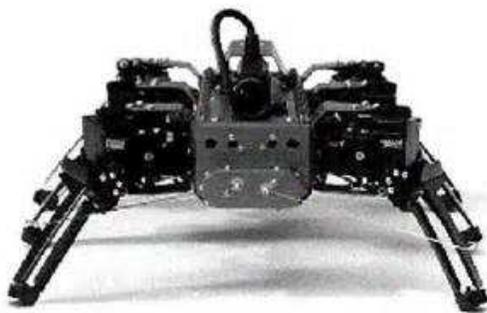


# **Promise for ALL: Wearables, 3D Printing, and Robotics**



**Design for All Institute of India**

April 2015

Guest Editor: Debra Ruh

# Contributors

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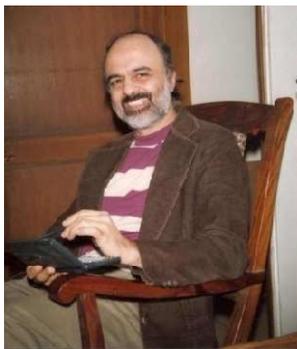
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# Chairman's Desk

## Dr. Sunil Bhatia



How human life function is a mystery and what makes it create something new out of nothing is a deeper mystery. How does an idea strike to one particular human mind seemingly out of the blue is a greater mystery. Why does a noble idea strike one individual making them special and not strike their fellowman and compel to live deprive is riddle. What does it make us to live as long possible and other side we intend to do well for others?

It is my personal experience that our life foundation is about regrets and denials. Regrets make us repent and ponder why we behaved in a certain way that was not the demand of time. That makes someone special and other deprived. Denials are internal and these are varied with individuals' perception and thus forms the unique pattern of man's character .Denials are external and these also play significant role in shaping our thought process.

A child was suffering with a contagious disease and his life was limited. The medical practitioner declared with his limited knowledge that the child's illness could also prove fatal to those taking care of the child. The medical practitioner suggested that it might be better for family to abandon the child and allow him to live as long he could on his own. Medical practitioners abandoned that child to the mercy of divine power but the mother refused to entertain this idea. She continued to care for the child with utmost care. She did not contract the disease and the child grew up and lived happily. What made the mother not abandon the suffering child? It appears many cultures in primitive times did not encourage abandon the child or person who was born unfit or disabled. My observation about woman the way she cares for their infant even situations where to protect her infants may risk her life does not support the popular theory that challenged person was abandoned in the past by our primitive people.

The mother designed a way to care for the child by carrying the child on her back or on her shoulder or even invented the design to hold the child by trying with long clothes around her waist? When she touched her child, it expressed

her affection and when child was breastfeeding she enjoyed those moments. Scolding is an act which shows her concernment for safety of the child. Do these evidences show us that primitive people never encouraged a mother to abandon an unfit child or band member? Rural woman still carry heavy load on her head for transportation and they provide support to her child by giving them her hand while walking and majority of time without supporting with her hand she walks effortlessly, comfortably and with ease. These practices are primitive but it is sign of love for others and it was the driving force that attracts to protect the love on at any cost.

It is the human character that parents take care of a child until they can perform duties independently. There is emotional bonding that takes place and allows another person to save the life of a person with challenges. It is the divine feeling to save the troubled person. In modern time I have witnessed people help another person sometimes at the risk of own life. We have inherited this trait of 'protecting' from our ancestors. We would like to progress that spirit is still intact in us but our minds are engraved with protection for others and it surfaces when crises are about to engulf the fellow person.

I have witnessed this during a huge fire or earthquake and other natural or manmade crises people rescuing other people despite danger to them. People perform great feats of strength to save the person in distress. We must explore how our ancient people took care of people with challenges and disabilities. What tools were used to safe guard the person with disabilities and challenges? I believe that the theory of abandoning the unfit was not in primitive peoples mind, it is product of our modern urban thought where meanness is central idea.

We did not learn this practice from our ancestors. Our primitive people were not inhuman and they never mutely followed other animals around who did not care for their fellow animals or victims. They might have attempted to rescue either by expressing extreme anger and gesture by using their body parts in such way that it could instill fear amongst attackers or they even threw stones to keep attackers at bay or gradually migrated to devised movement of sticks in such a way that could generate fear or by hitting from safer distance. They might have designed barbed fencing to prevent attackers or used caves and then entrance were blocked with heavy stones to avoid attackers or many other possibilities like dragging the troubled person to safer place or carrying people that were unable to walk on their backs. They used these tools for self-defense or to protect others. Basic human material is the same today as it

was back in primitive times. However, we have evolved, educated ourselves with knowledge layers that have given us new dimensions in human relations.

For example, the design of shoe was an attempt to lower the limitations for possibility of running away as fast they could to safer places or for carrying challenged person by tying on log for transportation and we call it “sling litter”. In modern time it helped in designing manual carriage as a palanquin or sedan chair in the attempt to save the lives of others. As our technologies improved, we created the automobile ambulance to airlift a patient.

The greatest revolution occurred when primitive person invented a wheel and with that transportation got a whole new meaning. Before invention of wheel they had to depend on river water by designing raft or boat or allow the tied papaya stems to float. Air transportation was missing but the use of air in their design was present. They used a boat that could move with the pressure of wind. It was the discovery of fire that had given wings to their ideas for flying by using fire for inflating balloon as transport means. It was not readily available transport means at the time of emergency that’s why this could not get that position in human history what others mean acquired. It is still use for leisure nothing beyond. There is sufficient evidence that primitive people never followed the practice of abandoning their members with disabilities. Instead history shows us that they were true fighters for saving the lives of others. When someone died they felt a heavy heart and performed last rites very meticulously. This alone shows their concern for safety of others. They also learned many lesson out of their failures so they did not make the same mistakes in the future. They strive on failures.

Denial is further classified as external but natural. It is experienced by all irrespective of the fact of able or challenged say climbing steep mountains or crossing the river that had strong currents or someone born with some physical or mental challenged and they failed to perform what we expected from normal human. It is experienced by all in our life time irrespective of able or challenged. Usain Bolt is the fastest man on this earth and he is considered most able person but he also feels challenged when we ask him to run ultra-marathon. ‘Feeling of challenge is circumstantial and mostly it due to limited physical strength and sometime it is mental block and every one experiences in one or many occasions in their lives.’

Design of shoe evolved to reduce challenges of denials experienced by everyone because of rough terrains. It helped in tackling tough situations for walker and allowed them reaching safer places without hurting themselves. Before the design of shoes, it was quite likely when person failed to climb the

tree for getting out of reach of attacking animal. His fellowmen who were at safe distance extended their arm to pull the troubled person was the first tool man invented to save others.

Sound was also used to alert everyone of danger for safety of others or degree of pitch and tone was able to distinguish from distress call for help or warning. In modern time our ambulance or fire brigade are designed to meet the emergency challenges has sound of distress that indicates for clear passage to these vehicles. They might have used the whispering in ear for not to give their presence to animals. Their walking movement was conveying message to others about intensity of trouble. Slow forward movement was the indication for prey and backward slow not to be attacked by others or fast running was sign that chased by attacking animal. After man discovery of fire it revolutionized the human thought and allowed them to protect people and reduce drastically killing by animals because animals feared the fire and its heat and could not devised the management of fire what man learnt. Subsequently fire and its application made the man supreme over other living beings.

Internal denial of an individual is product of our lifestyle that works as denial for someone. It is our mind set that does not permit to allow others to perform. Sometime we are engrossed in such a level in objectives that we ignore others or to achieve our functional objective we failed to include others who can perform but disturbing element.

In the early periods of human life, our ancestors mostly faced the nature created problems and to overcome they were dependent on physical strength and mental capabilities was supporting tool. It is the reverse in modern time where mental capability has overtaken the physical strength in hierarchy of progress. They faced physically challenged person was problem but mental challenged was not issue. Our modern society is facing both physical and mental problem. That overcoming the man-made denials we controlled by some extent by concept of universal design/ Design for All.

It still needs lot of improvements and our technologies are assisting in overcoming addressing those problems and it is my firm belief that modern technologies can only address these problems.

In one seminar people were discussing the role of assistive technology and how it can help mankind. I spoke and agree with distinguished speakers about role of machines but my personal opinion differed since I believe best

assistive technologies allow a person to tap into their human potential. We should instill such values that he/she should feel great in assisting others. If technologies are available and make his assistance and life better than we should all welcome these products! Best assistive technology is care by human and it has no substitute. Latest mantra of progress in modern time is inclusive growth and those technologies or application are supporting are bound to progress leap and bound and others will stick to traditional progress.

Discover how to build roads was another great step toward journey of progress of man began from first designing natural earth tracks by using same route repetitively either by men or domesticated animals like ox, donkeys, or horses and used water for means by using inflated animals skin as balloon or reed raft by tying together bundles of papyrus plants or designing boats to modern time using air by designing airplane has witnessed many ups and downs. Modern technologies are making life less taxing compared to living simply from our wisdom, values and physical strength. Earlier people that were blind struggling hard for moving and by spreading hands he was trying to locate the troubled areas then he designs the cane that touches the ground to find the uneven surface that could be reason of trip. As he walked he kept moving cane in air for locating any hurdles on his way. Then smart E-cane with sensor was developed that is helping the blind to move with less trouble. Now scientists are working in designing the wearable glasses that will help the visually impaired to see and move with minimum pain and struggle.

In modern time technologies are improving but human touch is diminishing. It is my personal feeling that with the application of technologies that should assist to make our lives better is changing us to machine dependent. In modern India this practiced was prevailing but with introduction of modern technologies it is diminishing and it will very shortly extinct from society that challenged person was family responsibility and they were taking care and he/she enjoys the same honor according to position in family hierarchy.

We have not witnessed the institutionalized support and it is its character to take care it demands machines. Many institutions are coming forward for taking the responsibilities but still majority of challenged person are looked after by family members.

We are grateful to Mrs. Debra Ruh for making our efforts worth and she justified her role as guest editor by inviting and covering the role of technologies for making life better. Once again thanks for editing this special issue.

With regards,

*Dr. Sunil Bhatia*

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# Forthcoming Issues

## May 2015 Vol-10 No-5

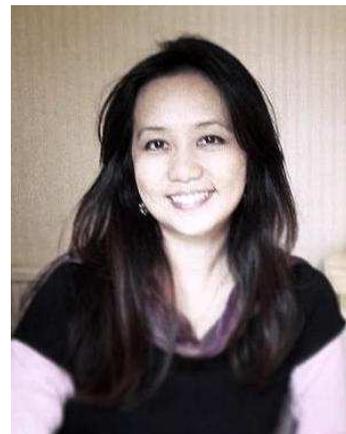
afUD ( French Association of Universal Design) President Jean Rene Moussu has accepted our invitation for Guest Editor for our special issue. He is enthusiastic to popularize the concept of Universal Design in his country because he feels it is social responsibility of every citizen of the world to make the world accessible to all. He is inspired by Ron Mace and believes his word his philosophy



\*The UD is a collective thought. Think different !UD\*think! The UD\* is not an evolution, it is a revolution.

## June 2015 Vol-10 No-7

Dr. Antika Sawadsri is a full-time lecturer in the School of Interior-Architecture at King Mongkut's Institute of Technology Ladkrabang (KMITL). She received a PhD from the School of Architecture, Planning and Landscape, Newcastle University, UK. She has qualifications on interior Architecture and Planning and is a specialist in an interrelationship between social construction of 'disability' and the designed environment. Her academic interest focuses on inclusiveness in the process of creating living spaces. Recently,



Antika has taken parts in both the State's agencies and non-government's movement in mobilising equal access to the buildings and city of disabled and ageing groups in Thailand.

## July 2015 Vol-10 No-7

Humaniteam is a design laboratory which focuses on Health and Disability-related issues. We believe that the practice of a sport is conducive to enhancing the skills of people in disability situation in their everyday life environment.

Design acts as a bridge between each pole of expertise, thereby creating a common language and translating it into objects or services. HUMANITEAM is really passionate by design for All. Many projects of UD are ongoing. Ms Claire Fauchille will be the Guest Editor.



## August 2015 Vol-10 No-8

Dr. Bijaya K. Shrestha received Doctoral in Urban Engineering from the University of Tokyo, Japan (1995-'98), Master in Urban Design from the University of Hong Kong, Hong Kong (1993-'95) and Bachelor in Architecture from the University of Roorkee (now Indian Institute of Technology), India (1983-'88). Dr.

Shrestha has got working experiences of more than two decades. He had already served to the Department of Housing and Urban Development, Ministry of Housing and Physical

Planning, Government of Nepal, United Nations Centre for Regional Development (UNCRD), Japan and various architectural schools in Nepal before taking the present job at Town Development Fund (TDF).



He has initiated a new master program in Urban Design and Conservation at Khwopa Engineering College, Purbanchal University, where he served two years as Head of Post-graduate Department of Urban Design and Conservation.

Dr. Shrestha is the recipient of numerous gold medals for his excellent academic performance and decorated by 'Calcutta Convention National Award 2006' by Indian Society for Technical Education for his best paper at the 35<sup>th</sup> ISTE Annual convention and National Seminar on Disaster – Prediction, Prevention and Management. He is also

member of numerous professional bodies and life member of various alumni associations. He has already contributed more than five dozen of papers, published in various forms: book chapter, international journals, conference proceedings, local magazines and journals including in local newspapers. Moreover, he has been invited in numerous international conferences for presentation of his research findings. Finally, his field of expertise includes sustainable urban development, disaster management, and housing, local government capacity building and development control. He will focus on universal design concept on Nepal.

## **September 2015 Vol-10 No-9**

Samanta Bullock is residing in United Kingdom and she is Wheelchair Model, Tennis Player and Public Speaker, Self Employed will be guest editor



## **October 2015 Vol-10 No-10**

Prof Ravi and Dr Ajanta Senof IIT Mumbai, India will be the Guest Editor and theme of the special issue is Design and Children.



## **November 2015 Vol-10 No-11**

Ewa Golebiowska, Poland is the president of EIDD Design For All and she has accepted our invitation of Guest Editor and she will invite the authors from European countries for special issue.



# Guest Editor's Desk

Debra Ruh



When Dr. Sunil Bhatia asked me to be the guest editor I was delighted and honored to manage the April 2015 Issue of DESIGN FOR ALL. I selected the authors carefully to assure that we got a global perspective about Wearables, 3D Printing, Robotics, Driverless Cars, Smart Cities and how they can positively impact everyone including persons with disabilities. This issue focuses on the Promise for ALL: Wearables, 3D Printing, and Robotics.

I was mesmerized by technology and entrepreneurs from almost the beginning of my life. My father owned a small telecommunications firm and after a few years went to work for AT&T. He managed the AT&T computers and worked the night shift. The computer system he managed took up several city blocks in Jacksonville, Florida. I imagine that we have microcomputers that have more power than that entire computer had at that time. My Dad would let us go to work with him from time to time and we would wonder around the gigantic computer and watch the blinking lights.

I became a telecommunication analyst and programmer for the banking industry. In the mid 90's people started talking about the internet. I was fascinated and wanted to learn as much about it as possible. I applied for a position in the bank in the late 90's to create our firms website. The bank was afraid to take a chance on me since I did not know much about the internet. I hated being denied an opportunity and vowed to learn as much as possible about the internet.

Along the way, my husband and I had two amazing children. Our oldest daughter, Sara Ruh was born with Down syndrome. Our youngest a son, Kevin Ruh is one of the featured authors in this issue. When Sara was born with Down syndrome we were shocked and nervous about her future. The doctors told us she would probably never walk or talk. They had very low expectations for her life.

My husband and I decided to not listen to the experts. Instead we gave her all the same learning and growth opportunities that we provided her brother.



*Sara and Kevin Ruh*

As Sara and Kevin were entering middle school in Virginia, Sara was not reading. We met with a team of experts to see how we could help Sara. One expert suggested that she could bring shopping carts in from the mall. My husband and I were shocked at the low expectations.

In the early 2000's my desire to make a difference, focus on the latest technology, and our desire to help our daughter find her potential all started coming together. In 2001, I started my own technology firm called TecAccess. TecAccess focused on internet, communication and technology (ICT) accessibility. Our employees were technologists with disabilities and we were a For Profit firm.

