CONNECT special

Issue 5

Newsletter

September 2016

Editor's Note

Dear friends,

"Science can amuse and fascinate us all, but it is engineering that changes the world."— Isaac Asimov. So true, it is engineers who change lives for the better. 15th September is Engineer's day in honour of Sir M.Visvesvaraya. This edition is being dedicated to all the engineers who have made assistive technology a reality. The color scheme of this edition is indigo to green which mirrors bettering lives.

Happy reading!

Regards

Bhavna Botta

Preface

All devices and technologies that are rehabilitative, assistive and adaptive for people with disabilities are called Assistive technology. An Assistive Device is a device that helps overcome shortcomings in mobility, vision, hearing loss etc and helps in increasing the capabilities of people with disabilities. Accessible technology is that which is designed with the needs of a lot of different users in mind. The built-in customization features enables all users in spite of their disabilities to use these computer hardware and soft ware with ease. An assistive device along with accessible technology would enable a person to be independent.

It is interesting to note that the history of assistive devices dates back to 1874 when the Audiophone Bone Conduction Amplifier was the earliest type of hearing aid, where the technology used was conduction of sound through bone.Accessible technology started to reach to common man with Microsoft Office 2003 included features that made the software accessible to a wider range of users, including those who have limited dexterity, low vision, or other impairments. A major breakthrough in access becoming the key pivoting point was in 2010, Apple products, especially the iPad ,have a multitude of apps that have been developed for people with special needs.

India has embarked on this less trodden path in the recent years. The need for affordable devices has seen the growth of startups trying to develop indigenous devices. Conferences, exhibitions, national fairs by the NGOS encouraged development of indigenous devices. Government has been initiated Assistance to Disabled Persons for Assistive Devices, 'ADIP' scheme,a comprehensive Directory of Assistive Devices and Technology was also released . National Resource Centre for display of available assistive devices called 'Sambhav' was set up.

But all these efforts are still not paying off. In spite of the market for disability-assisting devices and technologies is pegged at Rs 4,500 crores in India very little interest is shown by the business world. While technology is playing a critical role and globalizing both urban and rural India,why is assistive technology still take a back seat ?





Insights on AT in India

Prof. Anil Prabhakar, Assistive Tech Lab, Electrical Engineering, IIT Madras.

1. What are the latest developments in assistive technology –

The sector has seen some major positive actions like-

· Wearable electronics, such as fitness trackers, are becoming inexpensive and common. Wearables are also an excellent option for use as assistive devices, since they combine sensors with smart phones.

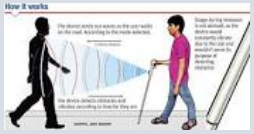
· Another area that is likely to see new devices is through the use of virtual reality (VR) headsets and brain machine interfaces (BMI). VR gear and BMI devices are the rage among people who play video games. However,as the hardware and software become easier to use, it is likely that developers will be able to use the technology to address the needs of persons with disability. Finally,there are efforts to indigenously manufacture Braille cells and electronic readers for the visually impaired and we should begin to see new devices in the coming years.

· Engineers were previously not sensitized to the needs of the differently abled and it has taken time to train the required man power.

· It is heartening to know that PayTM has offered to set up a category dedicated to assistive devices.Similarly,GetMeEnabled has its own portal. These efforts will help the sale of assistive devices

2. Why does it take so long for a product to hit the market

It takes about 3 years for product to go from lab to prototype to field trials and then to product. Assistive devices have low volumes, and often require customization. In addition, manufacturers don't easily recover their costs and are hesitant to invest in the machine tools required for assistive devices.



However,there are examples in Chennai such as Phoenix Medical Systems and Enability Foundation for Rehabilitation, who have taken upon themselves the challenges of manufacturing assistive devices. Hopefully,these companies will be able to show the path to others and many more small and medium enterprises (SMEs) will emerge to manufacture and sell assistive devices.

3. How to minimize the time from prototype to manufacturing

The way to minimize the time from prototype to manufacturing is to use methods known as Design for Manufacturability (DFM). Engineers should involve all the stake holders in the design phase of the devices, and thus minimize the number of corrections and iterations required., this means that the end users must become partners in the process. They should be able to envisage the use of the devices outside of their own disability,and in the larger space of all potential users.

4. What is the needed support from government and industry

Government has access to a lot of data on the incidence of disability,data that can be used to predict future demand. Forecasting demand is an important activity as assistive devices are unlikely to become self-sustaining products in the near term.

In a typical business model, the sale price of a product is 2-3 times the cost of the components (what we refer to as the bill of materials). If government invests in the development of intellectual property in partnership with academia, and if industries step forward to subsidize the design for manufacturability and the one-time costs of moulds and printed circuit boards, then the end user need only pay for the cost of components. There still remains the cost of training the end users on assistive devices, and we hope that NGOs will step forward to help us.

This sharing of costs across stakeholders can make an assistive device available at one-third of its regular price e.g. iGest(wearable communication device which converts gestures to voice output) will become available for Rs. 3000 instead of Rs. 10,000.

5 Do we need a separate agency for developing assistive devices

I personally doubt that having one more Government agency will address the issues related to assistive devices . Industry is best suited to do this. Students doing commerce and management need to evolve unconventional business plans.

