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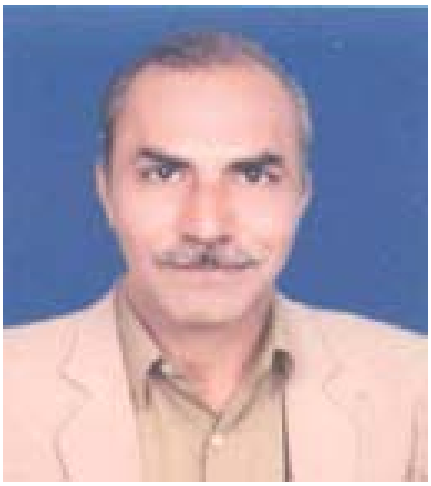
Design for All

International Day of Persons with Disabilities – 3rd December 2010

Chairman's Desk:



Dr. Sunil Bhatia

We all in this world have freedom to lead our lives on our own terms and designers are not exception. 'Options are many but choices are limited'. Academically qualified designers have lucrative commercial offers after the formal education .They take qualifications as their birth right to enjoy all possible luxuries & comforts of the world as against those who are not formally trained. They can either run after the materialistic world that is full of meta illusions for their individual gains or work for betterment of the humanity. Those who feel that the former will take them to a better life; they realize in last lap of their lives that their chase had no end. Rather it was nothing but mirage. The more we chase, more avenues appear that ultimately fuels our greed. They are so involve in their acts that they do not know at what point greed has overtaken their real purpose of being in this world and it works as dynamo for their progress. They find themselves surrounded with huge bundles of lifeless items and no sign of real life is visible. They forget that these items are designed to make their lives

comfortable but can not take us to real happiness. Happiness parameters are different from what they have defined. These peoples become insane in acquiring worldly things and intensity is so high where they shelve their moral, legal values and forget the importance of real human beings around them and commit the heinous crimes. A story of human weaknesses of never ending greed reminds me 'How much land does a Man need?'

No one can escape death but what matters is the quality of life individual is living? These material things which surround are left for inheritance or legacy of meaningful life is left by a man. A few follow religiously later option that is 'what they have taken from the society, they should return more than that.' This way they believe goodness would keep mounting and would help in prevailing better life. If we respect one another, share ideas for betterment of the society, participate in sorrows as well as on happy occasions , will to help others and above all tolerance is high, no one can imagine life better than this. These actions will make lively atmosphere where pain and sufferings have least presence and it will help in reducing the impact of destructions and evil forces. An ordinary person with limited knowledge, vision and resources also wishes to be part of progress of goodness and for him easiest options of returning back to the society is 'charity'. While performing charity they console by saying 'I have done my social obligations. Rest is in the hand of god'. When he utters 'I have done my duty and rest is in the hand of God', it reflects his interior motive. Charity appears eye wash, rather it indicates

hidden agendas. Either he wishes to avail the tax benefits or it enhances his personality aura and that could create better impression on others who are around him. It may be fear or say rage of god (he doesn't deserve what he receives from the society and loosing of what they are enjoying causes intense fears. This makes him highly manipulative, crook, mean and sometime he commits heinous crimes to protect creature comforts.) that prompts him for charity or after the death the charity will establish him as a good human and it will be passport for Heaven or rarest of rare they shell out as secret funds without any mala fide intentions. Generally he gives old cloths or house hold materials that are no more useful to his family. I admire his thoughts and respect their common sense of justifying his acts. Real designers are not run of the mill but he is trained to play a vital social role with huge responsibilities and side by side he should not be denied a reasonable comfortable life. If he fulfills his social obligations along with his commercial benefits, it makes him respectable in the society. The best way to enjoy both worlds is use the concept of Universal Design/ Design For All in his commercial design products/ services. In this way he is helping all and some commercial gains are inevitable. He has all rights for a justified moderate living.

An individual can lead his/her life either by choosing the 'art of life' or 'art of living'. No one from the society can force him to follow any of these paths. It is the choice of an individual. Majority sails in different manner, 'we are living in highly competitive cut throat world and for progress we have to be

ruthless and selfish. Otherwise our existence will be in danger.' Some time a few wish to lead the lives as they wish to but 'no man can live without jostling and being jostled; in all ways he has to elbow himself through the world, giving and receiving offence. -Thomas Carlyle' .Circumstances are not permitting to follow what they wish, it is cause of helplessness and their struggles end with 'man proposes and God disposes'. They are victim of circumstances and do not know how to be out from this trap. The temptation of 'art of living' i.e. manmade circumstances is so high that majority falls under this trap and they are not trained enough to know the art of coming out from this trap and simply surrender to their fate and accept as their destiny. I call them 'circumstantial victims'. Art of life puts many moral constraints. In this world of so many professions people vote for art of living.

A few who are aware about these materialistic traps and never become victim of these traps, they are living with hopelessness. They are simply busy in criticizing the system but do not have enough brain & courage to rectify the system. It is rare that I have come across such a special class of people who are capable to earn and can lead their comfortable life as ordinary person leads, but by choice they are 'poor' and they fall under the category of 'great'. Living in mundane worldly affairs and not demanding from the society rather they keep giving in such a way that it changes the orientation of mankind and it becomes difficult to repay their deeds by our coming many generations. They acquire the status of messengers of the god and prophet. This is most difficult role they play while

living in those environments where everywhere one or another traps are laid and inspite of that they keep on working for the progress of humanity under all limitations. They lead lives of services & sacrifice. They have no major axe to grind except to live honestly & respectfully with fair means.

There is another class of people who are aware about trap and have wishes to do betterment of the humanity but they neither indulge in those environments that can trap and limit them nor do they wish they should have recognitions for their efforts. They simply live their own lives on their own terms and die as unsung heroes and lives with indifferent attitude. Majority of the peoples live as 'Life is not so bad if you have plenty of luck, a good physique, and not too much imagination. -Christopher Isherwood' It is the choice for designer to chose an ordinary person way of life or life of a person with some good mission.

It is the discretion choice of the individual what way he wishes to spend his entire life. If he becomes engineer, doctor or accountants or designers, marries a beautiful woman and has one or more beautiful kids studying in best school of the town and has al the facilities what an individual wishes to have, this style of life is 'Art of living' where individual knows the art of 'how to be part of the existing system and fits himself as a tool in a such a way that gives the impression that system will collapse without them.' Against that, he charges/ extracts/ loots a huge from the society and looks after his all needs & wants for living. Some extra clever people twist it for their personal gains for meeting their luxuries. Definition of luxury

for them is 'without hard work for any meaningful output, extract as much as possible at the cost of others for own benefits'. Income is important, but a good quality of life is dependent on much wider criteria than just money. A good salary alone does not make man happy. We are all trying to achieve something more than just material wealth.

The art of life is the art of avioding pain. 'Art of life' is where people are struggling hard to meet their two meals a day, face humiliation every moment, and poverty is best companion. These things appears minor compare to their ambitions with strong focus mind of 'to achieve something what an ordinary person's beyond imagination'. Their hearts are filled with humanism and ready to help others. Meanness and selfishness is not reflected in their acts. Every moment they are encountering disappointments, failures and miseries, in looking back in their lives, still they are able to say as human being "I had a wonderful life". Someone is constantly whispering in their ear 'life is tragedy, fragility and miseries'. These people are well aware that temptations of physical comforts are difficult to resist but they keep on saying 'these difficult movements are passing moments. Wonder is right before us and they are guided by insight that, in order not to miss the wonder.' They are vigilant, keep their eyes open and focus on 'how they can improve the existing system or engross in designing a new system that what is beyond the perception of common person.' In return of these exercise of creativity they suffer a lot. Common person's biggest fear is sufferings, pains and humiliation. These creative personalities are immune and do not bother for these negative forces. It is advisable that we

must look at 'art of living' and focus on thinking of 'art of life'. This life appears tough and it is difficult for anyone to follows, but in reality, it is the easiest & natural path. As a Buddha's life suggests, as a young prince Siddartha, he was deeply affected by the sight of old age, sickness and death and thereby led to the conclusion that pleasures of life are ephemeral. He was living the life under the influence of 'art of living' and he never encountered 'art of life'. Once he faced the harsh reality of life he became Buddha and no more a prince Siddartha. Ordinary people take good thing in life such as health, wealth and life itself as it were everlasting, and it often results in frustrations and sufferings. Designer's role is to minimize the sufferings and makes the life of everyone at ease and comfortable. Rare are designers who work selflessly for betterment of humanity. Majority of the designers are singing the song in chorus of market language and fade in oblivion as market fades and rises.

I have never come across such a selfless personality of last century of 60's decade Mr. R.L Mace who has coined the word 'universal Design' in present time, and his ideas were for benefits of masses. As time is passing his ideas appears more relevant. That is the reason, it is gaining momentum in such a short span of time and he had influenced the mind of designers of the world that they are working/ discussing/organizing seminars/workshops and conferences at national/international level where people from different parts of the world are showcasing their products/ services and improving their knowledge. He had suffered a lot but those sufferings are no

where visible in his works. So sufferings should not affect designers of our time. They should treat it as part and parcel of life .It is advisable that they should work for betterment of society and not for individual benefits. Present designer should keep two things in their mind-one is humanity and another is aesthetics. Humanity surfaced in any person when he experiences humiliation, poverty, sufferings of others and those conditions that are beyond their imagination. They question 'why is his personal condition so pathetic? What is the reason of his sufferings? What makes me different from them?' That point compels them to think for humanity. When Buddha saw the people were carrying a dead body for final rites it was shocking experience for him and he questions himself ' what I am doing is real life or what is happening in front of me is reality of life?'. Actually he was questioning which is reality and was clearing his duality contrast life, 'living as prince i.e. art of living' or 'what people are carrying a dead body i.e. art of life.' He had chosen later .That question made Sidhartha immortal Buddha and biggest contributor for betterment of humanity. This sensitivity for others can not be acquired, it is inborn. Our designers should never forget that if they do not have respect for human and their tolerance is lost, they can not be good designers. Aesthetics can be developed by training but respect for humanity is individual's an inner sensitivity trait and it can not be learnt from school. If our designers fail to create a proper balance in both, the result will be disastrous and it will ruin their works. No one expect complete wipe out of imbalance of these from the society. At least, they can work in the direction of reducing unwanted adverse affects of

manmade selfish actions. While working for progress of the society their biggest fear is of losing their current status .They should not fear of losing their current status and can continue to live as what they are living, but they should modify a little in working style and introduce the concept of Universal Design/ Design For All while designing the products/ services and it can bring sea changes in society.

Fame is easily acquired by unfair means these days. Any monkey dancing to the sound of the turn box on television can have their fifteen minutes of fame. No effort, no talent and their success don't bother anyone. We are tune with these mimickers. They say, 'Let the individual should earn comfortably under the legal frame for own benefits but they should not behave as moral preacher for rest.' Performers, politicians, bureaucrats and artist falls in this category and they only work for own benefits & survival, and never work for progress of the society. A designer designs his product what market forces are directing and he knows who so will first design ,will reap the huge commercial benefits, may bag many awards instituted by market governing forces and with that contribution of design he can live very comfortable life ,will have all luxuries what an ordinary person dreams to have. It is called rat race. Nobody on this planet is immune to pain, stress, worry, heart break, fear, disease. We are all one and no man made such designs or concepts can ever change that. If any designer works in designing of sharing or reducing the pain and sufferings of fellow human beings , he/she may not enjoy what a designer enjoys who are working under market driven

forces and his/her ideas are supporting ideas which are commercially benefiting individual or corporate. These market driven peoples are living under tremendous fear and their brains are constantly engaged in manipulation for retaining the position what they are enjoying. Those who do not care for market driven ideas are living in misery but they live carefree and they do not fear of losing anything. They live under the shadow of love. It's only a choice. No effort, no work, no job, no savings and no money. An individual has limited choices between 'fear and love.' Fear is the key of survival but love makes life simpler, sensitive and grows the habit of sharing. It is possible to live a good life just by living according to defensible commitments. For most of us, however questions of conflicts do arise because of our defensible commitments of our lives that makes it impossible or hard to live accordingly , waver in our allegiance to our principles, and we see the attractions of other ways of life. The fear of life is favorite disease of our generation. Rarest of rare designers adhere to their principle and produce masterpieces that become assets & inspiration for coming generations.

It is great news for all of us that we are completing our fifth year of monthly publication in the month of December 2010. We have invited various authors under our invited author's series and response was so overwhelming that we thought we should publish various articles under invited author series. Our November 2010 Vol-5, No-11 is first in series. Our second will be December 2010 Vol-5, No-12

We have received many requests for change of format of our international publication from our well wishers and we respect everyone's opinion. We appreciate the tolerance of our designer's community of tolerating such lousy designed publication. Our initial aim was focusing on managing articles for every month publication. It is the love, affection and care of our authors, well wishers and readers that we have survived every odd condition and without fail we succeeded in publishing our monthly publication. We have introduced time to time improvement in our publication under our limited resources. Sometime we were praised and at times criticized. Criticism is source of inspiration for us and we work hard to meet their expectation. This issue onward we wish to introduce the real change in format to meet the international standard. We are appealing to our well wishers that they should come forward and design the format of our international publication in their own style in same manner what they feel like to have in international publication and submit their design to the Dr. Sunil Bhatia dr_subha@yahoo.com or dr.bhatiasunil@gmail.com . We would appreciate your feedback in this regard and if it is possible kindly redesign our November 2010 issue and submit to us. One should carefully nurture the right thoughts; and slowly build up confidence on the stable foundation of faith, understanding and self effort.