Corporate America really embraced this new firm. I had great successes and some glorious failures. I built TecAccess into a profitable, multi-million dollar in sales company. Plus maintaining an employee based of 70 to 80% employees with disabilities. Most of our team had disabilities including quadriplegia, paraplegia, traumatic brain injury (TBI), autism, down syndrome, blind, visually impaired, hearing impaired, cerebral palsy (CP), MS, MD and other disabilities.

Along the way, I also made a ton of mistakes and was surprised at how hard it was to keep my company thriving. I laid awake at night many times worrying about cash flow and payroll. It was an exciting and scary time in our lives.

In 2011, I merged TecAccess with SSB BART Group and became their Chief Marketing Officer. I stayed with SSB for 18 months and then the entrepreneurial itch took over again. I left SSB and created Ruh Global Communications in 2013.

Ruh Global Communications focuses on digital marketing, social media, policies from the ICT Accessibility and Disability Inclusion perspective. I continue to be fascinated with ICT and spellbound by social media. I love the power that social media has to do social-good. Follow me on most social media channels at debraruh.

As all the internet, social media and technology converge more inclusion opportunities open up to allow individuals with disabilities to more fully participate in every aspect of society. As ICT expands and improves it benefits all of society. It is also interesting to note that technology has been created for hundreds of years for individuals with disabilities that benefit the rest of society.

Let's take a look at some of the inventions that have changed the world for individuals with disabilities and the rest of society.

**Accessible websites** allow persons with disabilities to access, interact and manage content from the web. An accessible website also produces positive Search Engine Optimization (SEO) rankings on the internet. Companies pay a lot of money to get better SEO rankings – who knew that when you alt-tag or add text to a graphic on your website it improves your SEO rankings.

**Captioning** makes audio and audiovisual material accessible and provides a critical link to communication, news, weather forecasts, emergency information, education, and entertainment for individuals that are deaf or hard of hearing. Captioning is the process of converting the audio content of a broadcast or other productions into text and displaying the text on a screen, monitor, or other visual display systems. Captioning is not always about the text or words but also includes sound effects, speaker identification, and music descriptions. It is critical that captions be synchronized and appear at approximately the same time as the audio is delivered.

In today's world, captioning is seen everywhere including airports, sports bars, fast food restaurants, and gyms to only name a few. Captioning can be used by individuals with limited language proficiency to improve comprehension and fluency. Captions also help to improve the literacy skills of children and adults alike. Captioning has improved the lives for people all over the world. The first program was captioned on American Television on March 16, 1980 by use of the Telecaption Adaptor, a decoding unit that could be connected to a TV set. According to the National Captioning Institute, the ABC Sunday Night Movie; Semi-Tough, the Disney Feature; Son of Flubber on NBC, and Masterpiece Theatre on PBS were the first programs seen with captions that Sunday night.

**Curb Cuts** were designed for persons in wheelchairs. Many other people immediately benefitted from the curb cuts including mothers with baby strollers, shopping carts, people that had problems with stairs, skateboarders, bicyclists, rolling computer bags, rolling, luggage and anyone using wheels.

In a recent article by Fast Company they show how IBM turned billboards into function ramps. IBM's People for Smarter Cities Project, by Ogilvy & Mather France, incorporated useful functions into their billboards. One sign actually folds 90 degrees over concrete steps, providing a useful ramp for persons in wheelchairs, people with rolling laptop bags, bikers and anyone else using products with wheels. This solution and other portable wheelchair ramps can be used in developing countries that do not have curb cuts or sidewalks.



*IBM's billboards double as wheelchair ramp*

**Detectors, Alarms, and Sensors** were designed as alerts for persons that are deaf, hard of hearing or for persons with vision loss. Today we use also use these technologies in phone systems, door bells, hotels to help the elderly or people with Alzheimer's, Autism, Dementia or intellectual disabilities be notified of an alarm, ringing phone or doorbell or many types of sensors.

Now these technologies are also being used in Smart Houses, Smart Phones, Smart Cars, and by the military. Sometimes a person cannot hear the phone ring because they are in a noisy call center or airport. Or it is imperative that we get a message to an aid worker or soldier in the field but we do not want to accidentally disclose their location. These technologies are being used in so many innovative ways to help society it is hard to mention them all.

**Google Glass** holds a lot of promise for persons with disabilities. "Google Glass has a ton of potential to transform lives for people with disabilities," says Mark Perriello, President and CEO of the [American Association for People with Disabilities](#). "Not everyone has had the good fortune to experience Google Glass at this point. But for those who have, the technology features a number of things that make it really user-friendly for people with disabilities -- voice-activated technology, the potential for speech-to-text, face recognition -- all of which can help people with a variety of disabilities."



*Google Glass*

**Kitchen Gadgets:** The founder of OXO Kitchen tools created a line of ergonomically designed tools for his wife with arthritis. It was such a big hit that they cannot keep them on the shelves.



*OXO Garlic Press*

**Location Services:** Created to help locate and keep people with Autism, Down syndrome, Dementia, Alzheimer and intellectual disabilities safe. These GPS location tools are now used in cars, smartphones, theme parks, cruises, conference centers, and museums. They are also used by emergency personnel to locate missing or lost people.

**Prosthesis** developers now work closely with the military to improve the devices to help PwD but also help military. The Exoskeleton was created to help people with spinal cord injuries walk but have major military and corporate benefits. For example, an EXO suit can allow a person to lift thousands of pounds instead of using larger machinery.

[This Computerized Exoskeleton Could Help Millions of People Walk Again.](#) ReWalk is a wearable robotic exoskeleton that provides powered hip and knee motion allowing individuals with Spinal Cord Injury walk.



Caption: Gene Laureano walks with the aid of ExoSkelton made by ReWalk

**Self-Driving Cars:** Google Driverless Cars are so smart they can drive themselves. Smart Cars of the future will talk to the driver, other cars on the highway, sensors in the road, traffic lights and other sensors and make driving safer for everyone. Cars can now parallel park themselves sensing curbs, cars and other obstacles and objects like pedestrians, bikes, and pets.



Caption: **Self-driving cars** now need a permit in California, [www.dailyrepublic.com](http://www.dailyrepublic.com)

**Speech Recognition** is another excellent example. It is now embedded in many aspects of our world including our cars, phones, computers, tablets, homes, and many other devices. Many businesses today offer voice-activated service options from customer service call centers to technical support.

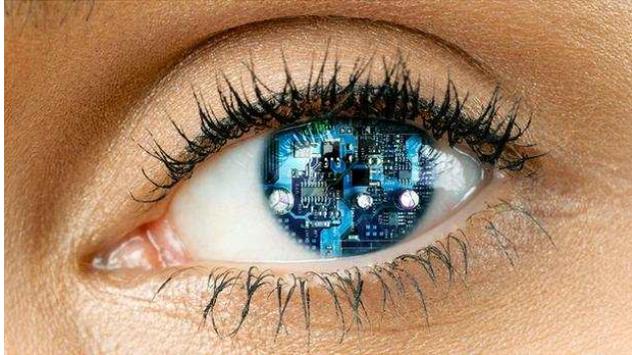
Speech recognition also helps make driving safer by enabling hands-free dialing for mobile phone users, voice-activated navigation systems, and voice control and search capabilities for in-car radios. The effectiveness of speech recognition today comes out of decades of research by hundreds of scientists and engineers working on statistics, linguistics, semantics, predictive algorithms and audio processing.



Caption: *IBM Pioneering Speech Recognition*

The good news is that science and medical technology advancements are helping people with disabilities see, hear and walk again. In a recent BBC article *Cyborgs: The truth about human augmentation reveals exciting technology and scientific advances that are augmenting people's lives*. Exciting times for people with disabilities assuming you have the means to pay for these life-changing advancements.

These scientific and medical breakthroughs are changing people's lives. The problem is that these advancements are out of reach for millions of people. The good news is that we have the funding, knowledge, and the social drive to eliminate many of the barriers.



### *Bionic Eye*

The theme at this year's United Nations International Day of Persons with Disabilities 2014 held on Dec 3, 2014 was "Sustainable Development: The Promise of Technology". The promise of technology has already proven very valuable to the world. Now we need to work together to be sure everyone has full access. Bottom-line AT is adding great benefit to the world both for persons with disabilities and to society as a whole.

I believe you will enjoy the articles that our global authors have prepared on this topic. We have authors featured from all over the world including Qatar, India, Ireland, England and the United States. Several of our authors also have disabilities including individuals that are blind, dyslexia and other types of disabilities.

To learn more about my work please visit [www.RuhGlobal.com](http://www.RuhGlobal.com) or follow me on Twitter, Facebook, Linked-In, G+, Pinterest, Instagram, SKYPE, KLOUT and WhatsApp. My social media handle is debraruh on all channels.

# Articles

## Wearable Technology – Unpacking the Hype: By David Banes



### **3 Months with a smartwatch and counting**

For the past three months, I've been living with wearable technology. That sounds a lot more impressive than it really is. More simply I have been given a galaxy gear fit, a "smartwatch" and exploring how I can use it, and thinking about how the technology might be used to support the needs of people with a disability. In order to think about potential we need to understand a little about the technology itself. The gear fit (like most wearables) is an extension of your phone or tablet, it syncs up with those devices to send and receive data. In my case my Galaxy s5 connects to my wearable via Bluetooth. Herein lies our first issue, this technology only works with Samsung devices.

This Bluetooth device acts as part of the Samsung ecosystem, without a Samsung Phone or tablet it has very limited value. Prior to being given the Galaxy gear I had owned an iPhone5, so the new technology required that I invested in another phone running android and more specifically manufactured by Samsung.

The device has several core functions around which applications can be built. Fundamentally these are

- Notifications (tactile and visual)
- Location Based Services
- Wearer Monitoring for Health

All three of these core functions have potential for people with a disability, and some have immediate impact.

Using the Gear Fit as a basis for notifications was my starting point with this technology, and the first notification on my wrist was the time. Let's not forget that being able to tell the time is a useful function of this technology, it also allowed me to easily switch between time zones to plan meetings and calls without needing to use my computer or phone. Useful, if not exactly life changing. More useful was the arrival of message notifications.

My watch synced to the messaging apps on my phone giving a vibrating and visual alert that a message had been received, email, instant messaging etc. all arrive quickly and allowed me to discretely check if a message was important or required my attention.

This ease of access to messages does have value for many people, for those with limited movements it allows for a quick scan of information without needing to retrieve a phone or tablet and can ensure that important information arrives on demand. One obvious use of this technology could be to remind people of meetings or events they should attend, or to receive more tailored reminders such as times for medication or treatments.

Notifications can potentially be received from a very wide range of applications. A gentle vibrating alarm might help those of us who hate all alarm clocks, but other opportunities such as tactile and visual notifications of sounds could have great benefits for people with hearing loss.

A system that allowed your phone to "hear" and identify sound events in your environment and send a notification instantly would be a significant contribution to personal independence and safety of people with hearing loss. Such technologies could be owned by the individual or could be provided for visitors or guests to locations to notify of fire alarms or could be linked to location based services.

Location based services are the second area of interest to users. The Smartwatch uses your phone as a GPS receiver allowing location services to work very well. By linking to GPS software on your phone and using those notifications we have a way of communicating directions and wayfinding onto your wrist rather than through constant checking of a phone screen. In a city this feels a lot safer than carrying your phone in public as you walk.

There is clearly a great deal more that could be done using the technology to inform users of location aware information. One obvious application would lie in notifications of personal proximity of people you are seeking to meet, it would be relatively easy for such notifications to be received and might be useful for home security to let a person with a disability know that a caregiver or friend is arriving nearby and they can expect a knock on their door without the need to receive a specific message.

Access to information then is at the heart of the wearable technology. This is very much evident in the use of such technologies to monitor health.

In this case the gear fit acts both as an extension of your mobile phone, and importantly as a health monitor transmitting data to your phone for analysis.

Sleep patterns, heart rate and mobility are all tracked allowing you to review your patterns and make changes in lifestyle that might improve health. Apps on your phone can prove useful for issuing prompts for those changes, these could range from prompts for your medication or change in position (great for PC users with a risk of RSI) to more substantial prompts such as heart rate alarms etc.

At the end of my three months I'm convinced that this technology has value, but the realization of that value may take time to come to fruition. The hardware is sound and is available at a reasonable price point, but needs further software and apps to be developed and distributed to exploit the potential of the hardware.

Herein lies the challenge, this device is very much part of Samsung's ecosystem, it only works with Samsung devices, in choosing a wearable for a person with a disability we need not only to consider its form and function, but the extent to which it has a supportive app development environment to work to its full potential and the extent we want to lock our hardware choices into a single supplier.

It is possible for such technologies to work across platforms, many of the fitness bands, the pebble smartwatch and even my Bluetooth enabled toothbrush work across both apple and android phones and tablets. If I was purchasing a device for myself, cross platform compatibility would be very high on my list of criteria for purchase.

# The Wearable Web –Benefit or Barrier?

## By Gerry Ellis



My TV has touch sensitive controls instead of physical buttons. Being blind, I cannot independently change the TV station directly. However, with the remote control I have no problem. My vision impairment remains the same, but I am more disabled in one case than the other because the design of the TV makes it inaccessible to me.

This distinction between impairment and disability is often not understood, but it is vital for developing an approach to improving our inclusion in everyday life. Will wearable devices improve or worsen the situation for persons with disabilities? Initiatives such as Global Public Inclusive Infrastructure (1) advocate for our inclusion, but we must also act ourselves whenever and wherever the opportunity arises.

Although smart glasses and watches are becoming commonplace, wearable technology is still in its infancy. Facebook CEO Mark Zuckerberg states in his 3, 5 and 10-year plan (2) that he believes that virtual and augmented reality will be the next leap forward in computing, but not for at least 5 more years.

Regarding their own virtual reality headset, he says “It’s still early for Oculus”. Will wearable devices envisaged by Zuckerberg and others allow captions and sign language to be displayed? Will they accommodate audio description? Will design limitations in their user interfaces exclude persons with disabilities? We must engage with industry to ensure that our needs are met.

Health is a fertile landscape for wearable technology. Infrequent physical examinations can be replaced by round the clock and long-term monitoring and recording of biometric data which can then be transmitted.

The elimination of the need to visit a doctor or hospital is particularly beneficial for those living in large, rural areas. Early versions of intelligent exoskeletons and bionic limbs are already in use.

The "hitoe", pronounced as Hee-toe-ay was developed by NTT R&D and Toray, a fibre and textile giant in Japan (3) (4) (5). The standard upon which it is based, Continua Health Alliance [6], is now part of ITU-T standards, as H.810 series. This demonstrates why we must influence international standards to ensure that our needs are included.

Persons with hearing impairments have worn hearing aids for decades. Gradual improvements have meant that early analogue devices that were connected by a wire to a separate component have been replaced by digital ones that fit inside the user's ear. However, improved functionality is offset by increased complexity. In those early days around 6 individual settings could be customized using a screwdriver, whereas 20 or more can now be altered wirelessly. We must ensure that complexity does not force us to be dependent on others to customize our wearable devices.

A further threat is looming in this area. Short range devices (SRDs) include hearing aids, cochlear ear implants, mobile medical monitoring devices and some Bluetooth connections. Many of these use the 2.3 to 2.4 GHz spectrum bands, but telecommunications regulators are now making parts of these bands available to mobile phone operators. This has the potential of causing interference with the SRDs. We must influence national and international telecommunications regulators to ensure that dedicated band width is protected for SRDs.

In a fast-approaching future many everyday devices such as household appliances will be directly connected to the Internet. Sensors will trigger interactions between these devices and between the devices and the likes of wearable technology.

Imagine a scenario where a sensor in the driveway detects the house owner approaching and causes the kettle to be filled and switched on. This is different from today where one sends a text or an instruction using a mobile phone to a control unit that in turn controls, for instance, when to turn on the heating. We must influence the manufacturers of assistive, alternative and augmentative devices to ensure that they can be connected to the Internet using standardized protocols. This will allow them to interact wirelessly with wearable technology or to take the place of wearable technology to interact with the likes of interconnected household devices.

