed and two devices are in the negotiation stage with licensing companies.

From the RERC on Universal Design (UD) and the Built Environment, the Adjustable Bathroom Suites have been licensed to Lasco Bathware of Anaheim, CA. Based on our marketing and consumer work and the RERC on UD's design work, Maddak Inc. has licensed and introduced the

Family Toilet Seat. The Expanded Keyboard, to allow students or professionals with a disability to fully operate a Texas Instruments graphing calculator, is currently in negotiation for license and just recently, the PDA Magnifier/Line Text Isolator has been licensed to Turning Point Therapy and Technology. In addition, the Easy Pump from the RERC on Successful Aging has been re-designed and a commercialization package for it has been completed. The original Easy Pump device assisted an individual in pumping gas. The new combination device is one that will not only assist a person in pumping gas but will also help him/her to tighten or loosen gas caps. The new device has already been presented to a potential licensing company for review.

In total, five device commercialization packages have been completed, multiple marketing reports were written, 85 technical assists were carried out, and 15 additional devices were evaluated. Two



*Jonathan Leahy, Graduate Research Assistant, demonstrating electric can openers during a recent focus group.*

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## D1. Supply Push Program

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patents have been filed on the UpStop Wheelchair Braking System, a provisional patent has been filed for the Automated Pill Crusher, and more patents are in the works for the Caller Connect and the Easy Bather Shower Chair.

For a complete description of these and other devices currently in process in the Supply Push Development Program, please visit our web site at: <http://cosmos.buffalo.edu/t2erc/development/supply-push/>.

From a publication and dissemination standpoint, two of our Supply Push devices (Adjustable Bathroom Suites and the Black & Decker Lids Off Jar Opener) have been featured on the new 2004

NIDRR RERC poster; two of our consumer impact device stories on the UpStop Wheelchair Braking System and the Lids Off Jar Opener have been profiled in NIDRR's Success Stories for 2004; video clips from news stories on Supply Push devices were included in the NIDRR 2004 RERC video; our work with Black & Decker was profiled in the January 19, 2004 issue of Business Week; and lastly, multiple conference and exhibit presentations showcased our work and accomplishments.

All in all, year one of this funding cycle has been a very exciting and busy one for this project and Year 2 looks to be just as exciting, challenging, and rewarding. ■

## D2. Demand Pull Program: Transferring New, Useful, and Innovative Technologies through a Demand Pull Approach - Wendy A. Strobel

The Demand Pull Project seeks out and transfers technologies that meet the critical needs of people with mobility, hearing, vision, and communication impairments to mainstream and assistive technology (AT) manufacturers. The work of the Demand Pull team is guided by primary market research that enables us to accurately identify the needs of people with functional limitations and secondary market research that provides an overview of each industry area. Primary market research, which is contained in the Stakeholders Forum Proceedings, includes consumer focus groups and interviews with manufacturers, clinicians, and academicians. Secondary market research, which can be found in the Industry Profiles, clarifies markets (segments, members, and size), manufacturers (products, features, and functions), distribution channels, purchase and reimbursement policies, and relevant conferences, tradeshow, and publications. Technology solutions are sought in both the private sector (other manufacturers) and public sector (universities, federal labs). The Demand Pull proj-

ect provides a range of services to technology developers to help facilitate technology transfers and the commercialization of products resulting from these transfers.

The Demand Pull Team has seen great progress in its first year of the new grant cycle. Pointsmart, an assistive technology software application that aids in the stabilization of erratic mouse movements, allows users to adjust the sensitivity of mouse movements beyond the speed and acceleration adjustments available on today's computers. It will be released to the public by the California based company, Infogrip. PointSmart will include features that allow users to adjust the sensitivity of the mouse or mouse alternative (i.e. head mouse, trackballs, etc.), it will give users additional room to adjust speed and acceleration, and it will feature a joystick mode that will start the mouse in the direction the user points and allow it to continue without continuous control. The user will only

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## D2. Demand Pull Program

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have to stop the mouse when they wish to change direction or select the destination object. PointSmart also allows the user to customize the functionality of the mouse clicks. A user can assign a left click, right click, click and drag, or no click to any of the mouse buttons.

Keyboard macros can also be assigned to the mouse buttons. For mouse users that are visually impaired or have tracking issues, PointSmart allows the user to choose from several very large and easy to see mouse pointers. Pointsmart will be available from Infogrip in March of 2005. A second product, the PowerCheq™ from Power Designers, has undergone improvements to include replaceable fuses. The PowerCheq™ is a revolutionary battery string equalizer that extends battery life and capacity up to 300%, and extends range by more than 20% over the life of the battery. The Demand Pull Team is continuing post-commercialization efforts to ensure that this needed technology will get to people with disabilities that use powered mobility devices.

The Demand Pull team actively seeks partners in the business community to commercialize the technologies that meet the needs of our stakeholders. A number of these products are in license negotiations with assistive technology companies. Wheeled mobility projects include an adaptive motor system, alternative seating systems, and an alternative manual wheelchair propulsion system. Communication technologies include alternate pointing devices and assistive technology evaluation tools. Hearing technologies include hydrogel coatings, patented earmold technology, and an automated captioning system. Technology disclosures that define these technologies, their markets, and competing products are available on the T<sup>2</sup>RERC website.