We try to cover the current topic that is in demand for our publication and we try our level best to justify also. International Day of Persons with Disabilities is annually observed on 3rd December with an objective to promote an

awareness of disability issues, the fundamental rights of persons with disabilities and integration of persons with disabilities in the main stream of each aspect of the social, political, economic and cultural status of their communities. The day extends an opportunity to initialize action to reach the target of full and equal pleasure of human rights and contribution in society by disabled persons, launched by the World Program of Action for Disabled Persons, declared by the UN General Assembly in the year 1982.

The year 2009 was focused on the right to act. The right to act is universally endorsed as a fundamental and basic human right. Its implementation as a right to all individual seems so rudimentary that we forget that for those with disabilities, the right to work is not always imperative. In terms of physical, institutional and attitudinal barriers, disabled persons are often refrained from their right to act. Our publication is working in the direction of making awareness among the people who are directly or indirectly affecting the progress of design community and its allied areas by framing their policies at different level in different states for common wheal. They are not discharging their duties properly and not providing facilities what an ordinary person wishes irrespective of challenged or not. They confined their role to simply that level where it gives the impression as they are catalyst for community care, but in reality, it will keep them remain in power. They forget that the purpose of life is a life of purpose and it appears simple, but in reality it's not easy. Recent research from the University of Bath claimed that while the

Western world has spent decades and incalculable amounts of time and energy aspiring to fame fortune and world domination, happiness is actually being kept alive in one of the poorest countries in the world. According to the university's Wellbeing in Developing Countries department, eight out of 10 people in Bangladesh - a country where almost half the population lives on less than $1 a day – describe themselves as "very happy". To be happy in this world money has least role.

We as designers should live a life of exemplary for masses because the masses of men lead lives of quiet desperation. We see the world through the eyes of our teachers, parents and too many of us are victim of "stuck in soon-to-be-outdated theories. We keep ignoring useful data that are signaling for drastic change because it doesn't fit our theories. We need to open our minds to possibility and never believe what we know is the ultimate and there is no scope of further improvement. We should learn the true joy of life, the being used up for a purpose recognized by yourself as a mighty one. Whatever decisions you made, you made them for a reason, and so you just go from there." Mr. Jimmy Wales of Wikipedia is a live example for our current generation who are complaining "Time has changed. Earlier it was possible to be good and do better for society". When he floated the idea of volunteers from all across the world could come together to create a remarkable pool of human knowledge – all for the simple purpose of sharing, he received many funny look and they were skeptical of the notion of wikipedia. It is now the 5th most popular website in the world - but it isn't anything like a commercial website. It is a community creation and everyone is part of

community. No one dare to think that in modern time anything can survive beyond using the market driven forces. We need person of stature of Mr. Jimmy Wales who can dream without slightest touch or shadow of market forces (No advertisements. No agenda. No strings attached) but simply design for betterment of humanity.

One must work and dare if one really wants to live.

- Vincent van Gogh

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Content of November 2010 Vol-5, No-11

Forthcoming issues:

February 2011 Vol-6, No-2

issue is special issue on 'Garment Design and disable. This issue will be edited by our Guest Editor Ms Ruth J Clark of Fashion Moves

April 2011 Vol-6, No-4

issue is special issue on 'Travel and Universal Design' and this will be edited by Dr Scott Rains of Rolling stones

Ben Lippincott

Since 2004, Ben Lippincott is Industry Relations Manager for the Rehabilitation Engineering Research Center for Wireless Technologies (Wireless RERC) at the Shepherd Center in Atlanta, Georgia. Previously, he was in sales and marketing at International Business Machines. He covered the Southeast region selling Intel-based servers to small and medium-sized businesses. Ben received his BA in English and Business Management from Appalachian State University in Boone, North Carolina.

John Morris

John Morris is a Research Scientist and Program Manager for the Wireless RERC and the Shepherd Center in Atlanta, Georgia. He received his M.A. and Ph.D. in Government from the University of Texas at Austin. John works on Wireless RERC's consumer research projects. His research focuses on consumer insights, design and usability, and accessibility of technology for people with all types of physical, sensory and cognitive limitations. Previously, John served as a visiting assistant professor at the University of Connecticut and Brown University. He also worked for the Oracle Corporation as a senior product development manager for the company's support services division.

Jim Mueller is an industrial designer who has worked in the field of design for people with disabilities since 1974 as an assistive technology provider, researcher, and design consultant. His clients include businesses, government agencies, individuals with disabilities, and national disability organizations. Jim is one of the authors of the 7 Principles of Universal Design and chaired the Industrial Designers Society of America's Universal Design Section from 1997-2009. Since 2001, Jim has served as a Project Director to the Rehabilitation Engineering Research Center on Wireless Technologies in Atlanta, GA.

Connecting Customers with Disabilities to the Wireless World

Ben Lippincott, Manager, Industry Relations
John Morris, Research Scientist and Program Manager
James Mueller, Project Director, User-Centered Research

Rehabilitation Engineering Research Center for Wireless Technologies
Atlanta, GA
USA

Background

In 2001, the U.S. Department of Education's National Institute on Disability and Rehabilitation Research established a new research center on wireless technologies. This Rehabilitation Engineering Research Center (Wireless RERC) was charged to 1) promote equitable access to wireless technologies by people with disabilities, and 2) encourage adoption of Universal Design in future generations of wireless devices and applications.

From its beginning in 2001, the Wireless RERC has been guided by people with disabilities through a nationwide Survey of User Needs and a nationwide Consumer Advisory Network of 900 people of diverse ages and abilities. The Wireless RERC has also developed relationships with manufacturers and carriers within the wireless industry. These relationships help the RERC to share data gathered from customers with disabilities with industry and to disseminate information about industry developments with these customers.

Connecting customers with industry

U.S. legislation has spurred wireless manufacturers and service providers toward meeting the needs of people with disabilities. July, 2010, marked the 20th anniversary of passage of the Americans with Disabilities ACT (ADA), landmark legislation mandating equal opportunities for people of all abilities. In the decades that followed passage of the ADA, wireless technology has evolved from a luxury enjoyed by an affluent few to an integral part of everyday life for some 280 million Americans, with and without disabilities (Mobile Future, 2010).

Yet these customers sometimes complain that industry doesn't listen to their needs. At the same time, wireless industry managers note that few customers take advantage of the accessibility improvements made to their products and services. The Wireless RERC has identified several barriers causing this apparent disconnection between industry and its customers. Identifying these barriers was critical to forming the methodology for several important survey research and consumer outreach projects aimed at 1) informing the wireless industry to design better wireless products and services able to meet the diverse needs of customers with disabilities, and 2) help customers with disabilities make more informed purchasing decisions. This paper offers an overview of these successful projects:

- **Survey of User Needs**
- **Hearing Aid Compatibility Survey**
- **Hearing Aid Compatibility Tutorial Videos**
- **MyWirelessReview.com and Reviews of Accessible Applications**
- **Online Accessibility Resources**

Survey of User Needs (SUN)

The foundation of the Wireless RERC's user research is a nationwide Survey of User Needs (SUN) and a Consumer Advisory Network (CAN). CAN members participate in testing, focus groups, and other research and development projects of the Wireless RERC. More than 3000 people with disabilities have completed the Survey, and more than 900 respondents had joined the CAN.

The SUN respondent population is a "convenience sample", not a fully-randomized sample of Americans with disabilities. Therefore, some demographic characteristics are over-represented relative to the overall US population of people with disabilities, as described by the US Census. For example, SUN respondents are generally of above-average education, employment, and household income. SUN data analysis therefore incorporates balancing across these characteristics. The RERC promotes its Survey as broadly as possible through diverse contacts among disability organizations, online social networks, and personal contacts. Special efforts are made to reach under-represented groups, including the rural poor. The Survey is available in paper format, as well as by telephone and online:
http://www.wirelessrerc.org/for-consumers/survey-of-user-needs.html

SUN findings to date demonstrate the importance of wireless technologies to independent living for people with disabilities. Among those who use mobile phones or other wireless

products, less than 1% of 2010 SUN respondents consider wireless access "not very important", while 67% consider it "very important" (Wireless RERC, 2010). Among their reasons are:

- **Communicate with anyone, anytime – 74%**
- **Get emergency help – 66%**
- **Feel safer and more secure – 61%**
- **Get information – 43%**
- **Reminds me of appointments – 31%**
- **Get directions wherever I am – 28%**
- **Allows me to work and/or go to school – 23%**
- **For entertainment (such as music and videos) – 21%**

These and other findings of the Wireless RERC's Survey of User Needs are shared with industry to promote better understanding of their customers with disabilities and how to better serve them.

Hearing aid compatibility survey

The Hearing Aid Compatibility Act of 1988 (HAC Act) requires that landline telephones manufactured or imported for use in the United States after August 1989 be hearing aid-compatible. In 2003, the Federal Communications Commission (FCC) adopted rules to make digital wireless telephones (cellphones) compatible with hearing aids and cochlear implants.

Knowing that full implementation of Hearing Aid Compatibility (HAC) regulation would take effect in January of 2008, in 2006 the Wireless Rehabilitation Engineering Research Center

(Wireless RERC) developed and launched an annual survey to monitor how effective the HAC regulation is and how it impacts the usability of cell phones for people who use hearing aids and cochlear implants.

Results over five years of data collection show that the percentage of consumers reporting being either satisfied or very satisfied with their cellphones (i.e., with clarity, volume, etc.) increased from the low 20-percent range in 2006 and 2007 to 52 percent in 2008, and increasing slightly to 54 percent in 2009. Still, only a small proportion of respondents said it was either easy or very easy to find a compatible phone. These respondents showed a marked tendency toward higher satisfaction levels.

The findings of this survey indicate that the FCC requirements has had a strong impact on cellphone satisfaction by hearing aid users, but this has been tempered by users' ongoing difficulty in finding compatible phones.

Tutorial videos on hearing aid compatibility

The technical challenges industry has had to overcome in manufacturing hearing aid compatible cell phones have been many. As suggested in the findings of the hearing aid compatibility survey above, selection of a hearing-aid-compatible phone by the consumer can be equally daunting. Just because a cell phone is labeled "Hearing Aid Compatible" does not mean it will work for the consumer right out of the box. Just as everyone's hearing loss is unique, the issues

surrounding radio interference between a custom hearing aid and the cell phone's electronics make finding a HAC solution exclusive to each individual. Compounding the problem, hearing loss advocacy groups say that in-store sales associates are often not familiar with the needs of customers with hearing loss, as well as what HAC devices are offered in the store. Because of this, the return rate of cell phones by individuals with hearing loss remains high.

To alleviate the confusion surrounding hearing aid compatibility and to assist industry in decreasing the high rate of phone returns, the Wireless RERC produced a five-part video series aimed at educating the consumer and sales associate in exactly what hearing aid compatibility is and how to go about selecting an appropriate HAC-rated phone (Wireless RERC, 2008). The first three episodes help answer the technical issues related to HAC via a conversation between a hearing aid user and his audiologist. The last two episodes show the steps necessary to evaluate a HAC-rated phone while in the wireless store, as well as when the phone is brought back home.

The videos are hosted on the Cellular Telecommunications and Internet Association's (CTIA) accessibility website, www.accesswireless.org. CTIA has been tracking internet statistics quarterly since the launch of the videos. These data reveal how effective the videos have been. For example, the average amount of time viewers spend on-site indicates that they watch each video through till the end.

Web statistics also reveal that the most popular videos in the series are Part 1, "Introduction to Hearing Aid Compatibility", and Part 4, "Beginning Your Search for the Right Wireless Device". These two parts are the cornerstones for guiding the customer with hearing loss on the right track to selecting an appropriate HAC phone. Part 1 contents include:

- **Finding useful web resources**
- **What Works: Understanding Hearing Aid Compatibility And The Rating System**
- **Understanding The Difference Between Microphone Mode And Telecoil Mode**
- **What Cell Phone Ratings Mean**

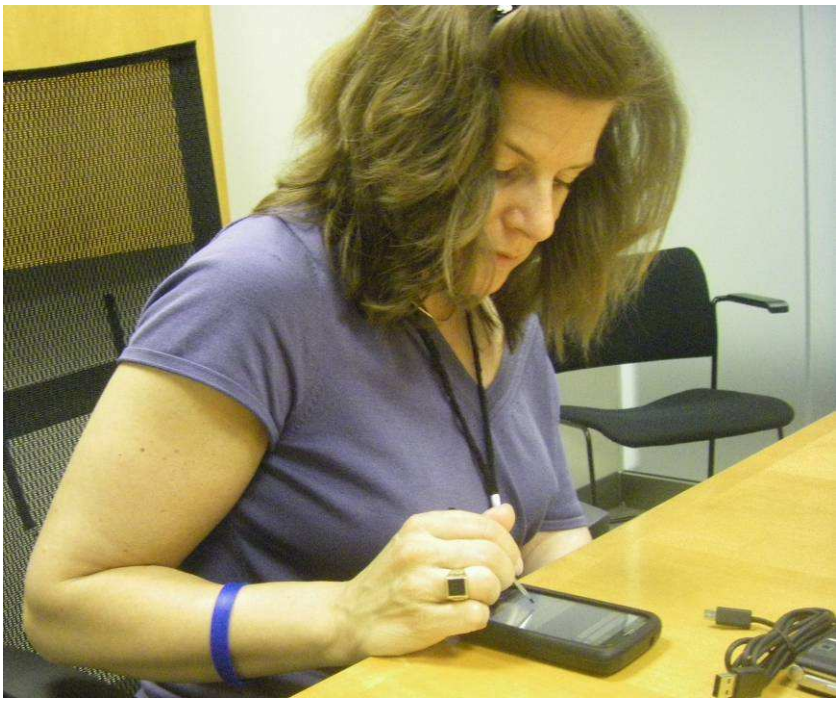
Part 4 is the beginning of the "Try Before You Buy" sequence at the wireless store. Its contents include:

- **Knowing What To Tell The Sales Associate**
- **Determining A Carrier Or Service Provider's Return Or Exchange Policy**
- **Determining Which HAC Rating To Look For**
- **Looking For HAC Ratings On Display Cards**

Not only have the videos been a valuable resource for consumers, they have also been used as training tools for sales associates. AT&T has used the videos in their training manuals, as well as offering links to them on their online intranet training resources. Carriers place a high level of attention on customer satisfaction. This is achieved by having a knowledgeable sales force, well versed in the needs of their customers with disabilities.