Social Computing, whereby places, points of interest and objects are aware of each other and are contextually aware of us and our social interactions, is fast developing. Beacons can interact with wearable technology to provide information to the wearer that is contextually significant. An example that benefits persons with vision impairments is the "Cities Unlocked" system (7). IT combines a standard headset, a mobile phone and strategically placed beacons. The phone does not have to be held in the hand as the information is passed to the headset wirelessly.

The system allows the wearer to navigate safely, hear information on commercial or other outlets as they approach them, they can hear the transport timetable information and more. It is still a pilot, but it is an excellent example of how much potential exists.

The UN Convention on the Rights of Persons with Disabilities (8) has been ratified by 150 countries and the European Union as a distinct entity. It promotes accessibility in the areas of (inter alia) technology, education, transport and general social inclusion. These are all areas where wearable technology is likely to flourish. It promotes the use of Universal Design, which stresses the importance of consulting with stakeholders, including persons with disabilities, at the early stage of design and development. This helps to avoid the high extra cost of retrofitting accessibility. Promoting the use of Universal Design in the development of wearable technology is highly desirable.

Wearable technology is already with us, but the next decade will see an explosion of applications that we can barely imagine right now. As the new Microsoft CEO Satya Nadella told his staff, "We live in a mobile-first, cloud-first world" (9). Persons with disabilities can benefit disproportionately if our needs are accommodated, but we will have numerous extra social and economic barriers placed in our way if not.

Demonstrating the economic benefits of including around 15% of society that have disabilities plays its part, but so also must standards, industrial attitudes and legislative instruments. We must ensure that the gaps between our impairments, the disabilities that are forced upon us by inaccessible products and services and our human potential all decrease. Wearable will be wondrous; it is up to each of us to ensure that it is accessible and wondrous!

(1) [www.gpii.org](http://www.gpii.org)

(2) <http://uk.businessinsider.com/zuckerbergs-3-5-and-10-year-facebook-plan-2014-10?r=US>

(3) [http://www.fibre2fashion.com/news/new-products-news/newsdetails.aspx?news\\_id=159289](http://www.fibre2fashion.com/news/new-products-news/newsdetails.aspx?news_id=159289)

(4) <http://www.engadget.com/2014/01/30/ntt-docomo-toray-smart-cloth/>

(5) <http://www.wearabletechworld.com/topics/wearable-tech/articles/368942-ntt-toray-industries-collaborate-smart-clothing-technology.htm>

(6) [http://en.wikipedia.org/wiki/Continua\\_Health\\_Alliance](http://en.wikipedia.org/wiki/Continua_Health_Alliance)

(7) <https://www.youtube.com/watch?v=949D1lhKKYs>

(8) <http://www.un.org/disabilities/convention/conventionfull.shtml>

(9) <http://news.microsoft.com/ceo/bold-ambition/index.html>

# Wearable Technologies: Inspiration for Inclusive Design:By Joy E. Kniskern, M.Ed., CRC and Christopher M. Lee, Ph.D.



From the perspective of the 21<sup>st</sup> Century, it seems hard to remember a time when we were not intimate with our computers – to hark back to the age before the PC, the Personal Computer. In the blink of a few decades, the computer has evolved from the expensive tool of corporations and governments to a portable accessory of every student and worker. And, mobile technology is quickly morphing from the smart phone to the wearable appendage – watches, jewelry, and medical monitors / advisors. Indeed, implantable chips are evolving in the laboratories of universities, hospitals, corporations and entrepreneurs.

Wearable technology has been around for 80,000 years. The Inuits carved whalebones with slits in the eyes for sunglasses and people have adorned themselves with jewelry for thousands of years. (Steve P. Brown, Intel Futurist at the 2014 London Wearable Technology Conference). The difference today is that wearable technology allows for people to interconnect with other people and with big data in ways never before imagined.

This article addresses the intersection of two trends: the tightly coupled human-information symbiosis that is mediated by technology; and the inclusion of people with disabilities as an inherent purpose of civilization.

We define the first trend as “wearable technologies” and the second as the impact of the United Nations’ Convention of the Rights of Person with Disabilities (CRPD). Not just the convention itself, but the legislation and global adoption of inclusive standards.

Let us examine the current facts, scenarios of use, emerging trends, and apparent implications for a more inclusive world.

Living, learning, working, playing and participating equally in society are the expectations of people with disabilities throughout the world. Humans are naturally endowed with a desire for engagement and inclusion: the presence of disabilities should not impose barriers that make the achievement of such impossible.

In 2006, when the [United Nations launched the Convention of the Rights of Person with Disabilities \(CRPD\)](#) global initiative, to promote, protect and ensure full human rights by all persons with disabilities, it not only acknowledged the importance of the cause, but took vital steps to address this worldwide issue.

The CRPD provides a roadmap for all nations, whether industrialized or developing, to include citizens with disabilities in society. By definition, this means that everyone should be able benefit from and contribute to the goods and services produced. Today, this is possible because new and emerging uses of technologies are erasing profound barriers that made significant, meaningful and consistent inclusion difficult, if not frequently impossible.

How big is the issue? An estimated 15% of the world’s population is living with a disability (about 1 billion people – World Health Organization, 2011), and this figure is escalating as the average life expectancy continues to rise in developed nations.

By 2016, more than 2 billion people will use smartphones worldwide. And by 2018, it is estimated that a third of the world’s population, or 2.56 billion people, will use smartphones according to [eMarketer](#). And, [Transparency Market Research](#) estimates that the market for assistive technology will grow to \$19.8 billion by 2019.

Driving this development is the ever-increasing demand for apps to inform our decisions and increase our productivity. Many software applications fit into the category of wearable technologies (WT), now ubiquitous, combining the portability and power of smartphones to augment everything we do. We can monitor and report health data to medical professionals, track the movements of our infants, the location of children and the activities of our elderly parents, input data using voice commands, and receive auditory input or vibrations for finding our way in airports, train stations, shopping malls or cities.

The potential WT brings to persons with disabilities extends far beyond just counting steps and calories. It opens doors to opportunities beyond imagination. And it blurs the line between “assistive technology” and mainstream technology.

Dragon Naturally Speaking (DNS) was originally developed for persons with disabilities who had no use of their hands. It set the stage for hands-free use of computers, smart phones and even home appliances.

Nowadays, technology has universal appeal in part because users can customize their preferences. For example, persons needing speech output can choose to select the voice of a man, a woman, or child and even certain accents.

Emerging WT takes customization a step further: it will be able to sense what we need. Imagine what it would be like to have gloves and socks that warm our feet to a normal body temperature in cold weather. This kind of technology could be linked to a smartphone app that could be turned on with a voice command, a gesture, or even an eye blink and would turn off automatically when sensors embedded in gloves or socks notify the smart phone that the foot or hand has reached a normal temperature. It could also be programmed to activate automatically. For persons who lack sensation due to spinal cord injuries, a smart glove or sock might help them cool off or warm to a normal body temperature.

Wearable technology (WT) can remind us to stay on task, filter distractions, authenticate our identity, help us to perceive that which we would otherwise would not notice such as objects we are unable to see, emotions we cannot perceive, names of unknown landmarks in the vicinity, or directions to help us get where we want to go. WT can also alert us to emergencies such as an infant's cry, the changes in a room's temperature, or the wandering of an elderly parent. With WT, we can easily regulate environmental controls such as the temperature of the room, the lights, and the appliances using a simple eye blink, a voice command, or a gesture.

For many people, technology is considered highly desirable, and so the adoption of devices that extend ones functional capabilities whether disabled or not, has created a niche that is sweeping the market and capturing the attention of app developers, large and small across health, education and global positioning navigation industries. Our need for WT of all kinds will drive market development to keep people healthier, safer, and more independent.

Let's explore how WT can augment the engagement of persons with disabilities in a variety of scenarios.

Anna uses Google Glass to email, make phone calls, take pictures, open her front door, and turn on the ceiling fan and the lights to her home. She also works remotely from her home by using her laptop and a remote robot, Walless, at her job. The robot allows her and her coworkers to communicate with each other virtually during staff meetings and training events. Through Walless, she gives customers tours of her office's assistive and wearable technology lab, where she can see and talk with them, and they can see and interact with her.

Rehabilitation specialists are researching how to make Google Glass more accessible to persons with disabilities with severe muscular atrophy like Muscular Dystrophy or ALS like Anna. Glass gives her some access through use of voice commands, but the combination of voice and simple gestures like the swipe of a hand, the blink of an eye or raise of an eyebrow, or a joystick used to power wheelchairs, would give her control to navigate menus more easily. Andy Lin, a technology specialist at the Center for Applied Rehabilitation Technology at Rancho Los Amigos is working on prototypes like this to give people with disabilities equal access to technology like Google Glass ([idigital Times](#)).

Unfortunately, implementing scenarios of use by Google Glass that can Anna and others like her will not come to fruition until Google can solve challenges that confront non-disabled users such as privacy issues associated with certain functions (e.g. video surveillance). Anna believes that the potential benefits for all seem limited only by the imagination of designers, developers, and end-users.

Hans who has low vision, uses a [MIMO](#) baby monitor and its smartphone app. The MIMO app tells him if the baby is sleeping or awake, his breathing pattern, skin temperature and when he rolls over. Hans uses the Zoom feature of his iPhone that enables him to use his phone and its apps including the MIMO. He can work at home and talk with customers with peace of mind, knowing that his baby is safe in a quiet nursery across the hallway.



MIMO, the Smart Nursery App

Mary uses an [Embrace+](#) smart notification bracelet and the Embrace+ app that gives tactile and visual input when Mary receives a call, text, social media notification, or a request to schedule a meeting on her phone's calendar. She wears a bracelet that vibrates and flashes patterns to represent the type of phone function triggering the bracelet. She can even select a color to represent different types of notifications. This WT was developed using Kickstarter funds.



Noah has non-specific learning disabilities, and his brother has autism. Both brothers have significant perceptual issues that create social barriers: they cannot determine when a person is sad, happy or angry. They are using a [Affectiva](#), an app developed out of MIT, that allows them to “read” a person’s facial features like frowns, smiles and smirks which is mapped to common emotions. The goal is to provide immediate feedback to help them learn to respond more appropriately to social situations.

Hermione faces a familiar problem of those who are blind: she can't see overhanging objects like tree branches. As reported in the [IEEE Journal of Biomedical and Health Informatics](#), The Aerial Object Detection app, developed in Spain, just might be the answer to this common experience of blind and visually impaired persons. It can recognize and alert a blind person to overhanging branches at head-level, something that neither guide dogs nor canes can do. The app uses both a telemeter to recognize indoor objects like a wall or an open cabinet and the phone's camera and 3-D vision of Google Glass scans the outdoors landscape for recognize for head-level obstacles. Beeps and vibrations alert users to obstacles within an appropriate timeframe. The app requires a 3-D mobile platform, which is a cause for concern because there are currently only two 3-D mobile platforms in existence.

Worldwide there are [39 million blind and 246 million persons living with low vision](#), and these figures are likely to increase as the global population ages, a fact which suggests that 3-D mobile platforms are, indeed, commercially viable.

Many people who are blind use Braille, and yet, the digital age where information can be electronically read threatens continuing use of Braille. One of the obstacles has been the length of time required to teach a person to read Braille.

Georgia Tech's Contextual Computing Group has pioneered a [wearable glove](#) that relies on passive haptic learning to play the piano or read Braille. The promise of this technology is that soon, blind persons could learn braille while listening to the television or traveling to school, minimizing the requirement for a live teacher and countless hours of practice.

Roberto does not require a hearing aid but uses [Soundhawk](#), an in-ear device that enhances his hearing by blocking ambient sounds in noisy environments. He is getting older and is using this device, which looks like a headband rather than a hearing aid to enhance his hearing. His aunt uses [Starkey's Halo hearing aids](#) whose volume can be adjusted to each environment using a Pebble Watch.

Rajeesh, who lost his vision to glaucoma when he was two-years old, uses his Smart Phone and a GPS navigation app embedded in his shoes developed by [Krispian Lawrence, CEO of Lechal](#), which means "take me there" in Hindi to find his way on the subway, in train stations, airports and museums. Apps like this, using GPS navigational technology in hands or gloves, are being developed around the world. [Another app](#) allows provides voice output to identify area landmarks, which helps with navigation and understanding new environments. He can use [Look Tel](#) to read labels of products at the grocery store, identify money, and other objects. He uses [Braille Touch](#), an app that allows him to text by turning the screen into a six-cell braille display.

Amelia's mother has Alzheimer's disease. Amelia receives alerts on her smart phone when her mother is less active than usual or when she wanders away from home.

Reggie was recently diagnosed with brittle diabetes. His doctor wants to monitor his glucose, insulin, and other health data remotely using a smartphone application to alert both him and Reggie in case of an emergency. Reggie also gets alerts from his smart phone to tell him when to take other medications.

Judy lost use of her legs in a skiing accident several years ago. She cannot feel anything below her waist as her spinal cord was so badly damaged. The loss of sensation resulted in her getting serious burns on her legs when she stayed too close to a heater. Today, a smart phone app connected to sensors on her body could alert her to dangerous situations like this. The technology is available to support many creative applications combining sensing technologies with smartphone or WT alerts.

A robotic ecoskeleton developed by [Exso Bionics](#) makes it possible for Judy to walk. She dons a suit that wraps around her legs and waist that gives her the capacity for assistance in standing and walking when she shifts her weight from one leg to the other. A small computer on the back of the suit allows her to walk with the use of Canadian crutches on flat surfaces. Future developments will open doors to use of this technology in climbing hills and stairs.

[Vanderbilt University's Center on Intelligent Mechatronics](#) has developed powered prosthetic devices that fully replicate the function of the lost limb. This allows users to react to their environment more quickly and safely. Essentially, this technology can give people back experiences by compensating for lost limbs.

The combination of 3-D printing and robotics allows developers to design low cost, high functionality prosthetics. One of the barriers to many people is the high cost of sophisticated, computer-assisted prosthetics that must be replaced every 18 -24 months. [Open Bionics](#), the finalist of the Intel's Make It competition for WT, developed the first low cost, high function robotic hand using 3-D printing technology. This amazing work will put good prosthetics within the reach of those who cannot afford them as well as for children who quickly grow out of prosthetics and need affordable alternatives.



Venture capitalists, the Maker Movement, and groups like Kickstarter and lucrative [app competitions](#) are helping to harness the creativity of many developers across the world, and this, in turn, will drive costs down for WT down.

Hopefully, these trends will drive costs down for higher end technologies like robots. Robots will ultimately be able to help people in everyday activities like eating, dressing and bathing and could be controlled by smartphones operated remotely by caregivers. Technically speaking, a robot doesn't qualify as a wearable. But imagine the possibility of a tiny Spork- like robot looped to one's belt that would, with the swipe of a finger would mobilize to help a person dress, shave or even eat.

Other research is focusing on the use of microchips embedded in areas of the brain that control specific movements of limbs that have atrophied from disease processes like muscular dystrophy and ALS, that, if successful, will potentially restore movement.

Even brain waves can be tapped to control simple devices. Brain wave technology can give an immobilized person a way to turn on or operate simple computer technology will ultimately allow caregivers to virtually visit elderly parents, or provide for a multisensory social interaction for persons who are unable to leave their homes.

One of the more recent developments of WT is in the form of jewelry. Kate Unsworth, CEO and founder of [Kovert Designs](#), has developed jewelry that allows users to accept push notifications through vibrations of pre-selected profiles such as work and family.

This gives users screenless use of Smart Phones by filtering constant interruptions. Her future work will include use of jewelry connected to credit, debit and travel cards.

WT sensors that provide alerts on posture, balance, and concussions are already available and can help prevent injuries. Developers are working on sensors embedded in clothes, shoes, and helmets for persons at risk of developing specific injuries. People who work on computers all day are at risk of many postural injuries; and, the loss of balance occurs with certain diseases and with aging.

Concussions are casualties of contact sports as well with children and adults who have more falls because of a disability like cerebral palsy or hemiplegia. The National Football League teams adopted the X2ICE Concussion Management Software for the 2013-2014 season, likely setting a trend for other contact sports as a way to prevent Sports Brain Injuries (SBI) as featured in Wired Magazine and the New York Times. With imaginative designs of “cool” headgear and notification systems, it’s not a far stretch to envision how this technology combined with balance sensors could help reduce falls or transmit important brain impact information to medical professionals.