In order to begin our efforts to locate and transfer technologies for people with visual impairments, the Demand Pull team has published the Proceedings for the Stakeholders Forum on Visual Impairment, which includes problem statements that identify needed technology for people who have visual impairments and blindness. Technology needs were identified for the following areas:

- Access to Text
- Access to Graphics
- Access to Consumer Electronics
- Wayfinding

The Demand Pull team has begun work on the Project on Educational Technology with a companion project entitled the Industry Profile Project. This project will provide the basis to identify needed technology for diverse learners in K-12 and college programs.

For additional information on the Demand Pull Project, please visit our website at <http://cosmos.ot.buffalo.edu/t2rerc/development/demandpull/>. Here you can obtain information on project services, needed technologies, technologies available for licensing and other transfer opportunities. ■



*Power Designers introduced the new PowerCheq™ battery string equalizer for power wheelchairs and scooters in.*

## D3. Fortune 500 Program: Improving Accessibility of New Mainstream Consumer Products through Participatory Development - James A. Leahy

New to the T<sup>2</sup>RERC this cycle is our Fortune 500 program. The Fortune 500 Program uses a practice called "Participatory Development" (PD), which is designed to communicate the philosophy of involving *all* consumers in *all* phases of product design and development. This program targets Fortune 500 companies - the largest and most influential sector of corporate America. The message the T<sup>2</sup>RERC presents is that when these companies are designing new mainstream consumer products, they can expand their markets by considering the needs of the elderly and people with disabilities. This market broadening increases a product's market size, which increases its likelihood of success. Once collaboration with a Fortune 500 company has been undertaken, the T<sup>2</sup>RERC provides free primary market research to that company.

During this past year the T<sup>2</sup>RERC continued to initiate and foster ongoing relationships with large manufacturers. The Black and Decker™ Digital Countertop Toaster Oven & Broiler (CTO8500) and the Digital Advantage Toaster/Convection Oven (CTO9500) have just been introduced and offered for sale through the internet. These toaster ovens were designed with consumer input from the T<sup>2</sup>RERC. Our consumer groups identified the need for an easier to use, mistake proof toaster oven that could be used to cook small, complete meals for just 1 or 2 people.

Consumers stated they did not want knobs or dials to turn; that they wanted better temperature control (1st slice of toast is as brown as the 4th slice of toast); temperature settings that were more precise; an automatic oven shut off; an auditory cue when the door was left open or when the toaster oven had finished cooking; cooking accessories that would fit their toaster oven so that they could bake a few cookies or muffins at a time; and multiple other usability and accessibility features (larger non slip handles, cool outer shell, easier to remove crumb tray, an easier to clean oven, etc).

Black and Decker™ incorporated the design and functional features requested by our consumers into the design of the CTO8500 and CTO9500 ovens. Features of these new ovens include pressure sensitive button controls; an electronic toast control (no more burnt toast); accurate digital settings from 200 to 450 degrees F for precise baking or cooking and 1-7 for toasting; a 90 minute auto off timer; a signal bell that chimes when the door is left open or the oven has completed a function; B&D partnered with Mirro Bakeware to offer bakeware specially sized for the new CTO8500 and CTO9500 ovens; large non slip handles; a Thermal Guard outer shell; a large crumb tray with a large easy to grip handle for removal; and a non stick baking chamber for easier cleaning.

The new toaster ovens are designed to make the task of preparing meals simpler and less time consuming for all consumers.

Other projects currently underway include a residential consumer thermostat system with White Rodgers, additional kitchen appliances with Black



*Robyn A. Washousky, Market Analyst for AZtech, demonstrating home electrical wiring products during a recent focus group.*

*continued on page 15*

## D3. Fortune 500 Program

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and Decker, and consumer electrical products for Pass & Seymour LeGrand. Primary market research (consumer input) has been obtained and passed onto these companies for product development. For Pass & Seymour LeGrand, our marketing and consumer reports were presented in person at a three hour meeting in August 2004 at Pass & Seymour corporate facilities.

Lastly, we are currently undertaking a project with a large consumer electronics company in a collabora-

tive effort to improve the usability and accessibility features in the next generation of that company's products. Consumer focus groups have been scheduled for late January and early February 2005. We hope to be able to report more on this project in our next newsletter.

For additional information on the Fortune 500 Project, please visit our website at <http://cosmos.ot.buffalo.edu/t2rerc/development/fortune500/>. ■

## Advisory Board Members

The Advisory Board members are experts in their own areas and represent points of access to other resources relevant to the field of assistive technology.

The Tech Transfer RERC is honored to have such distinguished people participate in this effort.

They are:

Arun Jain PhD

Professor of Marketing Research and Chair of the Department of Marketing, from the State University of New York at Buffalo

Don Siegel PhD

Professor of Economics and Chair of the Department of Economics at Rensselaer Polytechnic Institute

Madelyn Bryant McIntire PhD

Director of the Microsoft Accessible Technology Group

Michael Scriven PhD

Associate Director of The Evaluation Center at Western Michigan University

Pasi Sorvisto

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Assistant Vice President for Research at the University of Central Florida

# TECH TRANSFER



# UPDATE

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