MyWirelessReview.com and reviews of accessible applications

Through focus groups among members of its Consumer Advisory Network, the Wireless RERC determined that peer advice is a primary influence on selection of wireless products and services by customers with disabilities. Therefore, the RERC developed MyWirelessReview.com for disabled consumers to share their experiences with finding, choosing, and using wireless products and services (Wireless RERC, 2008).



MyWirelessReview.com is a website that offers up-to-date news of accessible wireless technologies and services, discussion areas where readers can share detailed accounts of wireless products and services they use in their daily lives, and finally, a forum for the Wireless RERC staff to share reviews of wireless products, services and applications related to accessibility with readers.

With the advent of Apple's iPhone and other modern smartphones - and now new tablet devices, the role of wireless applications has greatly expanded. Applications have the power to increase accessibility to the device itself or to information that the device accesses. However, hundreds of thousands of "apps" already exist, and the inventory grows constantly. Though many have potential benefit to customers with disabilities, apps are not tagged with the term "accessibility" so that they may be easily identified. How does a person with a disability search and find a suitable accessible wireless application among the dizzying array of choices?

In October 2010, Apple added a "Special Education" section to its App Store, which focuses on the needs and interests of people with special needs. As of October 26, 2010 there were approximately 85 apps for either the iPhone or the iPad, divided into 10 categories ranging from communication to emotional development and life skills. This is a good start, and Apple should be applauded. However, the "Special Education" focus misses the accessibility/assistive technology target. Furthermore, many apps might have incidental accessibility/assistive qualities that defy easy categorization as such because they are originally aimed at mainstream users.

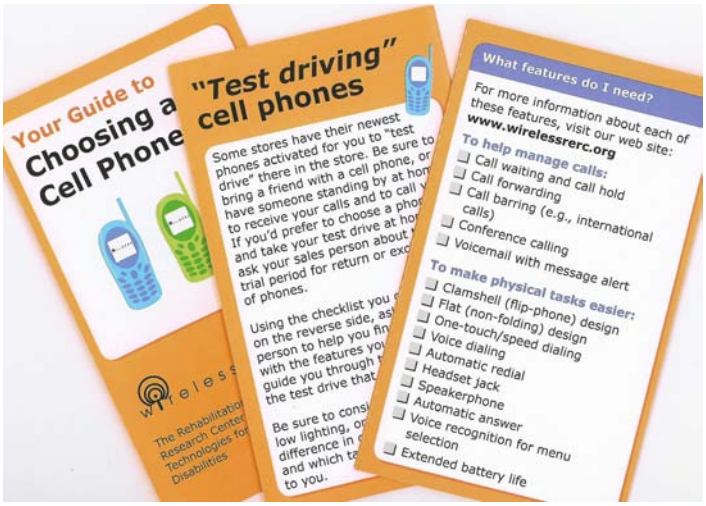
Consequently, since 2008, MyWirelessReview.com staff have been cataloging wireless applications that 1) enhance accessibility of the device itself, and 2) increase the opportunity for people with disabilities to engage in activities

of daily living through the use of their app-loaded smartphones.

To date, MyWirelessReview.com has reviewed over 30 mobile applications and also offers a video tutorial series, which instructs the viewer what the app does and how to load, use and delete the app on their device. These resources help to inform and educate the end-user to wireless accessible app solutions available in today's crowded marketplace.

Online Accessibility Resources

With so many choices in handset design and service options, many people with disabilities have difficulty identifying the best wireless product and service for their needs. For some customers, the large number of choices is bewildering and intimidating. Others find communicating their needs to retailers their primary barrier.



In 2004, the Wireless RERC developed a guide for consumers that helped them select a wireless device, calling plan, and features that fit their needs and budget. In pocket form as well as in electronic format, this guide was called "Your Guide to Choosing a Cell Phone". Since 2004, wireless technology has evolved and expanded many times over, and the RERC staff felt it was time to begin looking at ways to refresh the information in that guide. At the same time, the wireless industry has made great strides in communicating with its customers with disabilities. The primary conduit for this information has become the internet, since this is among the first places consumers consult to find information about wireless products and services.

The internet can be a powerful tool for gathering information about a wireless product or service prior to purchase. All of the major wireless manufacturers and service providers, and some third-party trade organizations, maintain an online presence. At the same time, the volume of information available online can still bewilder potential customers. This issue can be compounded for customers with disabilities, because these individuals often seek information about devices or services to address very specific accessibility needs.

In 2010, the Wireless RERC conducted a study with members of its nationwide Consumer Advisory Network to determine if the accessibility information on wireless technologies, devices, and services found online is truly useful for people with disabilities. Study participants were asked to rate the usefulness of

accessibility resources on a scale from one to five, with five being excellent, and one being very poor. Participants were also encouraged to comment on the information that they found especially useful or helpful on the websites, as well as suggest improvements. Links to information resources were provided in three categories:

Trade Organization Resources

Trade organization resources are websites that are dedicated to providing accessibility information on both wireless devices and services. They may also provide useful information on wireless solutions for an individual according to his/her disability.

Service Provider Resources

Wireless service provider websites offer details on end-user services and devices that address the communication needs of people with disabilities. Many of these sites list information targeted to specific disabilities, such as text-to-speech solutions for blind or low vision consumers, or service features that assist individuals with dexterity or mobility impairments. The sites also provide contact information to their national disability call centers. Not all service providers have a disability call center, but those that do provide customer support geared towards the needs of people with disabilities.

Manufacturer Resources

Wireless manufacturers' sites detail the specific accessibility features built into handsets, often listed by a specific disability. For example, if you are hearing impaired and wear a hearing aid, information on these sites might provide information on a device's speech-to-text capabilities or hearing aid compatibility "M" & "T" rating. These sites provide no information on service plans, but they sometimes provide links to the service provider that offers that particular phone.

Findings

Results of this study indicated that most of the information found online is adequate to answer the needs of people with disabilities, if they can find it. Survey results indicate an average of a 3.9 usefulness rating out of 5 for nearly all the resources. However, finding the accessibility-specific web pages within a company's website remains a challenge. To ease consumers' search for these useful resources, the Wireless RERC developed a portal directly to each of them: http://www.wirelessrerc.org/for-consumers/online-wireless-accessibility-information-resources?portal_status_message=Changes%20saved.

Conclusion

This article has described a variety of efforts by the Wireless RERC to 1) promote equitable access to wireless technologies by people with disabilities, and 2) encourage adoption of Universal Design in future generations of wireless devices and applications. Following this mandate from the U.S. Department

of Education, the Wireless RERC continues to explore ways to improve understanding and communication on these issues between customers and the industry that serves them.

Once a luxury enjoyed by an affluent few, wireless technologies now connect people of diverse ages, abilities, and cultures worldwide. More than half of Americans with disabilities now have internet access, and this proportion is rising steadily (Harris Interactive, 2010). The current administration is making broadband access for citizens of all ages and abilities a national priority. Increasingly, this access is through mobile wireless technologies. This trend is reflected in the development of online resources for connecting people with disabilities to the wireless world, as described in this article.

Especially for people with disabilities, accessibility and usability of these technologies are vital to full participation in society. The pace of wireless technology development dictates ongoing research, development, and training to assure that new developments enhance, rather than inhibit usability for people with disabilities. Central to these efforts is ongoing user research to identify those issues most important for industry to address.

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Ben Lippincott

John Morris

Jim Mueller

Steinar Valade-Amland

Managing Director - Danish Designers

Steinar Valade-Amland was born in Bergen, Norway in 1961. His educational background is within economics and management, while the most significant merits on his CV have been acquired throughout his career, first in Norway - primarily within sales and marketing, PR and media. In 1989, he moved to Denmark, where he has held positions in export, product and marketing management in design based manufacturing companies, followed by positions as account director and CEO of a leading brand design agency - until 2000, where he took on his current position of Managing Director of the Association of Danish Designers.

His professional strength lies in concept and strategy development with focus on small and medium size creative companies, as well as in communications management. Besides the daily management of Danish Designers, he is a sought after lecturer and conference speaker, workshop moderator and

process facilitator, both in Denmark and abroad, as well as a commentator and columnist on design and related issues.

Steinar Valade-Amland served on the executive board of BEDA (Bureau of European Design Associations), 2002 - 2005, the executive board of World Design Congress 2005, 2001 - 2004, the board of the Danish design magazine, Designmatters from 2002 - 2003 and as a board member of ICIS (International Centre for Creativity, Innovation and Sustainability), 2002-2007. From 2007 to 2009, he was a member of OHIM's (EU's Office for Harmonization in the Internal Market) Design Expert Group.

Currently he's vice president of the Kolding Design School. Furthermore, he has been member of several boards and advisory committees at various other Danish design schools and universities, as well as the committees for the consulting industries and research and education at the Danish Chamber of Commerce. Moreover, he is frequently called in as an expert in various EU projects, managed by DG Enterprise, DG Education & Culture, DG Employment & Social Affairs and DG Research.

Selected speaking assignments:
08/01: Shanghai Trade Council Delegation, Odder
The History of Danish Design and Danish Design today
10/01: Icograda Congress, Johannesburg, South Africa
The changing role and challenges of design
11/01: ICSID Congress, Seoul, South Korea
The changing role and challenges of design
11/02: EIDD - European Institute for Design and Disability, Århus, Denmark
Design integrated; On Nordic Design Concepts
01/03: APCI - Challenges of Design Promotion in Europe, Paris
BEDA - Communicating the Value of Design and Innovation
11/03: ESAD - Escola Superior de Artes e Design, Oporto, Portugal

Master Class: Personal Views
10/04: Trade delagation, Merceyside-UK, Copenhagen, Denmark
Danish Design yesterday, today and tomorrow
11/04: Trade delegation, Manchester-UK, Copenhagen, Denmark
Danish Design yesterday, today and tomorrow
02/05: Export Council of Denmark, Copenhagen, Denmark
Lessons to be Learned
07/05: P1 Radio (Danish Public Service Radio)
Debate w/ Anders Knutsen, Chair of Danish Enterprise Council
09/05: ERA05 - World Design Congress, Copenhagen, Denmark
Moderator, Design Management Symposium
11/05: Patent&Trademark Office, Anniversary conference 125®, Copenhagen, Denmark
Design protection and the emerging concepts of design
02/06: Entrepreneurship Festival 06, Copenhagen, Denmark
Workshop reporter - the creative industries and entrepreneurship
04/06: JETRO / Industrial Technology Center Hiroshima, Copenhagen, Denmark
Danish Design and the Building of a Design Industry
06/06: CPC - China Productivity Center, Taipei, Taiwan
New Design Development and Leadership
07/06: JETRO / The Symposiumon Export of Traditional Products, Kyoto, Japan
Japanese design in Europe; Source of inspiration, challenge and business opportunity
09/06: Estonia Academy of Arts, Talllin, Estland
Workshop: Design Education in Denmark
09/06: Estonia Design Year 2006/2007, Tallin, Estland
Opening Keynote Speech: The Role of Design in a Knowledge Society
12/06: Closing Conference, Nordic Energy Research, Uppsala University, Uppsala, Sverige
"Techné; beyond design as we know it"
01/07: APCI - Association pour la Promotion de la Création Industrielle, Paris, France
Challenges of design promotion in Europe - Designing design support
06/07: CPC - China Productivity Center, Taipei, Taiwan
Building excellent brand design services
10/07: Muotoiluareena - Konference, Häme Polytechnic, Hämenlinna, *Finland*

UTILIZING DESIGN REALLY DOES MAKE SENSE- Reflections and experiences from Denmark
10/07: Muotoiluareena - Workshop, Häme Polytechnic, Hämenlinna, Finland
DESIGN AS A STRATEGIC TOOL - How can you use design in your business?
10/07: AM 2007 - Workshop, Work Environment Day 2007, Nyborg Strand, Denmark
TECHNÉ - Design that more than pleases the eye
12/07: OHIM (Office for Harmonization in the Internal Market), Design Expert Group, Alicante, Spain
Asia - from manufacturing to designing
04/08: UNICERA, Istanbul, Turkey
The changing role of design
06/08: Design Region Bergen, summer conference , Bergen, Norway
Keynote speech
09/08: Oticon A/S, International Marketing Symposium, Copenhagen, Denmark
More than meets the eye
10/08: "Les nouvelles frontières de l'économie de la culture", Paris, France
Organization and management of design - speaker and panel member
10/08: Designit A/S, Service design symposium, Oslo, Norway
Design - a concept in constant change
11/08: Shaping the global design agenda, Turin, Italy
Confronting systemic global challenges - speaker and panel member
01/09: APCI - Association pour la Promotion de la Création Industrielle, Paris, France
DESINOVA - User driven innovation and strategic design i retail and service industries
03/09: Design Support Network, Essex, UK
Policy recommendations; integrating user driven innovation and strategic design initiatives
05/09: APCI - Closing conference, DESINOVA - Chamber of Commerce, Copenhagen, Denmark
DESINOVA - Lessons learned
05/10: Israel Community of Designers, Holon/Tel Aviv, Israel
Design for people, profit and planet
05/10: Hadassah Academic College, Jerusalem, Israel
Design for people, profit and planet

Let us discuss what design can do - rather than what design is

Steinar Valade-Amland, Managing Director of Danish Designers

For decades - in Denmark as well as in most other parts of the world - an amazing number of people has occupied themselves with what has always seemed like a key question; what is design? We are not in any way diminishing the importance of these endeavours as means of articulating and communicating - thus creating awareness and understanding of - the value of design. The result is greater understanding of design issues both in industry, in the political as well as the public domain.