X2ICE Concussion Management Sensor



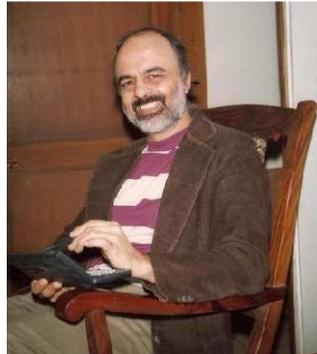


The Wearable Technology Revolution, where human interface blends with digital, material, and biological innovations, is still in its infancy. Stephen Power Brown, the Intel Futurist and Evangelist states “the push for technology software is only limited by our imagination to put these ideas together.”

As a speaker at the 2014 Wearable Conference in London, Brown cited three trends influencing the development of wearable technology: technology is becoming smaller, but is connected to massive amounts of data, bringing together the physical and digital worlds. And, rather than using a mouse and computer, the language of wearable technology is touch, the third trend. Brown attests that wearable technology will only be successful people can do the things they really care about. WT must be useful, safe, data connected, and help them socially, work better, be healthier, or stay connected to what matters to them.

For persons with disabilities, the key is finding ways of harnessing the potential of WT to reduce barriers – environmental, sensory, physical and cognitive – that obscure the hope for independence and the right to be included. For developers, find persons with disabilities who will inform and inspire your work.

# Haptics and the Deafblind: By Arun Mehta



Wearable computers touch significant areas of skin, through which information could be sent to the user. It is sad, therefore, to see them attempt to communicate through tiny screens instead. It seems to me that technology developers themselves are touch-challenged.

For the human body, the sense of touch is no less significant than sight or hearing. We have seen how much impact touchscreens have had, on mobile computing. However, the information flow here is only from user to phone. As a rule we do not use touch when the computer or phone sends information to the user.

Haptic technology, haptics, or kinesthetic communication, is [tactile feedback](#) technology which recreates the sense of touch by applying [forces](#), [vibrations](#), or motions to the user (wikipedia). Haptics is used to provide force feedback in computer games and in remote surgery. But in these cases we do not communicate text of any kind.

Let us put in perspective the use of touch for communicating text. When we started to use the ear for receiving information, we had the birth of language. Similarly, when we started to use the eye to communicate text, we had the invention of writing. Both these technologies, language and writing, have been revolutionary for mankind. The mainstream use of haptics to receive textual information could be comparable in impact.

The deafblind are the only community that makes significant use of haptics in information communication, because both, audio and video are problematic for them. For technology developers seeking to learn how to use haptics, working at a deafblind school may be the best way forward. The deafblind and their caregivers are the only people who have considerable experience in haptics, which can be built on when designing electronic haptic communication solutions.

The use of touch comes with considerable baggage. My country India invented untouchability. We avoid routine physical contact as in shaking hands. Instead we put our palms together in greeting. This may have started as a way to avoid catching disease. The central role that touch plays in sex is also a reason why we seem to fear physical contact.

At Bapsi (<http://www.bapsi.org/>) we have focused on communication problems of the deafblind for the last few years. Deafblind persons in the US use Apple devices together with a Braille display to communicate electronically, which together cost at least two thousand dollars. Our attempt is to make such communication possible using simple Android phones costing around \$50 dollars.



### "Vibrations: Free Software for those both blind and deaf"

For someone who cannot see nor hear at all, the only accessible phone output is the vibration. The phone outputs megabits per second for the graphics, and kilobits per second for the audio, but with vibrate you can output only about one bit per second, that too not all day, as I learnt by destroying my Samsung tablet while debugging the haptic apps I was writing.

The mismatch between the ability of the body to receive input via touch, and the ability of the phone to provide it, is extreme. The smartphone would be significantly improved if it had 6 tactile actuators instead of just 1, allowing it to output in Braille and also provide far richer tactile output for non-verbal communication.

Even with such limited ability to produce tactile output, the smart phone can be used in a variety of different ways by the deafblind. We started by using Morse code via vibrate. However, the caregiver community was reluctant to adopt it, since they have a long history of working with Braille, and Morse code is entirely new for them. It may take a while for Morse code via vibrate to get accepted, but once that happens, many possibilities will open up.

For instance, we plan to introduce a vibrating table, so that an entire class can share the information being communicated, the questions being asked, and other items. Things that the rest of us take for granted are major challenges for the deafblind.

It has been considerably easier for us to work with the deaf with low vision. We created dbtype, an app that can receive input either by typing or using speech to text, which is displayed using a large font size. It also includes text to speech for those who do not speak. It is best used on a large-sized tablet, such as Hewlett Packard Slate 21. This is already in use at the Helen Keller Institute for the Deaf and Deafblind in Mumbai.

The educational system has extreme difficulty in working with the deafblind, hence hardly any in India learn how to read and write. We attempted therefore to write apps that work for the pre-literate. Narangi and Narangi2 are apps that are slates for the deafblind. You can switch between “draw” and “sense” modes by tapping the screen. In draw mode, you use your finger to draw on the screen. In the sense mode, you move your finger on the screen, and only when there is black under your finger does the phone vibrate.

The app dbbug is a game for the deafblind. On the screen is a ball and a bug. The ball rolls in the direction you tilt the phone, and the objective is to roll over the bug. Only when the ball is moving towards the bug does the phone vibrate, thus providing feedback to a deafblind player. When the ball comes very close to the bug, it jumps to a new location on the screen, and the player is awarded a point. Vibration is also used to indicate score.

We are hoping to start a facility at the Helen Keller Center for the Deaf and Deafblind which any disabled person could approach for technology needs, the way she can go to a hospital for medical needs. This facility will enable developers to learn to appreciate touch better, and to test software.

We will also teach interested trainers and students Morse code and programming. Such a technology center is needed in every city, because the disabled have huge difficulties travelling. We have a long road ahead of us, before electronic communication becomes accessible to significant numbers of persons with multiple disabilities.



**Jury Special Award at the We Care Film Festival (Disability Film Festival) in 2012**

# Wearable = We are Able: The potential of wearable technologies for people with disabilities. By Neil Milliken



There has been a lot of interest and already many millions of words written about wearable technologies people are already excited about their latest fitness band and many will be salivating at the thought of strapping an Apple watch to their wrist. Rather than get into the psychology of whether or not it is Apple's marketing department that is creating the excitement I want to explore the different angle that is the latent potential that wearable's hold for improving the day-to-day lives of people with disabilities around the world.

If you take a step back and disassociate computing from the word technology for a moment then you will see that actually wearable technology had been employed by mankind for many centuries. In fact most forms of wearable technology were designed in some way to assist the user/wearer.

Let me define what it is I mean by technology; I like to use the term in its broadest sense: simply a tool, something that mankind has taken and forms to enable tasks to be carried out that could not be carried out before or facilitates greater efficiency or ease of access. In this sense even flint tools count as technology, modern society has been built around the invention, adoption and use of tools. If we use this definition the spectacles, wristwatches and memory bracelets all count as wearable technologies. They also all assist us in some way, spectacles help us to see wristwatches and memory bracelets help us to be organized. Another great example of wearable assistive technology is of course the hearing aid and it is recent developments in hearing aid technology that help us bridge the gap between older wearable tools and the exciting new era of wearable computing that we are entering now.

Originally hearing aids were discrete devices by this I don't mean that they were small or even particularly discrete but that they did not interact with other things around them only amplified sound for their wearer. Over time manufacturers developed connectivity enabling hearing loops and coils to expand the use of hearing aids. More recently manufacturers including Oticon, Phonak and Siemens have embedded Bluetooth into their hearing aids which has opened up the possibility of connecting to a multitude of Bluetooth enabled devices and services.

Here is demo of Bluetooth streaming on Youtube.

<https://www.youtube.com/watch?v=4106fT97KeA>

Such connectivity opens up a world of possibilities for personalization and inclusion, hearing aid users can participate and set a volume level that suits them without blasting the rest of the room with a wall of sound, it makes for a better experience for everyone. Another example I tried recently were the Sony Smart glasses that overlay captions whilst you still have pretty much full field of vision. These are already available in some cinemas.

Last year Glasses were the hot topic for wearable when Google released its Google Glass developers Kit, many people in the assistive technology industry saw potential for helping people by using the sensors built into glass and computing power to add capabilities for supplementing and augmenting communication and information for users with disabilities.

Some examples include wayfinding and object recognition, emotion sensing for people on the autistic spectrum. Certainly as someone with the short term memory of a goldfish I would quite like prompts and reminders whilst I already have these on my phone, my short-term memory is so poor that I cannot guarantee that I will have my phone with me for even if I do that I won't have forgotten to take it off silent after a previous meeting.

Whilst it was clear that Google Glass has significant potential as a testbed for wearable AT many people were concerned about the potential invasion of privacy from head-mounted cameras, and there was a significant backlash against users wearing glass in public places such as restaurants.

Putting aside privacy concerns for one moment I can see how facial recognition could help people with cognitive impairments such as early-stage Alzheimer's identify people and maintain greater level of independence, you could trigger reminders specific to people for example you identify Dr Jones and the reminder brings up the topics of conversation that you plan to have about your medical needs. GPS and location-based sensors could also trigger context specific reminders and alerts that could help with things such as shopping and also keep family and loved ones informed if the user wanders away from their usual geographical location as frequently occurs.

Wristwatches and bangles are significantly more widely accepted as everyday objects and therefore there is not the same opprobrium attached to them as there is to glass with its camera so I can see widespread adoption of devices over the next few years. What we really need to see is not fitness trackers that health products that work with the ecosystem and infrastructure already available via the mobile phones that these wearable inevitably connect to.

Take for example a pacemaker a simple low power connection could work in conjunction with a wristband which could in turn report back to deliver alerts to medical staff. So if either the pacemaker developed a fault or the user became ill they would have more rapid access to medical attention and therefore survival rates would likely be improved.

I already have one piece of 21<sup>st</sup>-century wearable technology that travels everywhere with me, it is my NFC (Near Field Communication) ring which contains two simple chips. These chips can be used to trigger any other NFC enabled device:

For instance you can use it to unlock your phone and to pass on contact details to someone else's phone at the swipe at your hand such a thing may sound trivial but if you have a sequencing problem or short-term memory difficulties passwords and pin codes are a significant barrier.

If you have arthritis and handling keys is too tricky you could use the ring to unlock your door and Samsung have a lock that works with NFC. However I think the most exciting thing of all is the prospect that something like an NFC ring could be used as a trigger for personalization of all kinds of devices.

Everyone's needs are different everyone's preferences vary. This holds true regardless of whether or not someone has a disability, accessibility needs are just customizations and user preferences the ring can be used to identify you and match your preferences. There is work underway on something called the global public inclusive infrastructure which aims to match user preferences and needs with the capabilities of different devices from phones to train station kiosks. You can find out more about this at <http://gpil.net>

We cannot fully know yet what the true potential of wearable technologies is as only time will tell but I am sure that they will form the bridge between us and the Internet of things giving us control over our environment and our lifestyles in ways that had previously been unachievable.

That's why initiatives such as IC tomorrow's [Contest for Wearable Technologies](#) are so critical for development in this area. The competition invites entrepreneurs to create the latest wearable innovations in areas such as health and fitness trackers, identity and authentication, and smart textiles. We wanted to get involved at Atos in the competition because digital inclusion is an integral part of our company ethos.

Judging the “Unlocking accessibility through wearables” category, I’ll be looking for something that solves an existing problem that affects a broad spectrum of people, and that as a result, has the potential to go viral. The joy of the competition is that it’s extremely open. We’re asking entrants to come to us with totally new concepts; and I’m looking forward to seeing all the inventions put forward, no matter how wild they may be!

# 3D Printing and Prosthetics: By Venkat Rao



A few years ago, 3D printing was a premium, not so affordable concept that was out of reach of many people. In more recent times, thanks to a lot of competition in the 3D printing space and falling prices and an ever growing community of 3D printing enthusiasts that have a zeal to share information, 3D printing is making its way into regular households.

But why it is such a big deal? With 3D printing you can print pretty much anything which, needless to say, also includes *useful* things. Printing useful items at home and using them on a regular basis can really bring a paradigm shift in the way they live their daily lives. It's not easy to fathom the extent to which 3D printing can go. It is both mind blowing and baffling to know that 3D printing can print anything from a cute little toy to a life-saving organ. Just recently, a major breakthrough in the 3D printing space allowed 3D printed tissue to survive on its own <sup>[1]</sup>. Such breakthroughs have led to important organs like kidneys to be developed for transplants <sup>[2]</sup>.

It's a no brainer that since we can print anything with a 3D printer, we can print prosthetics as well. There are more than 10 million amputees around the world <sup>[3]</sup>. Arranging a (traditional) prosthetic limb for them is always a challenge because of the cost involved which can range anywhere from \$30,000 - \$50,000. These exorbitant costs can deter anyone from pursuing an important accessory that will enhance their lives, more so because insurance companies do not cover the costs of prosthetic limbs especially for little children because they outgrow their prosthetic limb very quickly.

However, not surprisingly, 3D printers have come to the rescue of people who need artificial limbs. It is unbelievable how easily a limb can be printed by a 3D printer - layer by layer, that functions just like a traditional prosthetic limb. Believe it or not, a 3D printed prosthetic hand can cost anywhere from \$5 to \$100 <sup>[4]</sup>, <sup>[5]</sup>. That's it! And because of that, people are more willing to experiment with the design to come up with more efficient limbs. Outgrowing a prosthetic limb is not a worry anymore either.

There are several voluntary organizations out there that are making 3D printed prosthetic hands available for amputees at a very affordable price. One of these organizations is Open Hand Project that makes prosthetic hands available for less than \$1,000. It is an open source project which means that all the information required to create a prosthetic hand using a 3D printer is readily available to the entire community on their website. Any improvements to the project are shared with the entire community.

Another volunteer driven group, called E-nabling The Future, consists of engineers, students, teachers, occupational therapists, designers amongst others. This group helps print 3D prosthetics for those who need them, and the cost to print a hand may run anywhere between \$20 and \$50.

What you have read here is just the beginning. There are tons of innovations being made in the world of assistive technology using 3D printers on a regular basis! 3D printers are getting cheaper by the day, which means that more and more hobbyists and designers are getting their hands on them, fueling creativity and collaboration and taking 3D printing to a whole new level!

Curious about 3D printing? This website should help you get started with the basics:  
<http://3dprinting.com/what-is-3d-printing/>

### **Sources:**

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[5]: Krassenstein, E. (2014, April 20). Man Compares His \$42k Prosthetic Hand to a \$50 3D Printed Cyborg Beast. Retrieved March 1, 2015, from <http://3dprint.com/2438/50-prosthetic-3d-printed-hand/>

### *Additional reading:*

What is 3D printing? <http://3dprinting.com/what-is-3d-printing/>

Best 3D Printers 2015 <http://www.tomsguide.com/us/best-3d-printers,review-2236.html>

Open Hand Project <http://www.openhandproject.org/>

Enabling The Future <http://enablingthefuture.org/>

# Hope of Wearable Technology for Persons with Disabilities: By Kevin Ruh



Many people are talking about the possibilities and potential of wearable technology. It is interesting to note that wearable technology has been around for a long time.

The first external hearing devices were originated around the 17<sup>th</sup> century. Not exactly wearable technology, but it fits the definition of wearable and technology. It is also a great example of assistive technology (AT).

The first hearing aids were invented in 1898. Over a hundred years later, advancements, like the hearing aid, have proven that wearable technology can improve the lives of individuals with disabilities.

With further advances to these and other wearable devices the possibilities become endless and very exciting. Even implanting microchips into the brain to allow those who are deaf to hear has been accomplished.

Wearable visual technologies like the Google Glass have implications to improve navigation for low vision users. New “computer eye” technologies are in development to possibly one day help those who are blind to see through the use of wearables. We already have Bionic Eyes that are allowing people to regain partial eye sight.

Smartphone technology is changing as well. Wearable smartphones are being tested, some with implant technology and others with projection onto the skin from a bracelet. These could allow your body to become your technology device.