The role of Government is to set standards, aggregate demand and to facilitate and encourage SMEs to enter this sector. Industries incur a combination of capital expenses and operating expenses, making them very sensitive to supply and demand. NGOs and Government agencies should spend effort to forecast demand, and use this to offer industry a forward contract for a assistive devices based on specifications. By thus aligning the manufacturing of assistive devices to best practices followed by industry,we will be able to both serve the needs of Indian customers, and also export our solutions to other countries.

From the heart

Mrs. Jeeja Ghosh , head of Advocacy & Disability Studies at Kolkata's Indian Institute of Cerebral Palsy (IICP) and her colleagues were recently at the 17th Biennial Conference of The International Society for Augmentative and Alternative Communication (ISAAC) , in Toronto.

Augmentative and alternative communication (AAC) includes all forms of communication including use of aids and devices to express thoughts, needs, wants, and ideas. There are many indigenous communication devices developed in India like Gupshup, slate, Avaz, kathamala, and access devices like ADITI, hand and foot switch etc and many more in the making.

She says it is imperative that the use of Augmentative and Alternative Communication and AT in different parts of India, needs to be well documented and our achievements shared at such global platforms. At present, AAC is still at a nascent area on the agenda of the Indian disability sector.

As a national resource centre for AAC, IICP has taken the onus in placing the right to communication and equal participation of AAC users in every disability forum. IICP has been working with technology institutes and with manufactures in producing devices. We need to overcome challenges, especially garnering requisite funds, to ensure that more representatives are able to attend this international conference and be the spokesperson of AT in India. We hope to further carry forward the work at Isaac India Chapter to bring this important aspect of disability to centre stage says Jeeja.

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Device within reach

Avaz is a user-friendly Augmentative and Alternative Communication (AAC) app for the iPad that allows people with Complex Communication Needs to communicate their thoughts and feelings through the use of pictures, text and voice. The settings help personalize the app and contains built-in vocabulary in 7 languages - English, Tamil, Hindi, Telugu, Kannada, Malayalam and Marathi. Avaz received international recognition,(National Award in 2010, featured in a TED talk, listed on MIT's Top 35 Innovations). Avaz has been customizd in several International languages, to reach more children and adults across the world.

We faced several challenges while trying to market the app in India - this includes low awareness of AAC solutions for non-verbal children, low priority given for communication, lack of sufficient number of trained SLPs, lack of funds for schools, unaffordability by low income families etc. The Tamil Nadu Government's pioneering initiative of free distribution of Avaz on iPads to TN schools helped overcome some of these challenges say the team. www.avazapp.com

New device on the Horizon

285 million people are estimated to be visually impaired worldwide: 39 million are blind and 246 million have low vision. Around 90% of the world's visually impaired live in low-income settings. Also, 2 out of 10 people suffer from some sort of dyslexia .Only 5% of the blind have received any kind of education and most are unfamiliar with braille. Braille books and printers are not readily available.

There comes a need for a device which would allow blind and dyslexic people to read printed books like normal people. This wearable product's name is AAMI-Advanced Acoustic Multimodal Interface, designed and developed at HACKLAB, Bangalore. The device which is a personal reading assistant not only converts text directly to speech but also identifies the printed text and reads it out we scroll on the line. The product is worn on the index finger ,its powerful camera working with software reads every word .There is built in feature to translate and identify the meaning of each word in the text. The device also helps small kids (learning to read a story book) and tourists (as a translator).

The biggest challenge for us right now is to get the information across to the end-users that we have developed a reading device for them. We are planning to launch a crowd funding campaign to raise funds says Vikram, founder, Hacklab. www.aami.co

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A Free App !!!

Jellow Communicator ,developed by the IDC School of Design at Indian Institute of Technology Bombay (IIT-B) ,is a free app that uses icons for communication by children with speech difficulties. Jellow has a completely novel, visually appealing and easy-to-learn interface .The unique expressive side-buttons aim at expanding the language repertoire of users. In addition, the 'keyboard' button can be used to speak out custom-typed sentences using the text-to-speech

The app is currently available in English and Hindi Jellow is continuously undergoing development; therefore any feedback and suggestions for improvement are appreciated say the team. jellow Communicator is available free of cost and can be downloaded from Google Play using the link- https://play.google.com/store/apps/details?id=com.dsource.idc.jellow.

New & Smart Ideas

1. In iOS 10 there is a new accessibility feature called Magnifier that lets you use the camera as a magnifying glass with a custom UI.

2.Eye Play the Piano is a system that allows a person to play the piano without the use of the hands or arms. An eye-tracking device mounts on the player's head and allows them to select keys to play using eyesight, blinking and head movements https://themighty.com/2015/01/10-inventions-

Inclusion event of the month--

As a part of Madras week celebrations Connect Special conducted Walk The Talk -tracing inclusion in Chennai.The history dating back to 17th century was displayed in a pictorial form and the talk was led by Mrs. Poonam Natarajan,Ex Chairperson ,National Trust Of India.The inclusive Chirodance by Stdio 5 preceeded the event.

Your comments , suggestions are valuable , so are your subscriptions.

Mail us at botta.bhavna@gmail.com

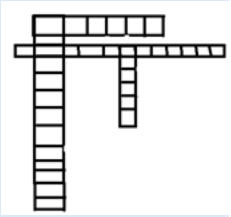
www.connectspecial.com

Cross connect --

Across

1. developmental disability affecting communication & social interaction

2, A change in how a student accesses and demonstrates learning, but it does not substantially change the instructional content.



Down

1 .A barrier free environment that allows maximum participation by individuals with disabilities.

2 .Poor sense of balance and lack of coordination of voluntary muscles.