However, as design has changed its character and meaning over the past decades, having been continuously qualified by new add-ons, one must assume that the same will be the case for the decades to come.

Thus, our suggestion is that a more meaningful approach could be what design has already and actually contributed, what it currently brings to the table of new solutions and which role one could expect design to play in the future - to the extent, of course, that any one of us has the right to predict tomorrow. Design does make a difference to artifacts and enhances physical objects. So far so good; no-one seems to contest designs ability to beautify, simplify and add meaning to a product, adding value throughout the value chain from manufacturing through sales and distribution to the

user - in the word's most inclusive sense. The examples are many and well known. Our affluent lives are full of well designed products like furniture and light fixtures, kitchenware and home electronics, clothes and accessories, cars, park benches, milk cartons... They all seem inevitable either because of the functions they fulfill or because they cater for other, more subtle needs in our everyday lives.

Material design contributes to define our lives and our identities. The objects we choose to make part of our work or play, homes or communities influence on both our perception of quality of life, but they also help us understand and master well known as well as unexpected challenges in our daily lives.

Material design might be of even greater importance outside of our private sphere, even though not all of us will necessarily be confronted with it or take advantage of it directly. Such design could be applied to products dedicated to special user groups, such as assistive technologies disabled people, medical equipment, gauges or CNC machines, lifts or drilling equipment, feeding robots for animals or cabin interiors for military helicopters. Actually, a product category, financial transaction or professional service where material design does already play a significant role seems almost unthinkable, as it influences on the quality and durability, functionality and usability of every single object being part of the delivery or value chain - from choice of materials and construction through manufacturing processes and assembly to distribution, sales, usage and

disposal. More and more often, it doesn't even stop there, as the adaptability of the disposed product to another value chain plays an increasingly important role.

However - just like design adds value to material products by making it more precious, more relevant or more competitive, design adds value by means of the same enhancement to immaterial deliveries such as private or public services, client relations or business transactions. By enhancing the interaction between the supplier of a service and you as the consumer of that service design strengthens the relation, influences on your preferences and changes both yours and the supplier's behaviour - either in correlation with the way in which the physical space or the user interface in which the transaction takes place has been designed, but often simply by offering a better experience within already existing parameters.

Design can be applied to an artifact or a specific solution to a specific challenge, but it can also be applied to a context - be it a physical space or environment or a configuration. If the context is physical in the form of a room or a built structure, the design will often be labelled architecture, interior architecture or environmental design. By organizing space through objects, light and sound, activities and objectives - applying the same parameters as earlier described - not only the space, but also the relations and experiences for which the space is dedicated are designed, adding value to the transactions in question, as if it were an object or a service.

Obviously environmental designers are able to add lots of value to private spaces like our homes or the CEO's office. But the real and vastly untapped potential of interior architecture and design lies in more public spaces, where transparency and legibility, light, sound and colours become a question of safety and security, treatment and care, health, life and death, such as for example work environments and institutions for education and care. The same goes for spaces - or rooms – which are not even considered such by many, because they are out in the open; the design of streets and squares, courts and yards. To design the environments in which people work or play, make decisions or philosophize, celebrate or mourn is at least as important a role for design as any of the previously described categories.

Design also determines the way in which we communicate with each other - as individual to individual and system to system, system to individual and individual to system. In this context, "system" might represent public authorities of any kind, but also companies, organizations or movements. One of the most conspicuous examples of such communication design is the way companies through "branding" and identity design try to convince consumers to choose their product or service instead of a competitor's - both through media exposure prior to the transaction, at the point of transaction through packaging and both the physical and relational point of sales design.

Along the same principles public authorities use communication design extensively in their dialogue with enterprises and

individuals through anything from flyers and reports to web-portals and self-service-systems. Other examples of communication design come from the ways in which we search and share knowledge in our modern age with Google and Wikipedia as pioneers, but also how our ways of communication with each other changes rapidly as new user interfaces and social media are made available to us - such as skype, facebook and twitter. In the physical world wayfinding design enables us to find around in complex and often unknown environments. One might say that the need for communication design and design that communicates - to facilitate all the deliberations we all have to engage in on a daily basis - increases constantly as does the complexity of our lives and our environments.

Until now, design has primarily related to the aforementioned areas; physical objects - and to an increasing degree services, physical environments and communication. Including all the subordinate categories, which for a number of good reasons will not be specifically dealt with in this publication. The domain currently being conquered by design, however, is the more subtle and rather intangible; how do we reach the goals we set? Some call it strategic design, others call it concept design while others again prefer the concept of "design thinking". Irrespective of terminology, it covers the theory that design is a highly relevant approach to dealing with challenges, which do not necessarily call for a physical object, a specific service, a dedicated environment or a new communicative tool to be addressed and solved. Design has moved out of the

domain in which a delivery is most often a tangible answer to a brief and into a domain, where design is seen as a valid resource where large, complex challenges are at stake, and where the designer works in close and equivalent collaboration with all kinds of other professional disciplines. Such challenges could be efficiency or profitability related - most probably on long term, or it could be related to local, regional or national identity or external relations, to loyalty issues and internal relations in large corporations, to competitiveness and innovation capacity, democratic processes and engagement, cross-sectorial dialogue and diversity issues. Not to forget the probably most urgent of all challenges - the need for a more sustainable corporate and political development and to a more responsible and balanced global order.

This rather radical change and enlargement of design as a concept and profession - which is inevitable - calls for cautious guardianship of design's original meaning and its meaningfulness for the individual. Design as the key to better solutions to your own specific problem, design as the door to experiences which move you and activate your senses, design as means to improve everyday life, to simplify what doesn't need to be complicated and to make the inaccessible accessible. Design as a way of making it easier for every one of us to understand and to relate to the world and the local environment we are part of.

We already described how Danish Designers currently see design as a concept and a profession; as a vital tool to increase

corporate, national and regional competitiveness - ”design for profit”, as a significant factor in terms of influencing people's lives through the products and services, spaces and environments, relations and experiences that shape our everyday - ”design for people” and as a pivotal resource with regard to promoting more sustainable products and services through the choice of materials and processes with consequences for sourcing, manufacturing, use and disposal – in addition to the power of design in terms of promoting responsible choices through consumption and behaviour - ”design for planet”.

In this article, we will focus on how we believe that design can play an important role with regard to the quality of life for individuals, and for individuals with special needs in particular.

Design for people - design for all

Design has always started with the aspirations and dreams of the individual, its acknowledged as well as unarticulated needs - long before concepts like user driven innovation and user centered design were introduced. Notwithstanding the fact that design not always had the positive effects on the user or humankind as such, that the designer had envisaged or intended.

Design fundamentally builds on a analysis of what could possibly be done to improve the perceived quality of any given situation. Approached in a design methodological manner, the analysis will lead to a number of alternative scenarios - all of

which represent an improvement compared to the present. The ultimate choice will most often reflect conscious deliberations of different and often contradictory concerns. The most immediate and intuitive adoption of any solution, however seems to occur when human factor interests are given the same weight and priority as the economical, and for a number of good reasons.

Design respects the sensual sensitivity of the user. Not only the visual but rather the combined -and rarely rational - sensual reaction triggered by the experience. If the solution resonates aesthetically with the user, it will automatically be perceived as relevant, thus somehow appeal to any one out of numerous forms of engagement. In the case of a physical object, it might incite usage or merely visual or tactile enjoyment. A well designed service or relation invites the user into active engagement, while well designed - most often visual - communication is more easily and immediately understood - increasing the probability of the user actually relating to the message communicated

However, design is also a means of promoting involvement, inclusion and coherence by offering access to products and services which are often - and rightly so - perceived exclusive and prohibited by many because of their physical or mental impairment, or simply because they are different form the vast majority. Sometimes, product or services need to be designed specifically to such – often marginal - groups, but more often than we think, a more inclusive approach to designing products and services - taking into consideration the needs of both able-

bodied and disabled users in the development process would benefit all. This concept and methodology - often called Desig for All or Universal Design - fortunately is being adopted by more and more sectors and product and service categories, not least because such demands of inclusion are currently being fronted by European Council and are also articulated specifically in UN's Convention on the rights of persons with disabilities.

Irrespective of whether one is disabled or not, the challenges we all face on a daily basis tend to appear increasingly complex to most of us - even complicated. However, as design and designers have clearly contributed to this it seems quite probable they are also able to a reverse contribution; to simplify and to make things more comprehendible and accessible. By removing the superfluous and focusing on the essential or by making everyday choices easier and better informed - not by fewer or more, but by better and more instinctively legible alternatives - be it with regard to tangible products or environments or to the services, relations and communication we rely upon.

A quite new approach to the exploitation of design's potential has materialized in a row of projects, often referred to as service design. This concept covers design of services in general - private as well as public. The private services have already been discussed in a previous chapter, as have the measurable effects in terms of savings and effectiveness in the public sector. Another – more subtle, but equally important

effect within the public sector, however, is the reduction or elimination of barriers between the individual citizen and the system that design has proved to offer. Confidence and tolerance are fundamental preconditions for a meaningful dialogue between the two parties - achieved through adding familiarity and relevance, by involving the user in the development or customization of the service and by creating a physical and communicative environment, which resonates with the user's feeling of comfort. All of which are key elements in the design approach.

Knowledge of design and the ability to evaluate any given product, service or message is important to build an understanding of space and the objects we are surrounded by as well as the information and the experiences we are subjected to. Understanding the intentions behind any given solution is crucial to decipher the codes and signals embedded in the solution - enabling us to make better and more informed choices. Confidence in the products and services we meet as consumers and in man made environments leads to self-confidence through a better understanding of our own identities and a more conscious relation to our experiences and our choices. Thus a fundamental understanding of design is a vital element in any human being's breeding.

Until now, Design for All or universal design has been regarded as a specific approach to design - often based on a different analysis than other design solutions, with greater focus on people's disabilities than their abilities. In a contemporary

conception of design, this specificity is exchanged with a more holistic approach - appreciating diversity and addressing individual needs as equal to the needs of the masses. In a contemporary design conception, co-designing is the key to accommodating different needs and capabilities; more and product and services are delivered from the hands of the designer as a concept followed by guidelines for implementation to suit individual needs. Not for the sake of the individual with disabilities or for the elderly or any other specific group of users, but for the sake of users per se. Globalization, economic growth, a general increase in consumer awareness and the proliferation of social media have all contributed to a more widespread understanding of the influence each one of us actually has on which products and services are offered to us. Consumer influence is no longer for the affluent only - it's for all. Which in turn means that design in the future - by default - no longer will be for the few but for all.

Thus - important and valuable work currently being laid down by design for all communities throughout the world suddenly meets global support from the development of design practice itself, form the design discourse and from the adoption of design thinking by other communities like the business community. And from a rapidly changing culture evolving from autonomous communities on the internet, sharing ideas, creating together and challenging existing corporate cultures. However, the role of the design for all communities is not in danger of becoming superfluous. It will merely change from

focusing on the role of the designer to influencing the numerous new stakeholders in the value chains of the future that they have the opportunity to make inclusiveness part of their own agendas. The designers already have, but very often faces barriers but up by their clients. If a million people - cross section and without representing a specific interest group - ask a product or service supplier to integrate whatever feature or concern which might benefit people with special needs as well as their own, their voice will be much more audible than that of the designer. Thus -the time is now for the global design for all community to start using the potentially most powerful media of our times; the direct access to people who care about their fellow citizens and use them as carriers of the obvious idea that designs of the future may accommodate all of us with our individually different needs. Doing this, it will not last by far as long as otherwise before Design for All is the rule and not the exception.

Steinar Valade-Amland

Managing Director - Danish Designers

Professor Jim S Sandhu

Sandhu is a post-graduate of the Royal College of Art and has received many honours, awards and fellowships, including a Churchill Fellowship and Fellowship of the Royal Society of Arts. In December 2008 he chaired a session of the European Ministerial Conference on e-Inclusion in Vienna. In 2003 he chaired a key session in the European Parliament of the European Day of Disabled People. He has been a major player in Inclusive Design since 1972 with over 300 wide-ranging publications and 80 public domain designs. He has been a consultant to the World Bank, various UK Government Departments, the European Standardisation Institute, the German Ministry for External Development, the European Commission's Fourth and Fifth Research Framework Programs and including Euro-India, Euro Latin-America, Euro-Caribe. Sandhu is a founder member of the European Disability Forum, European Cooperation in Science & Technology 219, European Institute on Design for Disability, International Federation for Information Processing WG13.2, European Consumers

Standardisation Body (ANEC), etc. He has worked in over 40 countries and lectured extensively including over 100 keynoters. Sandhu was instrumental in initiating the crucial Technology Initiative for Disabled and Elderly People (TIDE) in Europe and been a recipient of over 150 major research grants in R & D.

The Role of ID in Enhancing ICT Developments in India

Professor Jim S Sandhu

When I re-ran the Design-for-the-Non-Average course at the University of Northumbria in the mid-eighties one of my pupils was Jonathan Ives. He was quiet, thoughtful, critical and a brilliant designer. He was not yet in a position to show leadership qualities which became prominent about five years after he left the University. He is now a senior vice-president of Apple, originator of some of their key electronic products, a multi-millionaire and a household name.