Removing some obstacles that are created for users who have trouble using a traditional phone due to a disability. The term fashion electronics goes hand in hand with wearables. With things like the Apple Watch, one can see why the fashion label works. Watches and glasses have been considered fashion items for a long time. They have always had the power to improve people's lives but the stakes are higher now.

Expensive designer sunglasses are wonderful and trendy, but without my prescription eyeglasses, I can't see those sunglasses unless they're right in front of my face. Fashion and function can go hand in hand too.

The cool new "smart watch" could be a simple accessory to one and a necessary assistive technology to someone else. If a smart watch could be used along with GPS technology, then it seems very possible to navigate an unfamiliar place as simply as checking your wristwatch to see the time.

E-textiles are another form of wearable technology. The term refers to clothing items that have small computers running through all or part of the items. Smart shirts have the potential to monitor the vital signs of a wearer. Some sports trainers use this type of technology to track sports training data of an athlete who is wearing the technology. With the ability to track someone who is wearing a smart shirt it could be used to find someone who is lost.

While the current applications are not public, advances in this type of technology can benefit the world. The idea of your t-shirt telling you that you are about to have a heart attack and alerting the paramedics is still just an idea, but wearable technology could make it a reality. If we can make our clothing help us the limits to how technology can change our lives is going in the right direction.

The marrying of the fashion and functionality will allow us to have technology that may be purchased for practical and fashion reasons. Plus these devices have the benefit of becoming technology that is vital to you as you age.

Fashion applications are fine, but it pales to the advantages of the benefits for these technologies to improve our lives. Technology has made staggering advancements in the last twenty years alone and I think in the next 20 years we will fully realize wearable technology.

My sister was born with Down syndrome. When I see wearable technology market growing, my first thought is how these tools can help persons with disabilities. My sister is addicted to media, she is always on her iPhone. She loves to use her tablet and laptop as well. She also uses a FitBit to try and walk 10,000 steps each day, track her food and water intake.



*Sara Ruh*

I cannot help but imagine how she would use something like Google Glass. She loves discovering new technology and then dissecting it to find out how it works and how she can make it work for her. She is not alone, I know I love to customize my technologies that I use for personal functionality.

So allowing people access to technology helps them to learn and grow. Social good is about bringing people from all over the world together. Wearable technology can do that for the world.

Universal access to technology is the end goal. If wearable technology flourishes, then it would be easy to get everyone a wearable device and create a global network of users.

When technology is made accessible and mobile it becomes as seamless as wearing a wrist watch or putting on eyeglasses. This will allow us to tap into the abilities that we all bring to the table. Plus it will allow the world to fully connect and allow everyone to participate.

# Wearable Devices - Impact, Challenges and Life-Changers: By Steve Tyler



## **Introduction.**

Wearable devices are relative newcomers to the technology arena although the first documented and marketed products emerged in 2008.

They can be defined as:

- A device that is worn on the body in general usage;
- Controllable either actively or passively;
- Augments knowledge, enhances experience, or facilitates learning.

They now come in all shapes and sizes as a result of miniaturisation – a trend very much set to continue – from smart watches that connect to mobile devices to fitness bands or bracelets that monitor activity, from straightforward identifiers that allow you access to product or services to the more complex medical monitoring tools or intervention products such as blood glucose controllers.

In some of the latest live examples of usage in the medical profession, your monitoring device has already sent a report to the doctor or consultant in advance of your appointment, or for those most sensitive to atmospheric conditions and pollution due to respiratory problems, they have received warnings around pollen, pollution and other factors alerting the user to avoid areas of concentration.

What are the accessibility challenges in using these devices? Where are future developments set to take us? And what of the changes they are bringing?

My role at the Royal National Institute of Blind People in the UK is to devise strategies and implement plans that will assure access to the latest technologies, ideally as they are developed. I will outline some of our work during this brief article; but wearables are particularly challenging as a product type with regard to influence simply because they cut across so many traditional boundaries.

### **Current Challenges and State of The Industry.**

At the time of writing there are just under 300 wearable technology devices on the market. The broad areas covered include lifestyle (the biggest grouping), fitness (a close second), industrial, entertainment, gaming and pets. Devices include:

- Monitors that report on pets or animals – either tracking their location, behaviour or allow medical monitoring;
- Headmounted devices or watches designed to augment or ease delivery of information to the worker or to report on workers (fatigue or location);
- Medical devices that monitor heart rates, walking gaits, hand-eye co-ordination, multispectral analysis for more detailed health monitoring.

The number and diversity is increasing and with the development of so-called nano-technologies, the ability to pack in more circuitry, monitors and intelligence in to wearable devices is set to increase the diversity and take up of personalisable systems.

### **Access and Control.**

Our strategy to date has been to focus major effort on operating system providers of mobile devices – Microsoft, Apple, Google and more recently Samsung; at present, most devices rely on being connected to a mobile device either allowing control via that platform or utilizing it as a means of sending or receiving information to cloud based servers. Our broad approach has been to take a pan-disability approach, create business and strategic partnerships, and deliver both financial and social benefits together with industry players – sometimes resorting to regulation or legislation, sometimes interacting with standards setting groups.

As body worn devices become smarter and more autonomous, we are beginning to switch our attention to chipset providers, or those writing firmware – we are reaching a point where accessible control at the device level is likely to become more important in this domain.

### **Current Adoption.**

It is fair to say that barring medical and industrial devices, most take-up in other market areas has been by early adopters and technically savvy users with enough disposable income to be able to justify purchase. However, these devices are proving to be potentially powerful offerings in their role as monitoring or protection products.

They are beginning to find their way in to the homes of elderly people who either wish to continue living independently or, as public health finances are stretched, as a result of emerging policies.

The idea of discreet systems that are both worn and connected to the environment that alert family, friends or social services to unusual events not compatible with expected behavior, or simply lack of movement, are proving to be attractive and relatively cheap options. Rather like mobile technology, or the development of on-line shopping, they are quietly encroaching in to everyday lives. More than that, our growing expectation of being “always connected” leading western Governments to be talking about the internet as being a public utility, has increased the development, discussion and planning around the “internet of things” – the growth of traffic on the net between machines rather than machines and humans has led to the expectation that machine to machine data will overtake that of machine to human data within the next 18 months.

### **Connectivity and Accessibility.**

As we move through a transition where connected devices are not quite as smart as we want them to be, and therefore are still reliant on cloud-based connectivity, much of the processing of data is done on the cloud. We are already seeing examples in other arenas such as accessibility to TV via set top boxes where speech access, for example, or synthetic speech delivery, is actually generated server level rather than device level. The direct impact of that of course is that accessibility is denied if there is no connectivity.

Additionally, there is a gradual blurring between the role of wearable devices and devices in the home or the environment. For some of us, an idyllic situation is that your smart home is genuinely smart – not only do the devices in it communicate with each other but the devices you wear communicate with each other and those in your home. You can control your home via your mobile device, and as you arrive there, your home is expecting you – and identifies you or those you have allowed access – and it lets you in.

To bring this about requires agreement on connectivity standards. At present, although many technologists share the dream of ubiquitous technology” and connectivity, the reality is that industry is unwilling to share too much detail with each other – to do so begins to reveal precise information about just how their product works, and that’s apart from the obvious business imperative that would dictate that manufacturer X wants you the consumer to buy more manufacturer x products, not those of manufacturer y.

We need to ensure that in the emerging connectivity protocols, accessibility is present in the thinking of engineers and developers that allows all of us to share in this Nirvana!

### **Who Knows What About You?**

Legislation and regulation has always been slow to keep up with technology but with the ever-increasing pace of change this is now more evident than ever.

As we move to medical devices reporting to your doctor or data being shared with other contributing systems, there is an increasing need for people to be aware of who can see detail about you and your life.

We begin to hit real problems at human rights level in the disability community – if a blind person cannot access the device sufficiently and to make decisions about data sharing and that is a real problem. Or if as a result of genetic or other diagnosis it becomes clear that you have a propensity towards a certain type of cancer, should your medical insurance company know about that?

Privacy, security and control are major challenges to all of us in the emerging connected world, but more so I would argue for those that are denied access; this of course is an opportunity for organizations such as my own – through potential compromising of central tenets of our way of life, we can challenge at a fundamental level the importance of accessibility.

### **What of the Future?**

As ever, prediction in the technology space is almost certain to be incorrect. In accessibility terms, who could have predicted that the advent of touchscreen devices could actually enhance accessibility for some of us who rely on non-visual means to access the world around us? But some things are very clear:

- Wearable technology becoming elements within garments;
- Technology becoming part of your body especially as miniaturisation continues to be a key theme;
- Devices themselves directly connecting to the net via cellular or wifi networks;
- Wearable technologies directly enhancing the lives of people with disabilities.

This last point is particularly relevant to the disability community. Already there are examples of app-based control or alteration to prosthetic limbs which used to need a visit to the doctor. But in the blindness field, the development of image enhancement systems, image recognition, and ultimately of course, not worn on the body, but as part of the body, is a real possibility in the coming months and years.

### **Final Remarks.**

I have, in this short article, far from done justice to this area of development. But exciting it is – it has potential benefits are vast. But I vividly remember people speculating that, as more products became digital, clearly there would be more accessibility. This is not always the case – and today our challenge is accessibility to domestic devices and the emerging wearable market.

# Bios

## Debra Ruh, Guest Editor



**Debra is the CEO and Founder of Ruh Global Communications and Co-Founder of AXSChat.**

Debra Ruh is an advocate for the rights of persons with disabilities and founder of a Ruh Global Communications. The firm focuses on Global Disability Inclusion, EmployAbility, ICT Accessibility, Human Rights, Social Media Marketing and implementation of the United Nations Convention on the Rights of Persons with Disabilities (CRPD). Proud to work with United Nations agencies and countries to help implement the CRPD.

Debra founded TecAccess in 2001 and merged it with another firm in 2011. TecAccess was an IT consulting firm that employed persons with disabilities and helped businesses create accessible technologies for people with disabilities.

Debra is active on social media and blogging on Twitter, Facebook, LinkedIn, G+, Tumblr, and Pinterest her social media handle is @debraruh. Co-Founder of [www.AXSChat.com](http://www.AXSChat.com) a twitter chat about accessibility and disability inclusion.

**Policy, Legislative and Technical Experience:** Expertise with Standards and Legislation including the United Nations Convention of Rights for People with Disabilities (CRPD), Americans with Disabilities Act (ADA), Section 503, 504 and 508 of the Rehabilitation Act of 1973, W3C, WCAG 2.0 and ISO. Debra is also an invited expert and contributor to the [W3C Cognitive Accessibility Taskforce](#).

**Published Author:** “Finding Your Voice by Using Social Media” Published on Amazon <http://ow.ly/kxgIR>; “Uncovering Hidden Human Capital”: How leading corporations leverage multiple abilities in their workforce. Publishing Date: Early 2015, Publisher: G3ict

# David Banes



## **CEO of MADA Center, Qatar AT and Accessibility Center**

David Banes is CEO of the Mada Center, Qatar Assistive Technology and Accessibility Center based in Doha in the state of Qatar. He has worked in Doha for the past four years, firstly as Deputy CEO and more recently as CEO and has been charged with developing services to ensure that people with a disability in Qatar are digitally included.

Prior to taking up his post in Qatar, he worked as a teacher of people with special needs and principal of a school before working in the realm of digital Inclusion in the UK and Europe as Director of Operations and Development for a UK NGO. He writes regularly in the area and was recently featured on Anthony Salcitos looks at Global leaders in Education at <http://dailyledventures.com/index.php/2012/03/20/for-students-with-disabilities-personalized-technology-is-great-equalizer-qatar/>

Mada offers a single point of co-ordination for all activities related to digital and eInclusion in Qatar. Increasingly the center is also seeking to influence the emerging Access ecosystem in the region promoting cooperation between states and supports the development of assistive technology solutions and digital content that meet the needs of Arabic speaking people with a disability.

In order to achieve this Mada has been in the forefront of efforts to create Arabic assistive technologies and Arabic accessible books through a range of partnerships and initiatives. These have included support for people with little or no vision, dyslexia, physical needs, learning disabilities and hearing loss. The resources created by Mada are available through an online portal and released under open licenses to stimulate further innovation in accessibility.

Looking ahead, Mada is focused upon building capacity and stimulating innovation whilst maintaining direct services to have impact upon the lives of people with a disability in Qatar.

# Gerry Ellis



**Gerry founded and is CEO of “Feel The Benefit” and works for a Bank in Dublin as a Software Engineer.**

Gerry Ellis is an Accessibility and Usability consultant under the name Feel The Benefit. He is also blind and has worked for over 30 years as a Software Engineer with a Bank in Dublin. Gerry holds a BA Degree in Economics from University College Dublin. He is a Fellow of the Irish Computer Society, which is the primary Irish organization “serving ICT professionals and specialists in Ireland”. [www.ics.ie](http://www.ics.ie)

He has been active for 30 years with national and international organizations that are concerned with the social inclusion of people with disabilities. The International Telecommunications Union (ITU) is the United Nations specialized agency for information and communication technologies.

Gerry is the Vice Chairman of ITU’s Joint Coordination Activity on Accessibility and Human Factors (JCA-AHF) which advises ITU on issues relating to accessibility. He has also represented ITU at several meetings and conferences including 3 Internet Governance. <http://www.itu.int/en/ITU-T/jca/ahf/Pages/default.aspx> and [www.intgovforum.org/cms/](http://www.intgovforum.org/cms/)

He is the former Chairperson of the Irish Council of People with Disabilities, which was the largest organization in Ireland representing people with disabilities, their parents and caregivers.

He was a founder member and first Chairperson of the Visually Impaired Computer Society in Ireland. Gerry and former UCD Registrar Professor John Kelly, initiated the Association for Higher Education and Disability (AHEAD). [www.ahead.ie](http://www.ahead.ie)

He has been active on the National Boards and subcommittees of various mainstream organizations in Ireland which relate to ICT issues. These efforts include the Information Society Commission which was set up by Government to advance Ireland’s readiness to take advantage of the Information Age. He is also a member of the European Disability Forum’s ICT Expert Group and have frequently represented them at conferences and meetings. EDF promotes the interests of over 80 million people with disabilities in Europe. [www.edf-feph.org](http://www.edf-feph.org)

# Joy Elizabeth Kniskern, M.Ed., CRC



## **AMAC Accessibility Solutions & Research Center | University System of Georgia | Georgia Institute of Technology | College of Architecture**

Ms. Kniskern has over 40 years of experience in vocational rehabilitation and in launching technology-related initiatives. She currently serves as the PI of Strategic Technology Initiatives at AMAC at the Georgia Institute of Technology. She has spoken at many national and state assistive technology conferences and has published in the areas of assistive technology and assistive technology reutilization.

She has specific skills in training and technical assistance, strategic business planning, assistive technology and disability sensitivity issues, and in capacity-building. She has written and secured many national and state public and private grants to support new project development efforts.

She served as a Director of Assistive Technology Services with the Georgia Vocational Rehabilitation Program. In this capacity, she led the development of the agency's rehabilitation engineering program and secured and managed federal grants of over 13 million dollars over a 20 year period to develop the Georgia Assistive Technology Act - Tools for Life, the Alternative Finance Program - the Center for Financial Independence and Innovation, and the Pass It On Center, a national technical assistance center to support the development of safe, effective and appropriate reutilization of assistive technology.

Prior to joining the Georgia Vocational Rehabilitation program in 1988, she secured funding for and directed a highly successful computer programmer training school for vocational rehabilitation clients at Georgia Tech under the auspices of Goodwill Industries.

# Dr. Christopher Lee



## **AMAC Accessibility Solutions & Research Center | University System of Georgia | Georgia Institute of Technology | College of Architecture**

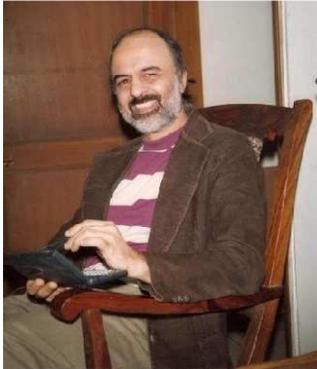
Dr. Christopher Lee serves as Director for AMAC Accessibility Solutions and Research Center. In this capacity, he oversees a wide range of educational projects, with emphasis on technology services, products and research. Dr. Lee has been an advocate and pioneer in promoting social entrepreneurship to benefit humankind and further strive for sustainable social change in the field of disabilities.