Recently, it has occurred to me why India with its 1.2 billion citizens, burgeoning industries, some brilliant minds and a thriving ICT sector has produced not even a quarter of a Jonathan Ives when proportionally it should have produced twenty at the very least. This is a serious question addressed to India's decision makers, politicians, industry leaders, universities, design institutions and industrialists.

Some Key Basic Facts about India

Having worked in about 30 countries in my time India sticks out by a mile as being out of Alice in Wonderland. It is full of paradoxes and contradictions. India is a country rich in culture, has nuclear weapons, communication satellites, satellite launch vehicles, missions to the moon and Mars, powerful parallel computers, etc. The country also has the largest number of illiterates in the world; houses one-fourth of the world's

diabetes patients; wastes over 40% of fruit and vegetables grown; has the highest road accident rate with the smallest vehicle numbers and has abysmally poor water and sanitary provisions. Of which other country can it be said that it lacks at least 200,000 schools. Stretching the metaphor a little it can almost be said that India has more temples per head than public toilets.

The paradox of India is best encapsulated in one of the most brilliant photo montages produced by the Indian Institute for Design for All. In one image it highlights the aspirations, the political inspirations, the diversity, the down to earth problems, the contrasts and contradictions, problems of ageing and disability, and trends to emulate the so-called developed world.

It is difficult to summarise a country: which is home to one in six members of the human race, is one of the most diverse country in the world, which contains one third of the poorest people and yet has increasingly consumer orientated middle class twice the size of the German population. India also figures closer to the bottom in most rankings prepared by UN agencies. The UN Human Development Index, for example, places India at 128th place, sandwiched between Equatorial Guinea and the Solomon Islands while the UN World Population Prospects report on infant mortality puts India at a lowly 142, higher than Gabon but lower than Ghana. There is another key index where India could rank top ten or even top five depending which criteria you use. India is home to some of the most corrupt government officials anywhere in the world. That fact comes into its own when you realize that the government is the largest employer in the country. It is a major stumbling block to progress as evidenced recently by the dismal organisation and provision for the Commonwealth Games.

In China, the main Asian competitor to which India is often compared, the state managed early on to harness economic expansion for huge public works projects and then allow more and more Chinese to partake of the benefits. There, the poor are far less likely to be deprived of basic services, whether clean water or basic schooling. In India, poverty has dropped appreciably in the last 17 years of economic change, even as the gulf between rich and poor has grown. More than a quarter of all Indians still live below the official poverty line (subsisting roughly on $1 a day); one in four city dwellers live on less than 50 cents a day; and nearly half of all Indian children are

clinically malnourished. In a major survey carried out by The Week April 6 2008 the most popular jobs in demand by employers were:

Call Centres	***70%***
IT/ITes	***70%***
Banking	***57%***
Software engineering	***53%***
Advertising	***37%***
Cabin crew	***27%***
Cost accountancy	***27%***

Design does not figure even at the bottom. It is a total outcaste – the lowest of the low. Or is it? It could merely signify lack of awareness of the profession. We know with certainty that every single design graduate finds a job within a relatively short time. That is a positive sign for the future. The success of hi-tech industries in particular has seen large numbers of overseas Indians return, in what has been described as a 'brain gain'. Historically, this kind of reverse is rare. Their return speaks for their economic confidence in India. They are part of a growing middle class, which is seen as a potentially vast domestic market. Any demand from this sector for inclusive design would have a major impact for designers and the quality of life of all Indians.

Population

A burgeoning population, contrary to Gandhi's views is a major hurdle to enhancing the quality of life of India's citizens

through design. More so, as all the major policies are focussed on development, industries, trade, export, with very little left for the alleviation of poverty. India is expected to overtake China to become the world's most populous country within the next 25 years. Its population has grown from 357 million in 1950 to nearly 1.2 billion today. By 2030 it is expected to be home to 1.6 billion people compared to China's 1.4 billion. Much of the population growth is down to India's high birth rate and an increasing life expectancy. Designers interested in India's problems need to understand these changes.

Older and retired people will form a significant part of society. As with many so-called developed countries this raises questions about how they will be supported, as less than 10% have pensions. An ageing population will also make increasing demands on the government inclusive design institutions. Sadly, in view of the scale of the problem few design institutions are addressing these critical issues. Why?

Lack of Design Policy or Focus

The fact that the design professions are fast changing and converging as never before, largely due to the impact of new technology and globalization will have a major effect on the concept, evolution and practice of inclusive design in India. We can be sure that this change will continue at an even more accelerated pace. The fact that India only has a rudimentary design profession and has done very little to implement its Disability Act of 1995 could be both a blessing and a hindrance to evolving an inclusive design policy. On the positive side the

change could be driven by market forces and by enlightened decision makers who genuinely understand the role of design in the quality of life of Indian citizens. It would require much more government support and promotion of the National Institute of Design, DJ Academy of Design, the Design For All Institute of India, the eighteen plus colleges of design, etc. It would also require engineering courses to focus more on disability, usability and user requirements for students to fully comprehend and subsequently be able to teach the goals of inclusive design.

Compared with Japan, China and Korea which have hundreds of excellent design institutes churning out thousands of high quality designers India's output is just over a thousand per year covering the full spectrum of design (Revathi Kant, Titan Industries, 2008). If we focus entirely on industrial and product designs then we are down to about 400 designers qualifying per year, produced by just over 18 institutions. For a country with well over a billion citizens this is a derisory figure – especially a country that boasts about its burgeoning industrial might. Just compare this figure randomly with some design institutions around the world to realize how appalling the situation is. Tsinghua University, Beijing -1530; Hong Kong Polytechnic - 1300; Hongik University College of Design, Seoul - 1140; National Cheng Kung University, Taiwan – 1400. Overall China has nearly 400 design schools whilst Korea produces 36000 designers annually.

In order to incubate India we need between 10,000 to 15,000 designers per year in the industrial and communication sectors (Sandhu's estimate). We already produce just under 500.000 engineers per year (The Week, April 6 2008) – mostly with little or no knowledge of design. Herein lies the problem. I remember a very senior academic and an engineer in Hyderabad proclaim that design was basically crafts. The 'real' problem solvers were engineers. "All built environment and product solutions lay in the domain of engineering." My retort was to point out if that was true, then given the high numbers of engineers in the country there should have been at least 50 Jonathan Ives and perhaps, the same number of James Dysons churning out world class products. Understandably, both these names were unfamiliar to him. He was lost for words when I asked him to name a few Indian products that matched the quality of Apple's output. In many ways this was not a dialogue between two adults but of two differing mindsets.

India has 250 sectors of industries, each sector requiring thousands of trained designers. For example, experts indicate that the Indian automobile sector alone needs as many as 10,000 automobile designers in the next six years and freshers have already started earning pay packets ranging from US$6742 to $20225 per year. This is high by Indian standards. To fight the hurdles in designing curriculum, some colleges like NID and Pearl Academy of Fashion have tied up with institutes overseas for technical assistance and exchange programmes.

Another manifestation of poor investment in industrial/product design is the lack of Indian teaching staff. Although new courses are added every year the number of faculty members has not grown proportionally. This is clearly the result of the vicious circle – few design institutions leads to fewer designers leads to fewer lecturers.

Brief Outline of ICT Innovation in India

Given my focus on Jonathan Ives as an exemplar, his great success in ICT products and given India's undoubted strengths in ICT it would be useful to dwell on the topic. The Indian ICT sector has carved a unique niche on the global scene through both the IT and communications sectors. Particularly in IT, the technological prowess and innovative approaches of the Indian software and services industry are setting benchmarks in project execution and service delivery that inspire awe. This awe emanates both from the developed and the majority world alike and earns India a neat 50 billion dollars in export revenue (5% of GDP).

The rampant growth of the Indian mobile telecom sector, which is adding an incredible 15 million subscribers a month during the past quarter, has taken the subscriber base close to 500 million. However, when you look at the lacklustre number of Internet/Broadband subscribers or the slow penetration of personal computers India presents a very different and weak picture. More than that the human development index in education & health the country ranks 134 out of 182 countries

(in the UNDP Human Development Report 2009). In the societal domains (governance & public service delivery) India ranks 133 among 183 countries in the World Bank's 'Ease of Doing Business' rankings 2009) where the ICTs are playing a dominant role around the world, India once again has a long way to go before these technologies play a decisive role in the lives of ordinary man and women.

By far the biggest problem lies in establishing what has been the role of policy in harnessing ICTs and how effective are policies in making India the sector
key player on the domestic and international arena. More importantly, are policy instruments in place to foster widespread innovation.

Innovation reported in the Indian media appears to be dominated by the technology narrative, meaning the innovation is a technical manifestation of a challenge. In this case the innovation focuses on the technology - the specified solution is a tool, application, or a service that needs the technological innovation to thrive. Here design innovators talk of new products, novel ideas and, at times, the creation of a new market. Three innovation families inhabit or dominate the technical narrative. These three families are not exclusive but they are certainly dominant among the technology discourse. They can be identified as converging software response, hardware response and tracking technologies.

The first concentrates on providing better solutions to firms in terms of ERP, CMS and better database and data retrieval features or simply a better, localized computer. The innovation is predicated on knowledge of a domain. Innovation is both a technological response and also a knowledge response: the solution provider studies the environment before providing solutions. Thus the application and tool response is largely dedicated to improving the stock of technology through design innovation.

Technological innovation is designed to make things more productive, activities better synchronized and information easier to retrieve.

The received data is authenticated and forwarded to an application server, which provides tracking information through an Internet accessible user-friendly interface. The user also has options to receive tracking information via e-mail, mobile, fax or SMS besides the facility of calling the customer support team on a toll-free telephone line. P29: Elogistics_2005

The hardware innovation focused on bringing the computer to the masses occupies a large spectrum of design innovation in India. These innovations are technological in nature, but largely aimed at improving computer literacy and access. This particular innovation is a design/technological response to a perceived need for a solution. For instance, technological innovation in creating diverse language accessibility is critical for enabling large populations to use the computer. Similarly,

tinkering with the keyboard and making it compatible with Indian languages is also considered as an innovative technological/design response within the technological narrative.

For a long time now, regular computer keyboards have posed challenges to non-English users especially those using phonetics or sound instead of letters to represent words, an HP software engineer said during a quick demonstration in their Bangalore lab, P 2: Info_tech_20Oct2007

The third domain within the technology narrative is dominated by innovations in the logistic area. Here the innovation response is a product that enables a new and more efficient way of conducting tracking than previously available. The technology is new and novel, meaning it creates a new channel of interaction for service delivery companies, which would not be possible were the technology not there.

The innovation allows consumers to use a simple SMS to pay pizza companies for pizzas and other eatables delivered at home. P13: India Weekly_20April2007

The latest from the Reliance Infocomm kitty is a vehicle tracking system (VTS), which can offer updates every two seconds on a 24-hour basis.

Speaking at the sidelines of Supercomm 2003, Bala Krishna, ECFU, Reliance P165: CIOL News_21Jan2003

The key feature of the technology narrative is the overt reliance on design/technological solutions for creating new products, applications and services. This narrative assumes that individuals will automatically like the technology solutions as it caters to a previously unsolved challenge. This is not always the case when we look closely at Indian products in the range. Most often the key ingredient missing is the design component, largely and consistently because it is deemed to be unimportant.

There is clearly a shift of innovation activity from the technology narrative to the collaborative narrative. I surmise that the shift will have two sets of impact on ICT innovation in India. First, ICT innovation will no longer be limited to large or medium scale companies situated in the Indian metropolitan cities, but innovation will be more contextual and unique. This innovation will continue to fall within the supply narrative. There will be a shift in Indian innovative activity from building technology for services to a product based provisioned on enabling collaboration. Consequently, it can be conjectured that innovation in India will continue to be perceived as a supply response but increasingly with a shift to innovation in enabling collaboration. Similarly it can also be conjectured that the technology narrative will continue to support either the supply narrative or the collaborative narrative.

What implication does this have on our understanding of innovation in emerging economies? The most important is that the Indian ICT sector is mature and needs to move up the value

chain in order to sustain its competitive advantage; hence innovation in collaborative frameworks will drive Indian firms. Second, the large rural development focus of the government of India will ensure that innovation continues to take shape in the smaller cities. This indicates a shift of innovation activity from the technology narrative to the collaborative narrative. I conjecture that the shift will have two sets of impact on ICT innovation in India. First ICT innovation will no longer be limited to large or medium scale companies situated in the Indian metropolitan cities but it will be more contextual and unique. This fits in well with the Design for All scenario as innovation will continue to fall within the technology narrative. I expect to see a shift in Indian innovative activity from building technology for services to a product based provisioned on enabling collaboration.

EuroIndia Spirit, Synchroniser, etc

In the context of collaboration one of the key features of European Research policy has been the sharing of knowledge through scientific cooperation with the international community. In the recent past this has been manifested through collaborative projects such as: EuroIndia, EuroChina, EuroIndonesia, EuroLatinAmerica, EuroCaribe, etc. All the funding has been provided by the EU.

In India the programme has been operational for about six years starting with EuroIndia's MONSOON project 2004, whose goals profiled and engaged the widespread Indian ICT research

community by analysing its research capacities and priorities. Euro-India sought to:

- **Identify, exploit and sustain EU & Indian RTD potential through an exhaustive mapping of the Indian ICT knowledge, research and innovation landscape**
- **Provide critical inputs to strengthen policy dialogue between the EU's i2010 strategy and the Indian Information Society policy**
- **Reinforce the promotion of the EU ICT programme and increase India commitment and participation**
- **Network a wide range of stakeholders through an institutional mechanism and a well-defined agenda in order to evolve and support a vibrant EuroIndia ICT research community**
- **Help to synchronise ICT research priorities and objectives.**

The mission of the current EuroIndia-Spirit and Synchroniser ICT co-operation initiatives builds on the achievements and momentum created by the earlier projects.

Started on January 1, 2010, the project will run 24 months, until December 31, 2011. Euro-India SPIRIT supports the objectives of the call ICT-2009.9.1: " Strengthening international co-operation to enhance Information Society policy dialogues", more specifically contributing to the definition and development of a European and Indian policy dialogue for sustainable ICT (Information and Communication Technologies) policy and research priorities, thereby aiding in the build-up of the European Research Area. The findings of

the project are available on the Euro-India SPIRIT project's website.

Project Mission

Euro-India SPIRIT aims to engage the EU and Indian ICT stakeholders at a level where policy formulation pertaining to research can be aligned and supported to identify the priorities of key research stakeholders and constituencies. The outcome is to formulate a mutually-beneficial research and innovation agenda that can be taken up through specific bilateral initiatives. Euro-India SPIRIT seeks to:

- **Set-up a group of European and Indian ICT players with expertise in different areas to analyse the research dimension of Indian ICT policy, probe stakeholders to identify long term research perspectives, aligned with EU priorities**
- **Recommend future co-operation initiatives, identify matching counterpart funding, to leverage Indian research capability and capacity and engage in projects in common priority areas**
- **Develop synergies with research activities in India**
- **Organize synchronized stakeholder events to feed policy dialogue meetings with input on common R&D priorities, opportunities and challenges**

Main topics

Euro-India SPIRIT covers the following ICT thematics:

- **ICT addressing societal challenges (e-Government, government & public services, eHealth)**
- **AudioVisual, Media & Internet (network and services infrastructure, Digital libraries, International Co-operation)**
- **Future & Emerging Technologies**

Synchroniser

Synchroniser is a strategic project with the core objective of enhancing the impact of the significantly progressing EU-India research policy dialogues in the Information Technology domain. This will be accomplished by convening a group of elite researchers and industry stakeholders from both regions in a common platform called the "Synchroniser Steering Committee" and through a comprehensive survey of identified "visionaries" in order to:

*** identify precise research paths for the joint EU-India research priorities**

*** identify matching counter funding opportunities between EU and India, and**

*** identify long term research perspective in India aligned with the EU priorities.**

Synchroniser Project is created to increase the quality, the magnitude, the profile and the impact of EU-India research and development cooperation in ICT.

Indian designers and design institutions should remember that they can be part of consortia bidding for EU funds under these programmes. Most of the resulting proposals as expected are multi or inter-disciplinarian. Consortia can consist of partners specialising in ICT, human factors, manufacturing, design, demographic research, industry, etc. Partners can come from SMEs,

industry, academia, research bodies, product design, ICT, etc. The funding is substantial and worth the effort. It is vital for Indian design companies to find an experienced European partner who knows the ropes in submitting proposals. For more information contact: euroindiaresearch.org/synchroniser

Conclusion

It is clear that India has a long way to go before design or ICT plays a decisive role in the lives of ordinary men and women. We need to understand what has been the role of policy in harnessing these two topics and how effective are policies in making the Indian sector a major player both in the domestic context and the international arena. More importantly, are policy instruments in place to foster widespread innovation, to address issues that confront a populous country with enormous social sector needs for the large majority made up of the poor. And a complex society weighed down by age-old traditions and barriers. Above all, we must not forget the fast growing middle class that projects the same ambitions and aspirations as its more developed counterparts.

This article has endeavoured to spell out the link between ICT and design, and the potential role these can play in the country's well-being. India needs to respond urgently to unique and, often, gigantic problems and unprecedented opportunities that defy standard prescription. It is my belief that one of the key ingredients to greater equality and global industrial progress is design. I am also aware that very few decision makers, power brokers and industrialists are aware of this fact.

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(Over the years Sandhu has played a small part in bringing about Euro- India collaboration).

Professor Jim S Sandhu

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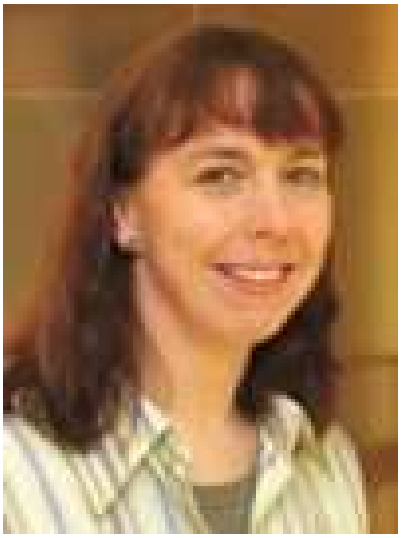

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AGING, WELL-BEING AND TECHNOLOGY

Is it possible to find solutions for better well-being with mobile phone?

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1. Background for the research

Our research is focused on mobile services and mobile solutions. We are looking for good solutions concerning rehabilitation, sports and exercise, and also for education. For aging people we are looking for solutions which focus on better well-being and encourage them for better social life. A main principle in the project is bringing the users' views and perspectives into the process of building the mobile solutions. Users participate, firstly, through workshops where general needs and requirements are defined to guide the design and, secondly, through field trials where the prototypes are put to the test in real use contexts. In other words, user needs and

user experiences play a central role in the design process. As a result of the whole project we will create a personal mobile space concept, where people can use mobile solutions based on their needs.

Prediction for the Finnish population is that in 2060 there will be 29 % over 65-year-old citizens according to Statistics Finland. In this year 2010 the percentage is 18. This is a very huge challenge for society. Well-being of the people is very important in Finland and healthcare has to be organized with better and more effective technology to enable more time for nursing patients in bad condition. All new, innovative solutions can enable employees to have more time for patients in health services, if some part of it is organized in a different way.

Rehabilitation is in a very important role after injuries and surgery, for example. The patient has to be encouraged for independent exercise, but it is also important, that someone is able to help if there appear some problems with health or exercise based on the rehabilitation program assigned to the patient. Based on these facts, our research is focused on developing and testing different mobile solutions for different groups of people. In this article we introduce two groups (aging employees and a rehabilitation group with osteoarthritis), which are participating in the user centered development and testing of mobile solutions this autumn. In the next phases, more participant groups will be recruited, and in every study there are different solutions in use.

2. Rehabilitation with mobile technology – motivation, freedom and practicality

One of our groups of participants is a rehabilitation group with osteoarthritis in knee. The 12 participants are women, aged 55-66 years. Their physical activity is in good level, because they have participated in a controlled exercise group after their diagnosis. In our study we are developing a mobile exercise program for this group. We have an application which can be used for giving instructions for physical exercise and estimating the participants' physical activity as well as the psychological aspects concerning training (picture 1).

Picture 1. Exercise application, main menu.

The participants have a mobile phone, and they practice independently with the help of it. The exercise program is

presented as video instructions, as an audio recording and as plain text (Picture 2). The participants can choose the best format of instructions for their exercise.

Picture 2. Exercise application.

Every participant is asked to work out three times a week for eight weeks. Every two weeks, the mobile application gives

them a new set of exercises. Before and after the eight week test period we measure some physical skills: maximum power of lower limb, functional balance and body composition (for example body fat percent). Motivation, user experience and usability are the most important parts of the research in order to examine the viability of using a mobile solution in rehabilitation from the user perspective, but health aspects, which tell about the effectiveness of the program itself, are also very important. We use different kind of inquiries to examine all those aspects, but physical skills are better to measure with particular equipment (Picture 3).

Picture 3. Measuring physical skills: maximum power of lower limb.

One of the ways to examine the participants' first impressions was a word choice inquiry which they filled in immediately after the exercise solution was demonstrated to them. Every

participant had a list of words out of which they chose the words that they found most descriptive of the exercise solution they had just seen for the first time. Some of the words mentioned by several participants included "innovative", "motivating", "new", "sophisticated", "time-saving" and "useful", to mention for example. After the eight-week exercise period, the participants are asked to fill this inquiry again.

After one week of exercising, each of the participants was phoned and asked about the initial experiences from using the exercise solution. Most of the participants experienced the solution very fun and useful, and the instructions were clearly described and easy to use.

In the future this solution can help physiotherapists in their job, because very many clients live in very long distance, and it takes lot of time to visit everybody's homes. Mobile solutions can motivate and encourage people to take care of their own physical condition. The physiotherapist can send a new exercise program to the client, and communication concerning the rehabilitation process will be possible via the mobile solution. This can enable better quality of cooperation and interaction between the client and the physiotherapist, and we believe that it will also make exercising easier to carry out. In this pilot research, data from the mobile phone is collected locally, and in the next version of the pilot application, data will be sent over the network. The aim of this study is particularly to find suitable solutions to be developed further and to be used with other rehabilitation groups. The same solution can be

used with different groups of medical staff: nurses, doctors and first aid.

3. Mobile technology and aging – a better quality of life for aging employees?

The retirement age in Finland is 65 years. The first section of this article mentioned that the size of this age group will grow all the time. If we come to a situation that the quantity of retired persons is double the current quantity, the society has to make plans in a long time frame. Better physical activity has an effect on the well-being of an individual, and in the future it will be even more important to take care of oneself, because the population ages.

The second group of participants is a group of aging employees, age over 50. First, they took part in an inquiry which was carried out in a workshop and the purpose of which was to examine the most problematic issues of their working place. Results included rush (mentioned by 14 out of the 18 participants), physical pain (9/18), demanding tasks (7/18), problems with other employees (7/18) and working posture (6/18). Other problems included lack of physical activity, mental stress, schedules, changes in work tasks, sleeping problems, and some problems with aging. When asked about activities that would improve their work-related well-being, more than half of the participants (10/18) brought up exercise breaks during the day. Several of them also mentioned exercise guidance in general, nutritional guidance, and improving the

community spirit. Similar issues were highlighted also when the participants were asked how mobile applications might be able to support their well-being. Exercise instructions via mobile device and related reminder alerts were mentioned by several participants, as well as ways of monitoring and enhancing motivation for free-time physical activity.

After this workshop we have developed a prototype of a mobile exercise program for employees so they can exercise in working place. They are recommended to work out twice a day, only five minutes at a time for a period of eight weeks. The main purpose of this exercise program is to encourage people to do some stretching and fitness in everyday tasks: you don't have to go to the gym or use very much time necessarily. Our hypothesis is that only five minutes' practicing twice a day will cause better results for fitness tests after this eight week program. Another measure, which we will use, is heart rate variability, which indicates mental stress. It is very interesting to find out whether this exercise program has any influence on mental well-being in such a short period.

Another activity for this group is intended for their free-time. We will use mobile technology to mark an exercise route with checkpoints in their hometown. This way the employees will have exercise, and there will be some motivational components in those checkpoints: information about the surroundings, competitions or games, or some tips and instructions for nutrition, diet, physical activity and health. All employees participate in the planning of the route. This is a very important

issue: one of the most important goals is to encourage aging employees to take care of their physical activity, and their mental and physical well-being after their working career. People should have some education on the possibilities for retirement age concerning sports, health and leisure time. We think that this group of people over 50 will have a good basis to exercise their whole life, if they are motivated to use new mobile technology and mobile solutions in everyday-life actions.

4. Future

After this study we will have a better knowledge concerning mobile solutions and user experiences. Designing and researching of mobile solutions will continue next year, giving us a great deal of new results and ideas. Different user groups will give us plenty of valuable information for designing user friendly solutions.

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Designers between the user and the ecosystem

Outi Ugas, Cindy Kohtala

This article is based on our study on designers' thinking about sustainability. One preliminary finding suggests there is a notable gap between those designers that choose to operate socially sustainably and those environmentally sustainably. Considering design as a way to interact between human society and the ecosystem, not only the user and the product or service, would give design practitioners a stronger footing as business globally moves more towards a people-planet-profit model of operating. The study and the results are published in the LeNS Conference Proceedings, Bangalore, September 2010.[1]

Is Design the Problem, or the Solution?

Any review of the discourse on design-for-sustainability, from the academic world to the trade media, will reveal conflicting perspectives on what is to be achieved and how we as a profession should prioritize actions. One consequence has been the development of a plethora of frameworks, checklists, manifestos and principles. While these are necessary and beneficial, the message to the designer (as well as design client) on how to best combat global challenges such as climate change and to fast-forward real, positive change remains fragmented. The goal of our research is therefore to gain an

[1] **Ugas, O. and Kohtala, C. (2010)**

understanding of where design practitioners stand today: where gaps may or may not exist between design-for-sustainability knowledge and competence in research and academia, and that in design practice.

As is often stated, design is too frequently a significant part of the problem rather than the solution, especially in mainstream commercial practice that seems to be often characterized by short-term, myopic motives and objectives; an avoidance of ethics discourse; and an unquestioning of the current materialist consumption paradigm. As a practice, however, Design for All is not an activity solely motivated by commercial, consumerist values, as a much wider perspective on human needs is required. One can therefore assume that the social sustainability approach, including Design for All and Accessibility, may include methods to bridge the gap between human society and the ecosystem.

At the same time, the business case for sustainability is well documented – from money savings (through optimizing energy, material, and chemical use, waste management, etc.) to risk reduction, to legislation compliance, to creating value that matches customer expectations.[2] How, then, can we drive this lesson home to current practicing designers?

[2] e.g. Robèrt, 2002; Hallstedt et al, 2010; White et al, 2008; WBCSD, UNEP FI, 2010; Charter and Tischner, 2001

Bridging the Gap

A recent report commissioned by the Finnish Ministry for Employment and the Economy from Provoke Design Ltd described how the design field globally is changing: less focus on product design; more concentration on service design, open innovation and social innovation; and designers more as experts in perspectives and methods rather than creating new forms.[3] [4] What is notable about this report, however, is the absence of focus on explicitly ethical, environmental and ecological issues and pressures. The promotion of user-oriented approaches and social innovation may address environmental impact indirectly, but the focus remains on organizational problem solving while ignoring societal problem choice.