His work has centered on the innovation of new models and techniques to support accessible electronic information in corporate, governmental and nonprofit entities. Dr. Lee is also a nationally recognized advocate, author, speaker, principal investigator and leader in the fields of learning disabilities and adaptive technology. He has been featured on CNN, National Public Radio and in newspaper articles picked up by the Associated Press.

In 2003, The National Rehabilitation Association awarded Dr. Lee the W.F. Faulkes Award for his contributions towards increasing knowledge in the field of rehabilitation. He was highlighted in Microsoft Accessible Technology for Everyone, a Microsoft video and publication, during the same year. In 2004, Dr. Lee was recognized in The Atlanta Business Chronicle as one of 50 of Atlanta's promising young stars.

In 2007, he was featured in the PBS series A Chance to Read, hosted by Molly Ringwald. He has been awarded the AccessText Network by the Association of American Publishers (AAP), national service award from the Learning Disability Association of America.

# Arun Mehta



## Founder and President of Bapsi Foundation

Arun Mehta lives in New Delhi, India. He is the Founder and President of Bapsi (bapsi.org), a nonprofit that specializes in free technology for persons with multiple disabilities.

The Bapsi society supports the many of the poorest people that do not have access to information technology. His organization created free and open source software [skid](#) and the [Vibrations series for the deaf-blind](#) are examples of this.

The society organizes training programs on cutting-edge technologies like, Ruby on Rails with the aim of enhancing skid software and vibration series for deaf-blind, with useful modules and new apps. The society promotes participation of persons with disabilities and siblings of them in the program, which makes the activity sustainable. The society also addresses the cause of persons with disabilities by keeping a track of the limited communication support tools available for them in the country.

In order to make the process of producing software for the disabled sustainable we request technology students to undertake summer Internship with us on these innovative projects. The software thus produced is made available for free. The training is free of cost.

Arun is fluent in Hindi, English and German. He wrote eLocutor for persons with extreme motor and speech challenges, was the lead developer of Skid (skid.org.in) for children with cognitive disabilities. He has also written a range of Android apps for the deafblind.

In 2013, Arun received the NCPEDPMphasis Universal Design Award. He won the Special Jury Award at the We Can Film Festival for the film “SMS for the deafblind” which he produced and directed, in 2012. He also won the Manthan Award for “Arpit’s Wheel.” software he wrote for a boy with cerebral palsy in 2008.

# Neil Milliken



## Head of Accessibility & Inclusion, ATOS and Co-Founder of AXSChat

Neil currently works for Atos as Head of Accessibility & Inclusion where his role is to help make the world a better place by delivering better technology for our customers and staff, embedding inclusive practice into the Business As Usual Processes of organizations with thousands of employees and turnovers numbering in billions.

He created the Atos Centre of Competence encompassing Accessibility, Inclusive Design and Assistive Technology Services. This team now services multiple accounts and delivers best practice, support and consultancy for the organization. [www.atos.net/iux](http://www.atos.net/iux)

He delivers strategy and services working with a wide range of clients internally and externally helping them to develop policies, processes and technology solutions to meet the needs of their staff and customers. These clients include: BBC, Department of Health, Ministry of Justice, Insolvency Service, and NHS. He is the Atos representative on the [Business Disability Forum Technology Task Force](#) and has successfully instigated the adoption of and implemented the Accessible Technology charter.

Neil is also an invited expert and contributor to the [W3C Cognitive Accessibility Taskforce](#). Previously he worked at Iansyst one of the largest providers of Integrated Assistive Technology Solutions in the UK. He led their mobile developments including the development of Capturataalk and ran their Technology Services Business Unit.

Neil loves social media and can be found on twitter as [@neilmilliken](#)

# Venkat Rao



## Creator of Assistive Technology Blog

Venkat Rao developed interest in assistive technology around nine years ago when, as a graduate assistant, he worked with students with disabilities at [Disability Concerns, Illinois State University](#). He started [Assistive Technology Blog](#) in late 2010, and the idea behind this blog was to educate readers about the latest and greatest in assistive technology - not the bulky, outdated and expensive machines we are used to seeing everywhere, but affordable, state of the art technology that would change the future of people with disabilities drastically in the near future.

He writes mostly about concepts/ devices that are still in prototype stages but would possibly be mass marketed in the future. He also writes about mobile apps/ software that make life easier for people with disabilities.

In his free time, he can be found hiking and taking photographs at any of the scenic parks in Minnesota and Wisconsin, exploring various bike trails in the Minneapolis/ St. Paul area, reading, attending concerts, listening to podcasts ([Radiolab](#) is his favorite) making music (he is a failed musician but doesn't want to admit it!), and pursuing interests that involve buying things at hobby stores.

He can be reached at [assistivetechologyblog@gmail.com](mailto:assistivetechologyblog@gmail.com) and [@AtBlog2](https://twitter.com/AtBlog2) on Twitter.

# Kevin Ruh



## **Creative and Marketing Director, Ruh Global Communications**

Kevin has been around disabilities his entire life. He is the Creative and Marketing Director for Ruh Global Communications and manages all digital marketing for the global firm. His older sister, Sara Ruh was born with Down syndrome. He has volunteered for many programs including Best Buddies, Special Olympics, Ashland Challenger Little League, HARC, VABLN, Hanover Day Program and other programs. He has a Bachelor's of Fine Arts (BA) in Kinetic Imaging from Virginia Commonwealth University (VCU).

Kevin has worked with children with Autism since he was 16 years old. He has worked in the school system as a Special Education Teachers Aid for pre-school children with Autism. He was aide to two children with Autism during high school. Kevin has also worked with VCU RRTC as a job and education coach supporting individuals with disabilities in college.

He manages social media and digital programs for disability organizations, multi-national companies and Thought Leaders in the disability sector for Ruh Global Communications and previously for TecAccess. He manages social media platforms like Twitter, Facebook, Tumblr, G+, LinkedIn and other social media tools like BufferApp.

He has a passion for film, documentaries and full inclusion of people with disabilities. He hopes to create several documentaries on disability inclusion in the future. Kevin is an avid bicyclist and is a member of RODA a Richmond Based Bicycling Club focused on social-good.

# Steve Tyler



## **Head of Solutions, Strategy and Planning at the Royal National Institute of Blind People (RNIB)**

Steve Tyler is Head of Solutions, Strategy and Planning at The Royal National Institute of Blind People (RNIB) in the UK with responsibility for developing services and products to ensure that blind and partially sighted people can take full advantage of new technical and business propositions. Steve is also one of the European Blind Union's most senior technical advisors and a regular contributor to EBU policy positions on accessibility and technology issues.

In the UK, he has led on key innovations, including:

- \* First accessible TV and set top box range in the world;
- \* Braille on pharmaceutical packaging;
- \* Creation of high quality synthetic speech solutions;
- \* Delivery of 'talking' cash machines in the UK.

His academic background in Psychology, research in Artificial Intelligence and post-graduate management qualifications give him the ability to translate an idea into a sustainable and compelling service or product proposition.

The Royal National Institute of Blind People (RNIB) is an organization that supports anyone affected by sight loss. Whether a person has lost their sight or they are blind or partially sighted. RNIB provides practical and emotional support to help people face the future with confidence. They provide advice on [staying in work](#), [using technology](#) to help them do everyday tasks, or simply support someone with [emotional support](#) and help individuals come to terms with sight loss. RNIB goal is to help persons with blind and partially sighted people, face the future with confidence together.

# New Books:

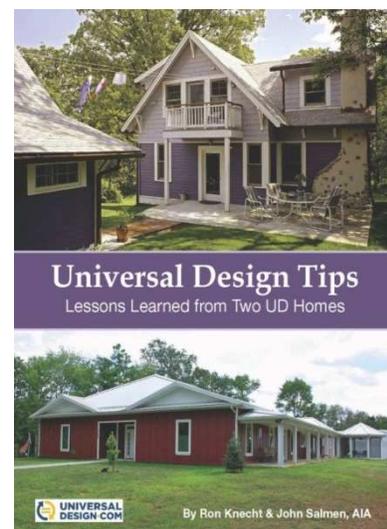
## A New eBook from UniversalDesign.com

### Universal Design Tips: Lessons Learned from Two UD homes

This new electronic book from UniversalDesign.com is filled with tips and ideas that will help guide anyone through the process of designing and constructing their own Universally Designed home. The book was co-authored by John Salmen, AIA, the publisher of *Universal Design News* and founder of UniversalDesign.com, and Ron Knecht, whose durable, energy efficient Universally Designed house was featured in the [January 2012 issue](#) of *Universal Design News*.

The first section of the book deals with the planning process, providing insight on how to choose a location for the house, consider activities of daily living during planning, best use various types of design professionals, finalize a floor plan and develop a building schedule.

The rest of the book is organized according to different areas or elements of the home (i.e. exterior doors, bathing, and kitchen counters, just to name a few.) Whether designing a whole house or simply remodeling one area, *Universal Design Tips* makes it easy to quickly refer to the relevant section and find valuable tips that ensure success. Each of these sections includes design tips, photos and important lessons that the two authors learned through their personal projects.



John Salmen has been working in the field of accessible architecture and Universal Design for over 30 years, and he put this expertise to good use when remodeling a historic property to create the Universally Designed house he and his wife hope to live in for many years. Salmen's "Home for the Next 50 Years" has been featured in various media outlets: including *The Washington Post*, *Fine Homebuilding*, AARP's television show *Inside E Street* and the book *The Accessible Home: Designing for All Ages and Abilities*. Now, readers will be able to explore Salmen's home in even greater detail and apply his experience to their own Universally Designed home projects.

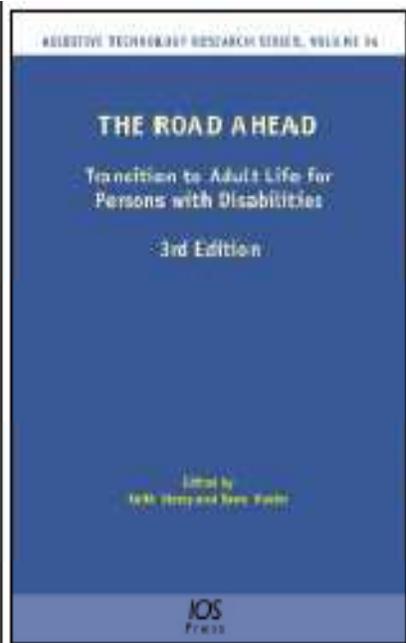
Ron Knecht's experience with Universal Design started after his wife of 46 years became ill with cancer. As her health worsened, Knecht learned first-hand the importance of accessibility for maintaining independence, safety and one's quality of life. Before Knecht's wife passed away, she extracted a promise from him that he would move to a Universally Designed house located closer to their daughter. Knecht was underwhelmed by both the houses that he saw on the market and the UD house plans that he found online; he realized that he would have to plan and build a custom house in order to fulfill his promise.

# China Design Index 2014



China Design Index 2014: The essential directory of contacts for designers Paperback – February 1, 2014 by Robert A. Curedale (Author)

# The Road Ahead, Transition to Adult Life for Persons with Disabilities



## **The Road Ahead**

Transition to Adult Life for Persons with Disabilities

Volume 34 Assistive Technology Research Series

Editors: Storey, K., Hunter, D.

December 2013, 318 pp., hardcover (revised 3rd edition)

ISBN 978-1-61499-312-4 (print)

ISBN 978-1-61499-313-1 (online)

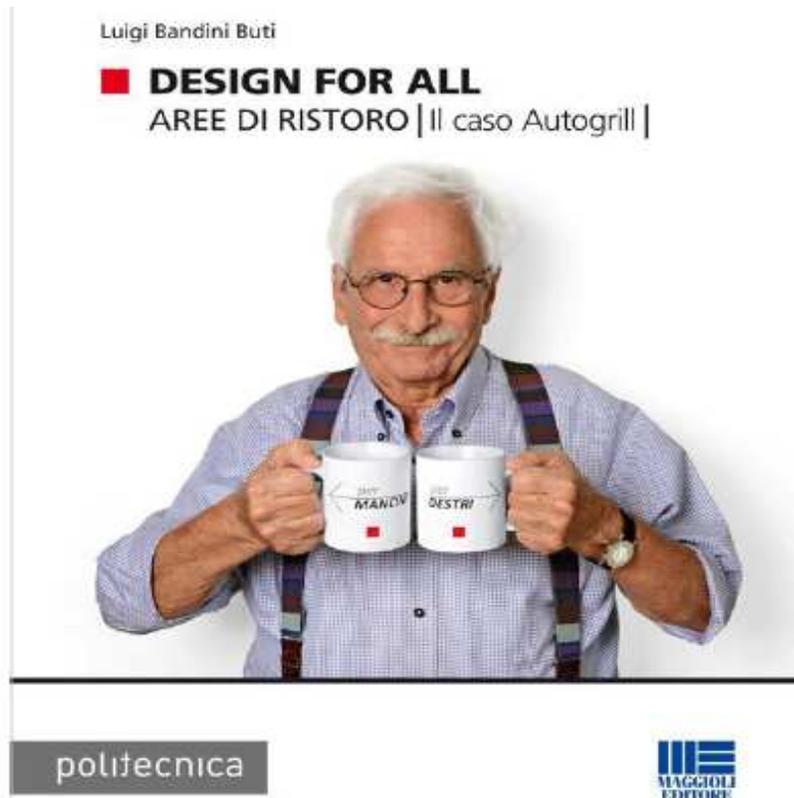
Price: €69 / US\$100 / £59

Successful transition from school to adult life has always been difficult for people with disabilities, especially in the area of employment. The vast majority of people with disabilities are either unemployed or underemployed with low wages and few benefits, and many governments are struggling to find a way of providing employment and benefits to people with disabilities without creating disincentives to work.

This book provides strategies and ideas for improving the lives of people with disabilities, exploring new ways of enabling a successful transition to an integrated adult working life by providing effective instruction and support. Following an introduction which outlines the importance of transition services and meaningful outcomes, topics covered in the remaining chapters include: person centered transition planning; enhancing competence and independence; employment assessment and career development; collaboration between agencies for a seamless transition; independent living and supported living; and community functioning skills.

The book will be of interest to all those who work with transition age students as well as those who work with adults with disabilities and want to enable them to have the best life possible. To paraphrase Helen Keller: "People with disabilities not only need to be given lives, they need to be given lives worth living."

# Design for ALL, Aree DI Ristoro



Luigi Bandini Buti  
**DESIGN FOR ALL | AREE DI RISTORO | il caso Autogrill |**  
Maggioli Editore, 2013  
<http://shop.wki.it/risultatoricerca.aspx?indizioricerca=luigi+bandini+buti>

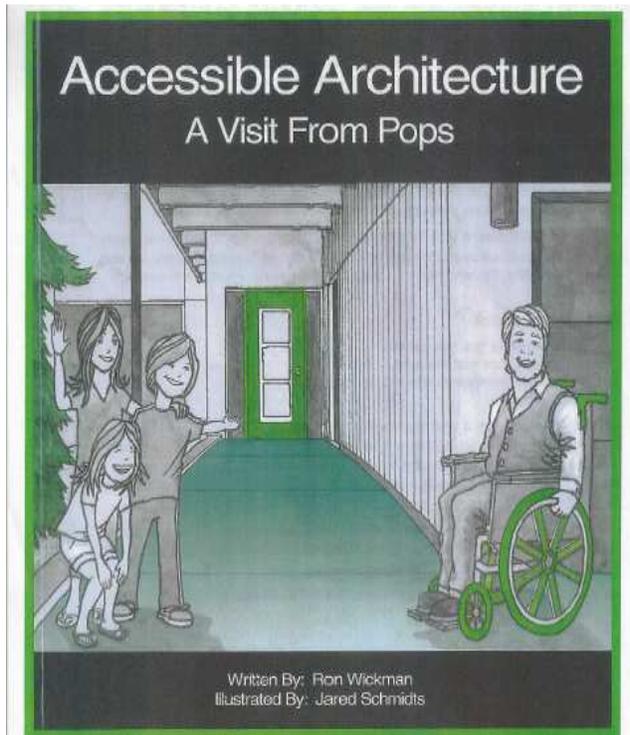
This book has been born following the collaboration with Autogrill that, for its new facilities "Villoresi Est", has developed an innovative, Design for All oriented project. We then realized that the cares foreseen for "all" would not be noted by "the majority".