The message to the designer is thus piecemeal and fragmented, as we stated above, and we therefore argue that dealing with complex, non-linear problems such as climate change mitigation, especially in interdisciplinary collaboration, needs a framework.[5] Our study addresses this by taking one widely used and tested framework, the Framework for Strategic Sustainable Development (FSSD, SSD), as the basis for re-clarifying the role of sustainable design for a generation of practicing designers in the field.

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[3] Aminoff et al, 2010: 13

[4] The word for "design" in Finnish (*muotoilu*) can be also been translated as "form-giving".

[5] Hallstedt et al, 2010; Archer et al, 2009; Hukkinen, 2008

Framework for Strategic Sustainable Development

The Framework for Strategic Sustainable Development (FSSD) has been developed to facilitate understanding about complex systems and to find a generally applicable principled definition of sustainability.[6] It first defines a generic five-level framework for planning in complex systems.[7] The generic planning framework can also be used for a neutral study of any intentional human system, for example economic processes, eco-labelling systems, or cultural phenomena.[8] FSSD encourages us to find sufficient understanding of the *system* (1) to be able to arrive at a robust, principled definition of *success* (2) in the task we are working on in a *strategic* (3) way, performing the right *actions* (4) and selecting appropriate *tools* (5) for monitoring, coordination and decision-making. (BTH, 2008)

According to the FSSD, the definition of sustainability in strategic planning has to be *science-based*, *necessary* for sustainability, *sufficient* for sustainability, *general*, *concrete* and preferably *distinct* (Robèrt et al, 2004). The four sustainability principles (or system conditions) have been determined through a scientific consensus process (Baxter et al, 2009) to define success in a sustainable society:

> **In the sustainable society, nature is not subject to systematically increasing**

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[6] Robèrt et al. 2002, Hallstedt et al, 2010
[7] Hallstedt et al, 2010, Robèrt et al, 2002
[8] BTH, 2008: 24

I. concentrations of substances extracted from the Earth's crust

II. concentrations of substances produced by society

III. degradation by physical means and, in that society

IV. people are not subject to conditions that systematically undermine their capacity to meet their needs.

When re-reading the fourth principle from a Design for All perspective, it is abundantly clear that designers must also remember the diversity of users and their different capabilities. Parallel to the third principle of environmental sustainability, we wish to emphasize that the design profession must not subject our social fabric to degradation through marginalizing practices. However, given the slight vagueness of the fourth principle as compared to the previous three, it has been recognized in the research community that we also need a principled definition for social sustainability, one that is also science-based, concrete and distinct, as stated above.[9] Design for All as a discipline can both feed and benefit from this expanded definition.

Sustainability principles and design

It can be argued that meeting people's needs has been the core qualification of "good industrial design" in Finland up to now.[10] Indeed, today's typical industrial design case focuses especially

[9] E.g. the ongoing research of Merlina Missimer, Blekinge Institute of Technology, Karlskrona, Sweden.

[10] Valtonen, 2007, also as described in Aminoff et al, 2010: 13, 15-16

on the fourth principle about human needs. There is a wide selection of methods, tools, software and design philosophies that delve deep into the exploration of needs, including Design for All: for instance human-computer interaction studies, product ergonomics and usability design, and participatory design methods.[11] However, Robert Verganti makes the crucial point that user-centred innovation is simply not sustainable: it has in fact "helped conduct us into an unsustainable world. The reason is sustainability is not embedded in the anthropology of our existing culture, society, and economy." [12]

In fact, looking back,[13] it is apparent that the early stages of design-for-sustainability have been able to form a strategic way to see the interdependency between design and sustainability. The sustainable systems perspective is thereby nested deep in design thinking, and much effort has been put into clarifying the design philosophy of a sustainable world. However, one suspects that this has had little or no impact on design business-as-usual.

About the survey results and conclusions

In order to acquire qualitative data on Finnish designers' guiding principles and their thoughts on sustainability, we distributed a survey to CSR- and Design-for-All-oriented mailing lists of designers as well as certain interest groups in

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[11] e.g. Mattelmäki, 2006; Sanders, 2006
[12] Verganti, 2010
[13] e.g. Stahel's Five Pillars of Sustainability (Stahel, 2001: 152) through to the Hannover Principles of Design for Sustainability (William McDonough Architects, 1992)

Facebook, on a web-based survey platform. The title of the survey was "Professionals of the creative branches and responsibility".

Out of the 40 surveys started, 31 were completed, and 29 also provided their age, gender, and professional title. Of these, 61% of the respondents were women, 39% men. The age distribution was rather well balanced, with both 25-34 and 35-44 being the most typical age. The professions of the respondents varied from designers, architects and art directors to researchers, entrepreneurs and leading specialists.

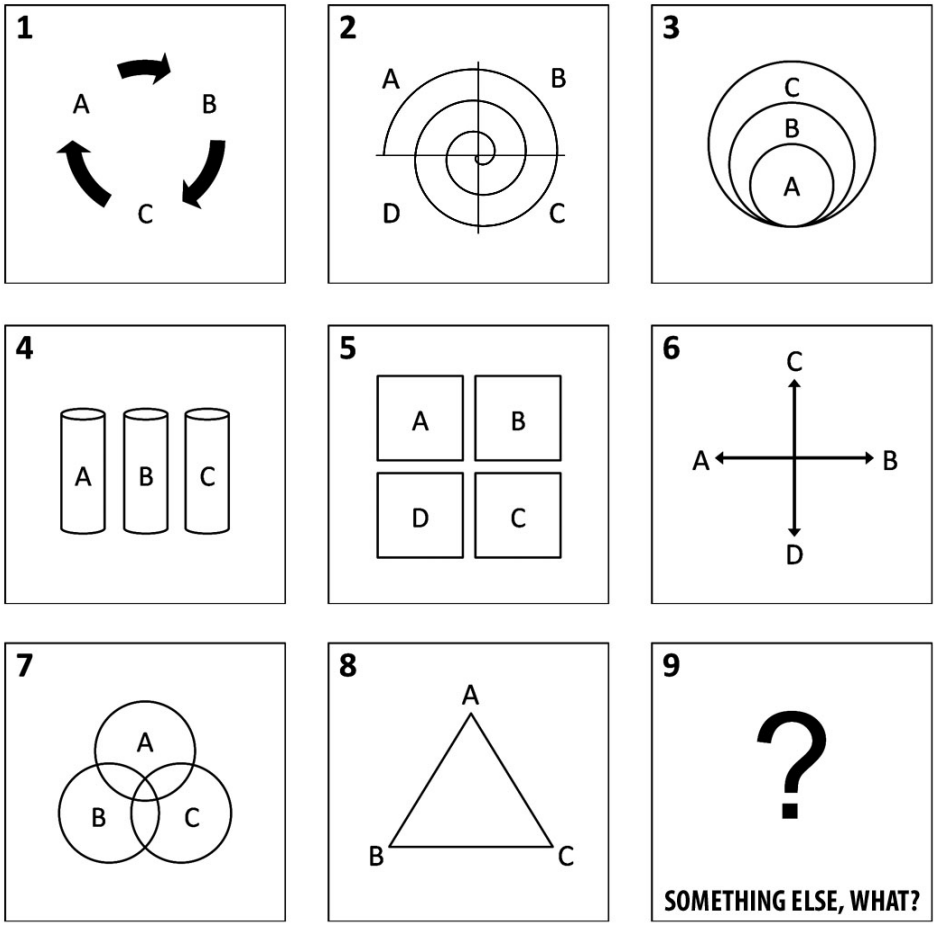
Guiding principles and definitions

The respondents were given principles and definitions in randomized order to evaluate how strongly they guide their work. The averages show that the strongest guiding principles (ethics, accessibility, solution-based, aiming at well-being) are quite parallel with the principles of Design for All. The comparison of averages and standard deviations shows that the respondents strongly agree on these.

Diagrams and terms to describe sustainability

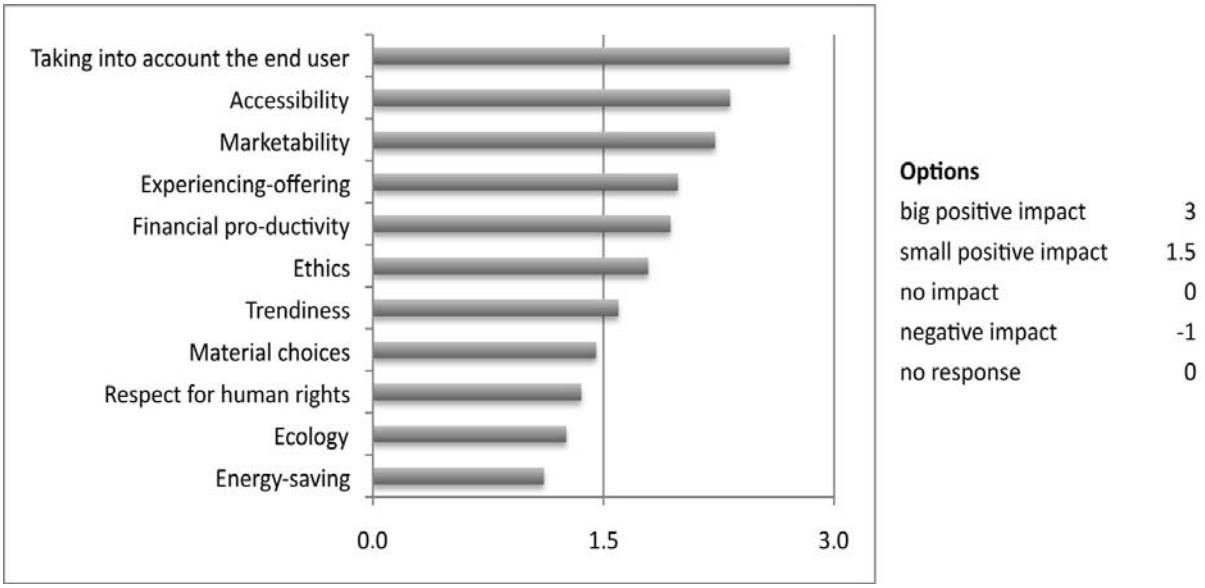
The respondents were asked how they would describe sustainable development and responsibility, in diagrams and terms. Half of the respondents chose option 1, the cycle, and the next popular diagrams were the interlocking circles in a triangle (option 7, a well-known diagram for describing sustainability) and the spiral (option 2). Twenty-two

respondents also provided terms for the diagram. What is notable in these models is the variety of the responses: there were no similar responses among the 22 models. The variety of sustainability models given in the survey shows the creative nature of design and designers. The respondents seemed to have a strong will to analyze the world of production, creativity and sustainability as a whole and include all the important terms in the diagram. However, from the design client's point of view this is challenging: if all designers define sustainability and responsibility in their own creative way, how can we proceed towards sustainability as a single and shared human society?



The professionals' impact on realizing principles

The respondents were asked to analyze the results of their own work and tell how much impact they had on realizing different principles of sustainability, accessibility and ethics. The results of this question are clear and prove that user-oriented design practice has empowered the designer to meet the end users' and customers' needs. What is remarkable here (or alarming) sits in the bottom of the "top 10": the same selection of designers that have a big positive impact on meeting people's needs have only a little or no impact on realizing the principles of ecology and energy-saving in the results of their own work. This makes most evident the gap between the fourth sustainability principle (about people's needs) and the first three (about the ecosystem).



Implications

There seems to be a tendency for design practitioners (at least in Finland) to concentrate on only one or two sustainability

"pillars": if focus is placed heavily on ecological issues (the first three system conditions in the FSSD), designers may consider that the users' needs are neglected, and they may even regard environmental impacts as the responsibility of someone else. On the other hand, a material resource perspective (i.e. addressing the first three system conditions) does not always consider diverse user needs nor the psycho-social aspects of sustainable consumption, and in the worst case, the socio-ethical side of design-for-sustainability may be regarded as belonging to the "political" realm, as in Fair Trade models, or "human needs" the responsibility of another party. We propose that user-oriented design philosophies such as Design for All can be considered as an intermediary for the communication between the different sustainability perspectives.

The crux of the problem seems to be that present design practice and even design-for-sustainability itself lack a unified definition of sustainability including both ecological and human principles. Increasing designers' shared understanding of the role of design in a successful sustainable society will show us the business case for sustainability in design practice, matching strategic design with strategic sustainability. For the Design for All approach, considering the environmental dimensions of sustainability, not only human needs, will open a deeper view to the world around the various users – not only in present but in future as well.

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Outi Ugas

Cindy Kohtala

Appeal:

The National Institute of Design (NID) R & D Campus at Bangalore was started in the year 2007 We offer three PG programmes of 2 years duration namely:
*** Design for Digital Experience**
*** Design for Retail Experience**
*** Information and Interface Design**

First batch of students who finished their education in 2009 are gainfully employed. The second batch of the students will be convocating in December 2010.

These students are looking for opportunities to be gainfully employed.

The third batch of our students will be finishing their academic programme of 3 semesters in November 2010 and they will be looking for opportunities for doing their diploma projects in suitable organisations.

We invite design led organisation's to visit our institution for the annual 'Industry Interface 2010' on 25th and 26th November to look at their learnings,

the projects done by them and explore the opportunities of offering suitable diploma projects for the third semester students and suitable employment opportunities to the convocating students.

This will give you the opportunity to get a first hand knowledge of the training in this Campus.

We will be happy to host you for this event. For details you can write/call me.
Looking forward to your valued participation.

Warm Regards

Nijoo Dubey
B.Arch, Industrial designer
Faculty of IT Integrated (Experiential) Design
NID, R&D Campus, Bangalore, India
Cell:+91 9845899402

NEWS:

1.