If you are not on a wheel-chair, or blind, or you are not travelling with a large family or you don't have to look after your old grand-father, you will not be able to appreciate many of the attentions included into the project. It was therefore necessary to make more visible the virtuosity of the planning process and its results, which may not appear obvious to many people.

This publication is not meant to be a mere description, it is rather a critical analysis of the Villoresi Est rest area, included in a context that wants to examine in depth the methods and the means of Design for All.

Its main objective is therefore to use the "Autogrill case" to investigate the necessary steps to develop projects Design for all oriented, hopefully in an authoritative way.

# Accessible Architecture



## **Edmonton Architect publishes - Adult Children's Book—Accessible Architecture: A Visit From Pops.**

Edmonton Architect Ron Wickman launches his first book titled: **Accessible Architecture: A Visit From Pops** at the City Room in City Hall, Tuesday, March 18 at 6 p.m. Ron, son of the late Percy Wickman, MLA Edmonton-Rutherford 1989-2001, is a story written on the focus of Percy and his 3 grandchildren. Ron is best known for his accessible design. His most recent endeavor published by Gemma B. Publishing draws on his knowledge. Edmonton draughtsman Jared Schmidts illustrates with wit and precision the need for a house to be visitable by everyone.

As a child, Ron Wickman learned firsthand about the need for accessibility. His father became paraplegic after being injured by an industrial accident. Ron wheeled his father into many inaccessible places. A longtime Edmonton City Councilor Percy Wickman advocated for people with disabilities throughout his life.

Ron Wickman studied architecture in Edmonton and in Halifax, Nova Scotia, specializing in barrier-free design, designing houses and public spaces that were both beautiful and accessible.

**Accessible Architecture: A Visit From Pops**—is an adult children's book, which demonstrates the three principles for ensuring a house can be visited and enjoyed by everyone equally, including those with a disability. Following Wickman's design and renovation also enables homeowners to age in place.

Visitability principles include

- the front entrance must have no steps;
- all main floor doors must be at least 36" wide
- an accessible washroom must be on the entrance floor.

**Accessible Architecture: A Visit From Pops**, by Ron Wickman, illustrated by Jared Schmidts and edited by Sarah Yates, is published by Gemma B. Publishing, a Winnipeg-based publisher. Gemma B. Publishing creates heroes and heroines living with a disability, in both fiction and non-fiction. The book will be launched at Edmonton City Hall, March 18 at 6 p.m. and available later at Audrey's Books in Edmonton.

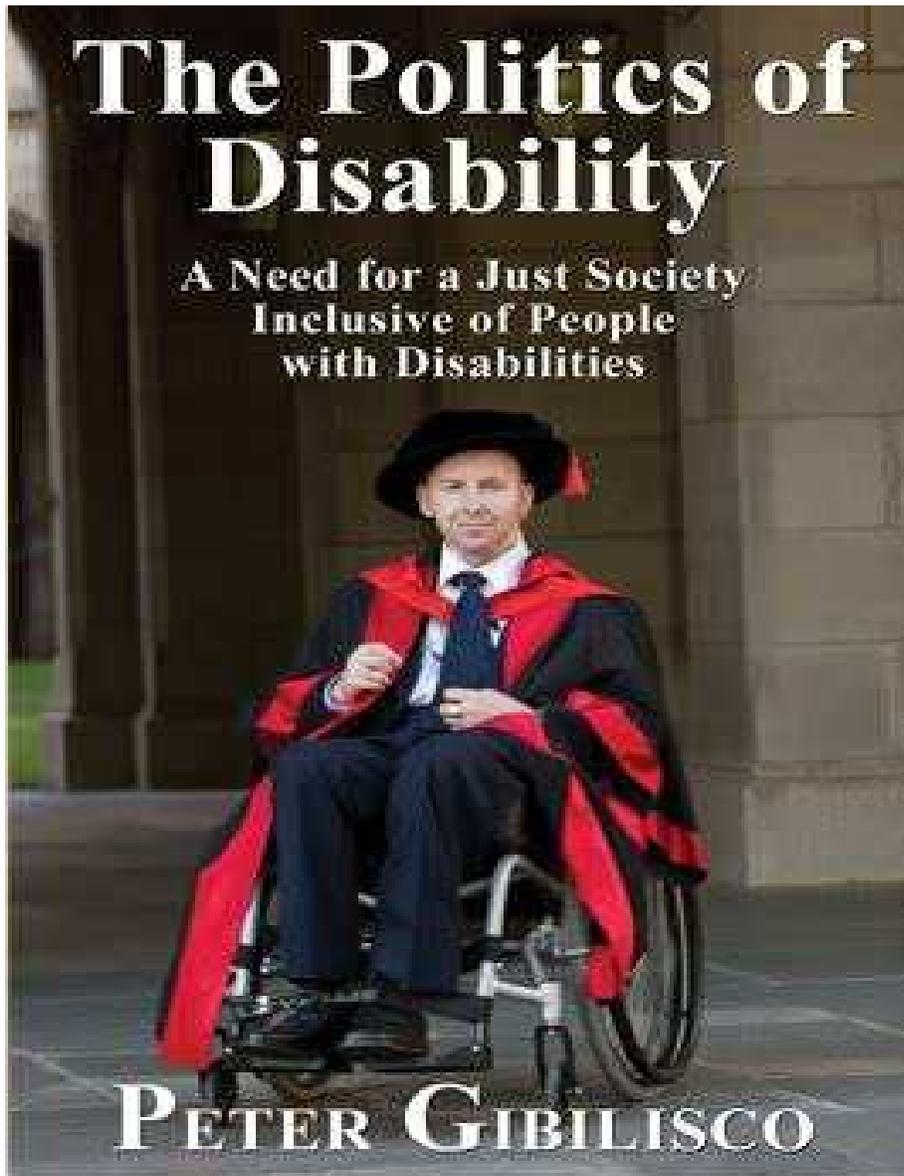
Ron Wickman will be available for interviews after the press conference at City Hall. His lecture at the Buildex Conference, Edmonton Expo Centre, Northlands will be held Wednesday, March 19 at 2:30 p.m.

**Accessible Architecture: A Visit From Pops ISBN978-0-991697-0-8** sells for \$20.

- 30 -

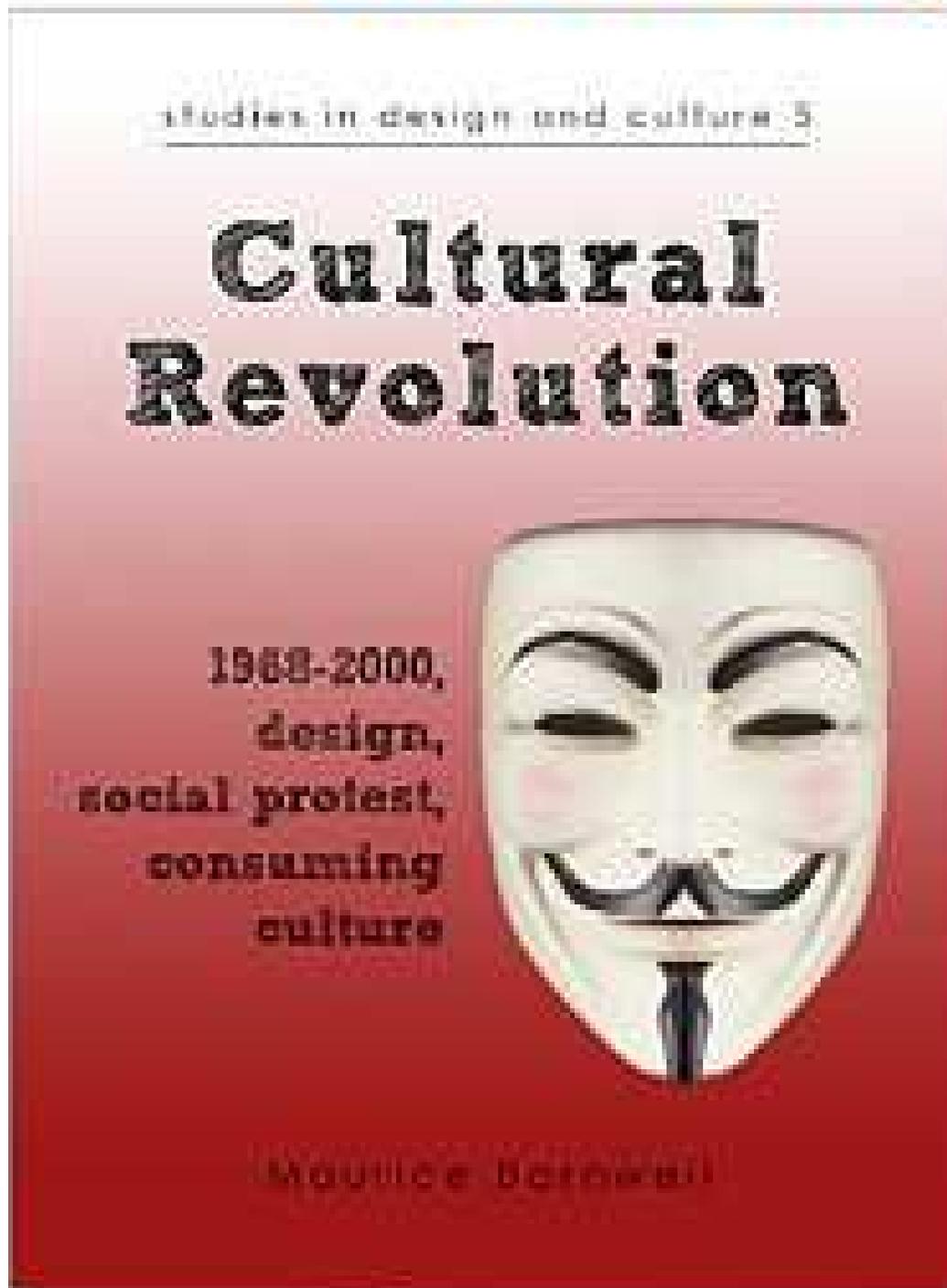
For additional information, contact:  
Ron Wickman  
Architect  
780-430-9835  
E-mail: [rwickman@shaw.ca](mailto:rwickman@shaw.ca)

## The Politics of Disabilities, Peter Gibilisco



This book will retail for a recommended price of \$19.95 USD ISBN 978-1-77143-155-2, with an ebook version also available at a recommended price of \$7.95 USD ISBN 978-1-77143-156-9. You'll be able to buy it from all the usual places - Angus & Robertson, Bookworld, Fishpond, Amazon, Kobo, iBookStore, and Google's Play Store, amongst others.

# Cultural Revolution by Maurice Barnwell (Author)



# Design For All – the project for everyone.

## Methods, tools, applications Volume 1 – 2 (Steffan, 2012)

**Design for All – the project for everyone. Methods, tools, applications.**  
Volume 1- 2 (Steffan, 2012)

The publication highlights the multidisciplinary and cross-disciplinary of the Design for All approach, both in terms of issues addressed and of field of application. The accessibility of places and objects is nowadays a minimum requirement: it is only the starting point to allow their use by the widest range of people possible. Through professional experience and research, the paper tackles problems, methodologies and working tools, benchmarks.

The first volume covers the main areas of research and presents some examples at urban scale; the second volume illustrates examples of architectural design, products, services, university education.

The lack of compliance of the built environment and of the products, with needs that can be very different, causes a state of handicap. The lack of ability is a handicap only if the project has not taken it into account.

With these books we intend to stimulate debate, in-depth research, specialized studies, so that Design for All can be increasingly known and applied in more and more research and professional areas.



Published in Italian in December 2012 by Maggioli Editore (Santarcangelo di Romagna RN, Italy).

[http://ordini.maggioli.it/clienti/product\\_info.php?products\\_id=8832](http://ordini.maggioli.it/clienti/product_info.php?products_id=8832) Volume 1

[http://ordini.maggioli.it/clienti/product\\_info.php?products\\_id=8833](http://ordini.maggioli.it/clienti/product_info.php?products_id=8833) Volume 2

The on-line English version is also available since October 2014:

<http://www.maggiolieditore.it/ebook/tecnica/design-for-all-the-project-for-everyone-first-part.html>

<http://www.maggiolieditore.it/ebook/tecnica/design-for-all-the-project-for-everyone-second-part.html>

*"Ideas, even good ideas, flourish only when practitioners commit to sharing their experiences, perspectives and aspirations. By organizing this publication and convening a distinguished international group of contributors, Editor Isabella Tiziana Steffan helps to establish the current state-of-the-art and affirms the significant potential of Design-for-All. She also delivers fresh inspiration to an expanded audience critically important to engage if Design-for-All/Universal Design is to realize its promise in the coming years.(...)We salute Editor Steffan for her passion, focus and hard work to bring this valuable contribution to fruition." (Valerie Fletcher)*

# APPEAL:

## Survey for Ph.D. Student

I am currently pursuing my Ph.D. from IIT Delhi in the domain of Industrial Design. My dissertation topic is Design Forecasting with ref to Product innovation.

Please help me by filling this questionnaire. And also recommend it to your friends/juniors/colleagues.

You can find the survey at:-

<http://www.surveymonkey.com/s/innovation-forecasting>

There are just 14-15 questions related to product innovation and the factors which are important for planning/designing our future. It would not take more than 7-8 minutes to finish this questionnaire. There is also a surprise gift in the end of the survey form, a specially designed poster featuring the great classical products of the last century, in high resolution, ready for print.

Design-for-all is a formidable design community and has a widespread global reach. Through it my survey form can reach design practitioners, academicians and stake holders at various levels. I request you to help me by forwarding this through your mailing list. I am really counting on your help and shall be deeply thankful to you for this.

You may also share it on FB, linked-In, or in your network of friends and recommend it to anyone whom you find appropriate for this study.

Thanks and best regards

Sugandh Malhotra

Mob: 9810296933

# NEWS:

## Diamond Schmitt receives Civic Trust Award in England

by DCN News Services

TORONTO—Diamond Schmitt Architects recently received a Civic Trust Award during a ceremony in London, England, for the design of a cultural centre in the Regent Park community of Toronto.



Diamond Schmitt Architects was recently honoured with a Civic Trust Award for the Daniels Spectrum cultural centre. - Photo: Diamond Schmitt Architects

"It is an honour to be recognized with a Civic Trust Award," said Donald Schmitt, principal with Diamond Schmitt Architects.

"The design objective was to facilitate interaction among the tenants, students and the public and to make the centre a vibrant and welcoming crossroads for the community."

The 56th Annual Civic Trust Awards Ceremony was held on March 6 at The Swan, Shakespeare's Globe Theatre in London. The longest standing built environment awards program in Europe recognizes projects that demonstrate excellence in architecture, sustainability, universal design and make a positive social, cultural, environmental or economic benefit to the local community.

From 238 applications, 91 national and international projects were rewarded with a Civic Trust Award or commendation.

Designed by Diamond Schmitt Architects, Daniels Spectrum was the only award winner from Canada and one of two from North America among a global roster of 32 projects.

The cultural centre provides professional performance, rehearsal, learning and social enterprise space for community-based arts and cultural groups.

"Native Earth Performing Arts has a unique ventilation system to allow smudging in Aki Studio, a 120-seat black box theatre, ArtHeart Community Art Centre has a built-in kitchen so they can provide free meals for drop-in participants, and COBA, Collective of Black Artists' drumming and dance studios have sound-isolated performance space and a separate box office and entrance," said Seema Jethalal, managing director of Daniels Spectrum.

Operated by the non-profit Artscape, the 60,000-square-foot LEED Silver certified facility is versatile and tenant groups worked with the architects to design their studios with their audiences in mind.

Other resident groups include the Regent Park School of Music, Pathways to Education, Regent Park Film Festival and the Centre for Social Innovation.

Daniels Spectrum is named for The Daniels Corporation, which is the developer in partnership with Toronto Community Housing Corporation, revitalizing the 69-acre Regent Park with 5,115 rent-g geared-to-income and market rate residential units and amenities.

Diamond Schmitt Architects is a full-service architectural firm based in Toronto with an international reputation for design excellence and sustainable design solutions

(Courtesy: by DCN News Services )

## 13th Session of the CRPD Committee Opens

GENEVA: The UN Committee on the Rights of Persons with Disabilities opened its 13th session (25 March – 17 April 2015) during which it will review Germany, Croatia, Czech Republic, Turkmenistan, Dominican Republic, Mongolia and the Cook Islands, as well as adopt the list of issues on the European Union.



## CONVENTION on the RIGHTS of PERSONS with DISABILITIES

During the opening session, the Committee re-elected by acclamation Maria Soledad Cisternas Reyes as Chair of the Committee and a new bureau composed of three women Vice Chairs, Theresia Degener, Silvia Quan Chang and Diane Kingston, and re-elected Martin Babu Mwesigwa as rapporteur of the Committee. The Committee also swore in five new members: Danlami Umaru Basharu (Nigeria), Carlos Alberto Parra Dussan (Colombia), Coomaravel Pyaneandee, Jonas Ruskus and Liang You (China).

For the first time during its session, the CRPD Committee is including private meetings with DPOs and civil society within its official meeting time in the lead up to country reviews, reflecting the value which the CRPD Committee's places on receiving information from DPOs and exchanging with them about the lived experiences of persons with disabilities and the challenges of CRPD implementation on the ground. These meetings are only open to UN agencies, NHRIs, DPOs and civil society and are not webcast.

# PROGRAM & EVENTS:

## RFT Awards



## Transportation connects us all.

Whether it's simply getting from home to work or using products shipped over distances near and far, in every region of the world transportation impacts our daily lives.

At first glance, transportation may simply appear to be about the movement of people and goods. But looking deeper, it's also closely linked to equality, access to healthy food and good schools, and wildlife impacts, for example.

As the mobility demands of people and freight have grown, so too has the need for products, systems, and services that will make the transportation sector more life-friendly, for both people and the planet.

Registration is now open

Learn biomimicry and how to apply it while competing for cash [prizes](#) with students from around the world.

[Register](#) your team for immediate access to the [biomimicry design resources](#) and start developing your design solution today!

# The Biennale Internationale Design SaintÉtienne 2015



## The Spark 8<sup>th</sup> Annual International Awards

**SCREEN**  
For a wide range of designs that are expressed on a screen, from applications to medicine, interface to entertainment.

**EXPERIENCE**  
About analyzing, designing & improving the user's experience. It includes service design, UI, UX and XD.

**CONCEPT & STUDENTS**  
For concepts developed in any medium and design discipline, by students or professionals.

**GRAPHIC**  
For print, branding, graphics & environmental design.

**SPACES**  
For architecture, interiors & urban design.

**PRODUCT**  
For 3-D, industrial & product design.

**HEALTH**  
For any health-related design, from devices to delivery, systems to facilities.

**TRANSPORT**  
For all forms of transportation, from cars & bikes to trains, planes and systems.

### The Spark 8th Annual International Awards

EIGHT NEW COMPETITIONS SERVING EVERY DESIGN DISCIPLINE  
FOR COMPLETE DETAILS, VISIT [WWW.SPARKAWARDS.COM](http://WWW.SPARKAWARDS.COM)

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Take a chance to travel for educational or professional purpose and tourism to the beautiful region of Provence. Improve your poster design practice and exhibit it with a selection of internationally renowned graphic designers in a European Capital of Culture.

# Transcend 2015



# Interaction Awards 2015



# AIM and MANAGE for Inclusive Access

# EBU, The Vision for Equality Award



The voice of blind and partially sighted people in Europe

## The Vision for Equality Award

**The EBU Vision for Equality Award** is given to European organisations, institutions, policy makers, enterprises or individuals in recognition of their commitment to protect and promote the rights of blind and partially sighted people and to improve their living conditions. The Award, which consists of a certificate and a piece of art by a visually impaired artist, is presented every four years on the occasion of EBU general assemblies.

Nominations may be put forward by EBU national members and are processed by the EBU Awards Working Group.

CALL FOR NOMINATIONS FOR THE 2015 EBU "VISION FOR EQUALITY" AWARD

## ICED 2015 – Design for Life



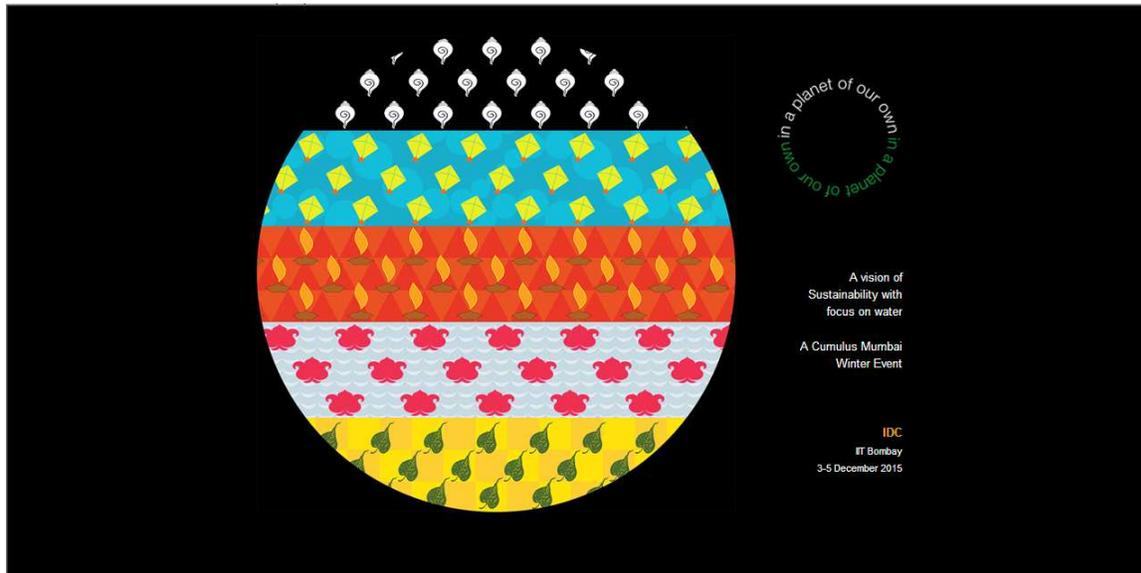
ICED  
2015  
DESIGN FOR  
life



WHEN  
July 27-30, 2015

WHERE  
Milan, ITALY  
Bovisa Campus - Politecnico di  
Milano

# A Planet of Our Own Cartoon Competition



## Cartoon Competition

We invite you to participate to showcase your ideas on sustainability during the Cumulus Mumbai 2015: In a planet of our own - a vision of sustainability with focus on water' by submitting a Cartoon created by you.

*Design Cartoons on the theme of Sustainability with focus on Water*

We invite cartoons which humorously communicate the seriousness of the theme, by rethinking sustainability with respect to water in terms of conservation, preservation and recycling. Rethink situations, rethink water, life, thirst, cleanliness, greenery, energy resources and everything else we use day in and day out to keep going. Rethink and depict how the saving of water that can fully give a new lease of life by either going back to nature or going back into the design process as a new paradigm that can affect our world..

Cartoonists are invited to interpret the theme of the event 'In a Planet of Our Own – a vision of Sustainability with focus on Water' as representations through designing of Cartoons. The **Winning Entries:**

- 1. The winning cartoons will be displayed as an exhibition during the event. We expect the exhibition to travel to other places as part of other events.**
- 2. The winning entries will also be published as part of a book to be released during the conference in December 2015.**
- 3. Each of the winning participants will receive 5 copies of the book.**
- 4. The winning participants will also be given the 'Certificate of Winning the Cartoon Competition'.Partnership:**

This competition is done in partnership with [Usability Matters.Org](http://UsabilityMatters.Org)  
The Jury and the Judgment Criteria:

The jury will be well-known professionals and socially active personalities. The names will be announced in due course. For judgment, the jury will use criteria such as creativity, humor, visual communication, presentation, persuasiveness, originality, cleverness, relevance of content and execution.

*Submission Guidelines:*

**Entries : up to 5 cartoons per person**

**Size (hard-copy): A4 (210 X 297 mm ) or A3 (297 X 410)**

**Size (digital): 300dpi and in dimensions of A4 or roughly 2500 x 3500pixels**  
**Please make sure the resolution is 300 dpi so that it is suitable for printing**

**Technique: free - can be either hand drawn or digital using any medium**

**and email these with the subject line 'Cartoons' to:**  
[contact@inaplanetofourown.net](mailto:contact@inaplanetofourown.net)

**or snail mail to:**  
**Cartoons - in a planet of our own**

**IDC, IIT Bombay  
Powai, Mumbai  
400076  
India**

[www.innonatives.com](http://www.innonatives.com)

**OPEN INNOVATION AND DESIGN FOR  
SUSTAINABILITY CONFERENCE INVITATION**



# Innovation with a Smile AVRILDESIGN



# Job Openings:

## 1: VISUAL DESIGNER:

0-2 years of experience

Formal degree or professional qualification in Visual Communication and Proficiency in various design communication tools

You will create rich visual interactions by understanding the structure and type of information in close collaboration with information architects and product management. Deliver visual design solutions for new features and product requirements that fit with both brand and platform consistency. Exposure to visual designs for smartphones, iPhones or tablets is desirable.

Location:

Pune/Bangalore

## Sr. USER EXPERIENCE DESIGNER:

3-5 years of experience

Formal degree or professional qualification in Interaction Design, Product Design or Visual Communication, Proficiency in various design communication tools

You will design creative and intuitive applications for desktop, webtop or palm-top devices. Good understanding of design process and ability to communicate ideas using various design tools, excellent communication and team working skills. The person should have good problem-solving skills and self-motivated to learn and apply new trends and practices.

Location:

Pune/Bangalore

Send your portfolio to us at: [careers@claricetechnologies.com](mailto:careers@claricetechnologies.com)

## 2. Information Architecture

Create user-centric designs by considering customer feedback and usability findings. Translate business requirements into tangible user interface solutions that integrate the latest standards in interaction design, wireframes, prototype and some visual design. Conduct usability research (expert reviews, competitive analysis, task analysis, card sorts, user interviews, and usability tests) and put together detailed, structured analysis of issues and potential solutions. Convert findings into wireframes and prototypes.

Design the Information architecture, interface, and interaction flow of web applications. Develop process flows, wireframes, and mock-ups to effectively conceptualize and communicate high-level design strategies and detailed interaction behavior. Develop and maintain detailed user-interface specifications

Collaborate and communicate with/between engineering team, stakeholders, expert users and senior leadership for review and feedback. Contribute to the user experience knowledge repository by updating UI Guidelines and design processes and patterns. Influence and educate the product teams in user-centered design principles and processes.

#### Skills

- Bachelor's degree
- Masters in Human Factors or related field preferred
- 5– 8 years related work experience
- Expertise in a broad range of methodologies including strong experimental design, data, analysis, etc
- Strong understanding of UI design concepts. Excellent problem-framing skills
- Organized, self-directed, efficient, and able to manage complex projects in a timely manner
- Experience with Axure, Balsamic, visio, Photoshop and/or some interaction design tools

Please email your resume and portfolio to [dhaval.upadhyay@tomtom.com](mailto:dhaval.upadhyay@tomtom.com).

### 3. Design Leader

Fropcorn, one of the fastest growing start ups based out of Mumbai is looking for a top notch design leader who can completely own the user experience for their products.

Fropcorn is a content distribution start up that brings entertainment to millions of people who are traveling each day. They have built proprietary technology which helps passengers download movies, music, games, etc within minutes and watch it during the journey.

The team consists of folks from Microsoft, Vodafone and Komli and is also a part of the 1st batch of the accelerator run by Reliance and Microsoft.

The designer should also be able to help them

- create a strong and fun brand identity
- contribute in brand building, product UX (website and mobile apps) and marketing collaterals.
- make the entire content download experience fun and engaging.

A minimum experience of 1-2 years is preferable.

If you think you have what it takes to work for a start up and be a part of one of the most exciting journeys, then send your portfolios to - [kartikpoddar@gmail.com](mailto:kartikpoddar@gmail.com).

### 4. Senior Interaction Designer

Juniper Networks is looking to hire a Sr. Interaction Designer to join its team in India (Bangalore) office. The details for this role are below. If this gets you excited, please share your resume and portfolio (or link to an online version) with me at [amols@juniper.net](mailto:amols@juniper.net)

#### JOB DESCRIPTION

The Senior Interaction Designer must be highly skilled at balancing users' needs, technical constraints, and business objectives while working in a fast-paced environment. The ideal

candidate is an expert in designing complex web applications and has a track record for making the complex simple. He or she should have extensive experience converting user stories into detailed interaction specifications and/or prototypes that are elegant and easy to use. This position requires strong written and verbal communication skills, and a great sense of customer empathy.

Responsibilities include:

- Work from user stories, explore detailed use cases, define UI concepts, and then guide development through all of the details that culminate in an excellent user experience
- Improve existing product functionality based on user research, working iteratively with the team
- Collaborate with visual designers and corporate marketing to integrate visual and behavioral elements
- Lead the design process on projects, drive decisions, create schedules, and track measurable UX outcomes
- Deliver UI prototypes, wireframes, and detailed design specifications to communicate designs
- Lead teams in conducting design reviews and assist with user research activities
- Mentor junior staff and non-designers in all aspects of user experience and design

Qualifications:

- Bachelors/Masters degree in HCI, Human Factors, Cognitive Psychology or related design fields;
- 5+ years of experience ideally working in a UX team or agency environment
- Expert knowledge of interaction design and overall user experience methodologies
- Strong time & project management skills, Agile experience a bonus
- Expert knowledge of tools such as Adobe CS, Omnigraffle, Axure, and MS Office
- Familiarity with HTML, CSS, and Ajax technology; web prototyping skills a bonus
- Familiarity with user testing; hands on user research experience preferred
- Track record of designing experiences that delight users and increase revenue

Please include offline portfolio/URLs for an online portfolio in addition to your resume. Submissions without a portfolio will not be considered.

#### **ABOUT THE TEAM**

Join a global team that thrives on creativity, innovation and complex problem solving. You'll work on software that is mission-critical for our customers and keeps the Internet safe. You will influence all aspects of our product, from the design of a grid control to how we represent big-data on Internet traffic patterns.

Work in an environment where the executives talk about user experience and customer experience as much as they do about revenue and market share. Define market-changing experiences that influence lots of people's lives.

#### **ABOUT JUNIPER NETWORKS**

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. Our products and technology run the

world's largest and most demanding networks today, enabling service providers, enterprises, and governments to create value and accelerate business success. Everyday our 9,000+ colleagues come together across 46 countries to realize our company vision – Connect Everything, Empower Everyone. We are innovating in ways that empower our customers, our partners and ultimately, everyone, in a connected world. These customers include the top 130 global service providers, 96 of the Fortune 100 and hundreds of public sector organizations.

#### 5. User Research Intern

We are looking for a User Research Intern for 4-6 months at PeepalDesign, a UX Design and Research Consulting Firm in Bangalore.

If you meet the below criteria, we would love to hear from you:

1. Doing your Bachelors or Masters in Research/Design
2. Excellent communication skills
3. Passionate about user research
4. Interested in a 4-6 months internship from June/July (minimum 4 months)

It will be purely research internship. Hence, kindly apply only if you are interested in research.

Please send your resumes to [mrudula@peepaldesign.com](mailto:mrudula@peepaldesign.com) .

#### 6. Designers

Job opening details for Tata Elxsi ,Bangalore Studio.

Experience 0-3 years.

The designers are expected to work in the following areas :Design Research, Interiors, Space design, Retail design and Signage Design.

Architecture graduates will be given priority.

Please send in your CV and portfolio to

[ghate@tataelxsi.co.in](mailto:ghate@tataelxsi.co.in)

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