Success is sticking to creativity

Sugru Inventor Jane Ni Dhulchaointigh

A Kilkenny woman's gum product is nominated today as one of the inventions of the year, writes KEVIN CASEY

IT'S A brand of goo. Sounds like glue. Spelled S-u-g-r-u. Inspired by the Irish word súgradh, meaning play. But what does Sugru do?

"It's basically a bit like plasticine or modelling clay," explains Jane Ní Dhulchaointigh (31), the inventor. "When you take it out of the packet, you have 30 minutes to shape it into anything you want. Then, you leave it overnight and it will set into durable silicone rubber."

It doesn't sound that interesting until you realise that Sugru moulds to most of the other materials in your home. Working with metal, glass, ceramic and hard plastic, Sugru is extremely versatile stuff.

"It started with the idea, 'What if a material existed so that everything in the world could be more flexible'," explains Ní Dhulchaointigh. A graduate of National College of Art and Design in Dublin, she had the idea for Sugru while studying for her masters at the Royal College of Design in London. She wondered, what would happen if people saw everything in their house as unfinished and they were the ones to finish it off?

From the outset, she wanted to design a user-friendly and accessible product. That's why it has certain properties like being dishwasher-proof, it looks good, is durable and is safe to use.

It is design-led all the way but Sugru is backed up by some hard-core science and technology. "To design a new material from scratch does not happen overnight," says the Kilkenny native with understatement. She collaborated with a team of experienced materials experts through countless experiments over five years of research and development before they were ready for market.

Is the market ready for them? "I realised very early that in order for people to think as designers, as I hoped they would, they would need to be inspired," explains Jane. "It was not about the material so much as about how people perceived it."

Word about Sugru spread through internet communities. "Something that encourages people to share their ideas becomes very powerful," she says. "Because we use the internet more and more, we expect everything online to be customisable. When it comes to our physical world, we just don't have that flexibility."

The e-tail channel on her website (www.sugru.com) displays the slogan "Hack things better". In this context, the word "hack" connotes innovation and improvisation.

Shoppers can browse a gallery of Sugru tricks submitted by users from all over the world such as patching up boots in Wellington, customising lamps from Illinois and adding colour to bikes from Edinburgh.

People protect their gear with it, such as mobile phones and make the world a little bit safer and softer if there is a baby around.

It's not just for sticking your iPod back together after you boogie too hard though. "Only about 25 per cent of the things we see people do are repairs," claims Ní Dhulchaointigh. "Most people use it for improvements and modifications."

The only limiting factor is human inventiveness. "It sounds absurd," she says, "but there are hundreds and thousands of

things that people do." Despite its recent online fame, the idea for Sugru (2003) predates social media platforms Facebook (2004), YouTube (2005) and Twitter (2006).

"When we started off, it wouldn't have been possible to build an online community for Sugru like we have now," she says. But now all geographic barriers have been wiped away. "I can get a message [in London] from somebody sitting at the kitchen table in Alaska working on their headphones and we have a bit of banter about favourite songs."

Social media makes the shopping experience more like browsing in an old shoe shop or a record store. But one that reaches out to anywhere. "People don't normally expect to be able to speak to the managing director of a company but it's all so easy that we can operate like that. I absolutely love that."

Sugru also retails through small craft stores, science museums, bike shops and hardware stores. The upshot is, they're selling 5,000 packs a month.

The company had two employees last Christmas, with six this year but there are no plans to super-size the business by going with a major retailer.

"It's a very organic growth strategy for a business but it also is quite solid because, through those feedback loops, you're making iteractive improvements all the time to your product, customer service and distribution system. You're learning all the time and it's all based on evidence."

Sugru has enjoyed extensive coverage in *Forbes* magazine and the British newspapers. Even *Time* magazine is getting in on the act. Today Sugru is being nominated as one of the magazine's Top 50 Best Inventions of 2010, rubbing shoulders with the rocket scientists of Nasa and the gadget gurus at Apple.

If you could wrap publicity like that in foil packets, you could sell it for a fortune. So, does Sugru have a special PR machine next to the magic gum mixer? Ní Dhulchaointigh laughs and denies any such machine exists. "It's timing," she believes. "There's a mood. It's not just the recession, it's a post-consumerist mood which is complicated."

In some respects, it's not because people can't afford new things, it's because, due to environmental concerns it suits them to waste less and conserve more.

For aspiring entrepreneurs, she sees e-tail as the way to go. If you can forge a connection with people, you can trade with them from anywhere. "Creativity is free," she points out. "The people who know their thing, love what they do, whether

musicians, designers or whatever, have a massive opportunity ahead."

And Sugru is growing. "We believe it has the potential to be as big as Blu Tack."

As a reference point for the future, it's worth remembering that another great brand based on the native word for "play" is Denmark's Lego.

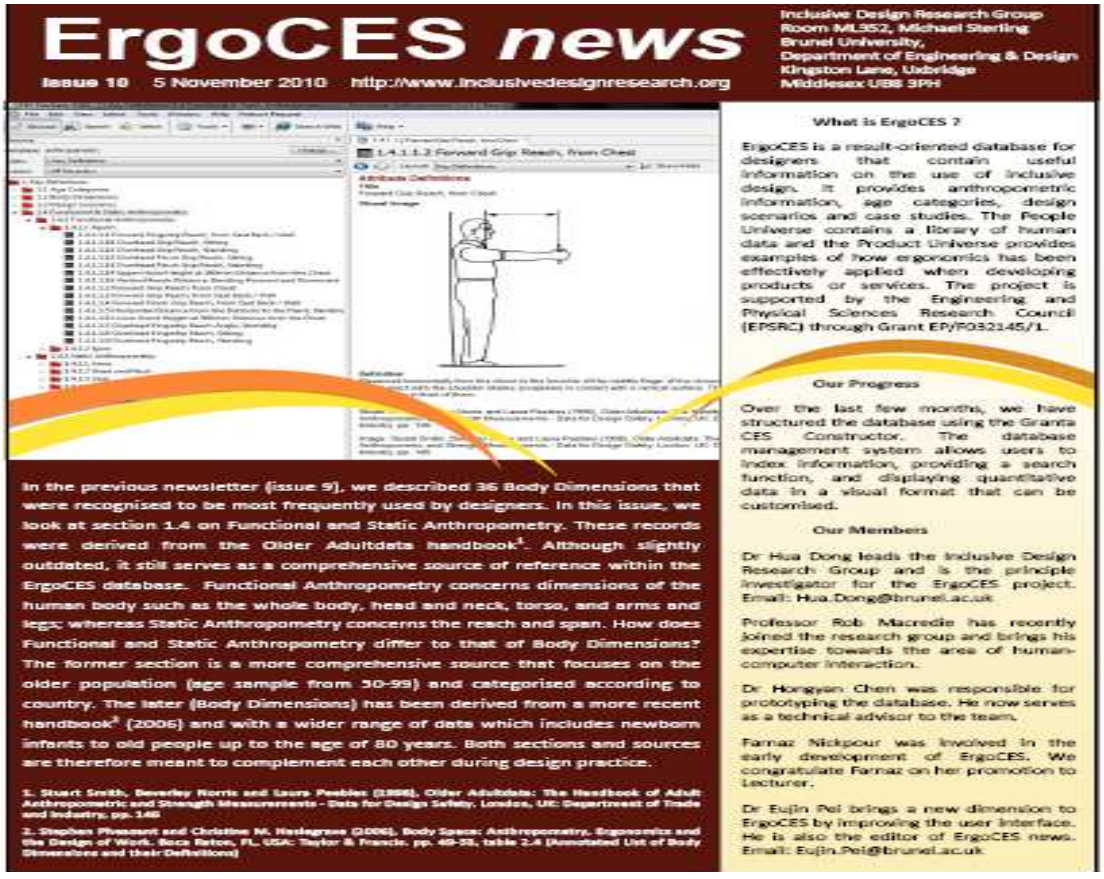
Best inventions list from 'Time' magazine

Time magazine publishes an annual list of Best Inventions. Past luminaries include Nasa for their Ares rocket (2009), Apple for the iPhone (2007), YouTube for their video platform (2006) and Apple again for the iTunes music store (2003).

Other inventions which have made it to the list and crossed into the public imagination include the Large Hadron Collider , the invisibility cloak, the Mars rovers, camera phones and the world's fastest computer. Some inventions which are still awaiting the big time include the Airgo (2001), an air-powered Pogo stick, and the Bow-lingual dog translation device (2002) for interpreting canine speech. Unfortunately, it was never released outside of Japan.

(Courtesy: Irish Times)

2.



ErgoCES news

Issue 10 5 November 2010 http://www.inclusivedesignresearch.org

Inclusive Design Research Group
Room ML952, Michael Sterling
Brunel University,
Department of Engineering & Design
Kingston Lane, Uxbridge
Middlesex UB8 3PH

In the previous newsletter (issue 9), we described 36 Body Dimensions that were recognised to be most frequently used by designers. In this issue, we look at section 1.4 on Functional and Static Anthropometry. These records were derived from the Older Adultdata handbook[1]. Although slightly outdated, it still serves as a comprehensive source of reference within the ErgoCES database. Functional Anthropometry concerns dimensions of the human body such as the whole body, head and neck, torso, and arms and legs; whereas Static Anthropometry concerns the reach and span. How does Functional and Static Anthropometry differ to that of Body Dimensions? The former section is a more comprehensive source that focuses on the older population (age sample from 50-99) and categorised according to country. The later (Body Dimensions) has been derived from a more recent handbook[2] (2006) and with a wider range of data which includes newborn infants to old people up to the age of 80 years. Both sections and sources are therefore meant to complement each other during design practice.

1. Stuart Smith, Beverley Norris and Laura Peebles (2000), Older Adultdata: The Handbook of Adult Anthropometric and Strength Measurements - Data for Design Safety, London, UK: Department of Trade and Industry, pp. 146

2. Stephen Pheasant and Christine M. Haslegrave (2006), Body Space: Anthropometry, Ergonomics and the Design of Work, Boca Raton, FL USA: Taylor & Francis, pp. 49-58, table 2.4 (Annotated List of Body Dimensions and their Definitions)

What is ErgoCES ?

ErgoCES is a result-oriented database for designers that contain useful information on the use of inclusive design. It provides anthropometric information, age categories, design scenarios and case studies. The People Universe contains a library of human data and the Product Universe provides examples of how ergonomics has been effectively applied when developing products or services. The project is supported by the Engineering and Physical Sciences Research Council (EPSRC) through Grant EP/F032145/1.

Our Progress

Over the last few months, we have structured the database using the Granta CES Constructor. The database management system allows users to index information, providing a search function, and displaying quantitative data in a visual format that can be customised.

Our Members

Dr Hua Dong leads the Inclusive Design Research Group and is the principle investigator for the ErgoCES project. Email: Hua.Dong@brunel.ac.uk

Professor Rob Macredie has recently joined the research group and brings his expertise towards the area of human-computer interaction.

Dr Hongyan Chen was responsible for prototyping the database. He now serves as a technical advisor to the team.

Farnaz Nickpour was involved in the early development of ErgoCES. We congratulate Farnaz on her promotion to Lecturer.

Dr Eujin Pei brings a new dimension to ErgoCES by improving the user interface. He is also the editor of ErgoCES news. Email: Eujin.Pei@brunel.ac.uk

3

HIGHLY COMMENDED Scott Rains, US

Raining champion

4.

Students of Chitkara win Accolades in 41st All India Student Design Competition-2010 organized by NDRF, Bangalore

Chandigarh: Chitkara is aimed at fostering the spirit of inventiveness and realization of ideas among the budding Engineers and it added another feather to its splendid achievements in the recently held 41st All India Student Design Competition-2010 organized by NDRF, Bangalore and made its presence felt.

Three students of Chitkara Institute of Engineering & Technology won National Awards for the Innovative Projects submitted by them. Chitkara Institute of Engineering & Technology is the only Institute in India to win three National Awards in this prestigious Competition. Harsh Goyal (CSE), Bhushan Singh (CSE) and Bhupesh Nath (EE) received the awards in Hyderabad in the function chaired by Union Minister of State for Human Resource Development, Ms. D. Purandeswari. .
National Design and Research Forum (NDRF) was constituted under the aegis of Institution of Engineers (India) in 1985 with view to provide a national platform for Engineers, Scientists and Technologists engaged in R &D activities.
Projects
1. Selection of Cellular Networks using NS2 Simulator—Harsh Goyal , CSE (Silver Medal).
2. ECG Data Acquisition with Heart Rate Detection System-Bhushan Singh, CSE (Bronze Medal).
3. Vehicle Speed Measurement System with Remote RF Monitoring System –Bhupesh Nath, EE (Bronze Medal).
Dr. Madhu Chitkara, Director General, applauded the achievement of students and congratulated them and their Faculty guides.

Program & Events:

1.

open space people space

Inclusive Design for Getting Outdoors
A conference on research into inclusive outdoor environments for all

27th – 29th June, 2011, Edinburgh

First Call for Presentation Abstracts

Submissions

Abstracts are invited for presentation at the Open Space: People Space Conference, 2011. The Programme of accepted submissions will take the form of brief, 8 minute presentations in sessions that combine 6 such presentations and condude with a combined discussion forum. Presenters will also have the opportunity to display a poster of their work during the Conference.

Please read the following information on formatting your abstract carefully. Submissions should be made online. This online facility will be made available soon on the OPENspace website at: www.openspace.eca.ac.uk.

Themes

Abstracts should focus on topics related to inclusive outdoor environments and cover areas within the main themes of the Conference:

- Inclusive design and sustainable community planning
- Physical environment, health and wellbeing
- Age-friendly built environments from childhood to old age

Abstracts should be submitted for consideration no later than: **31st January, 2011**

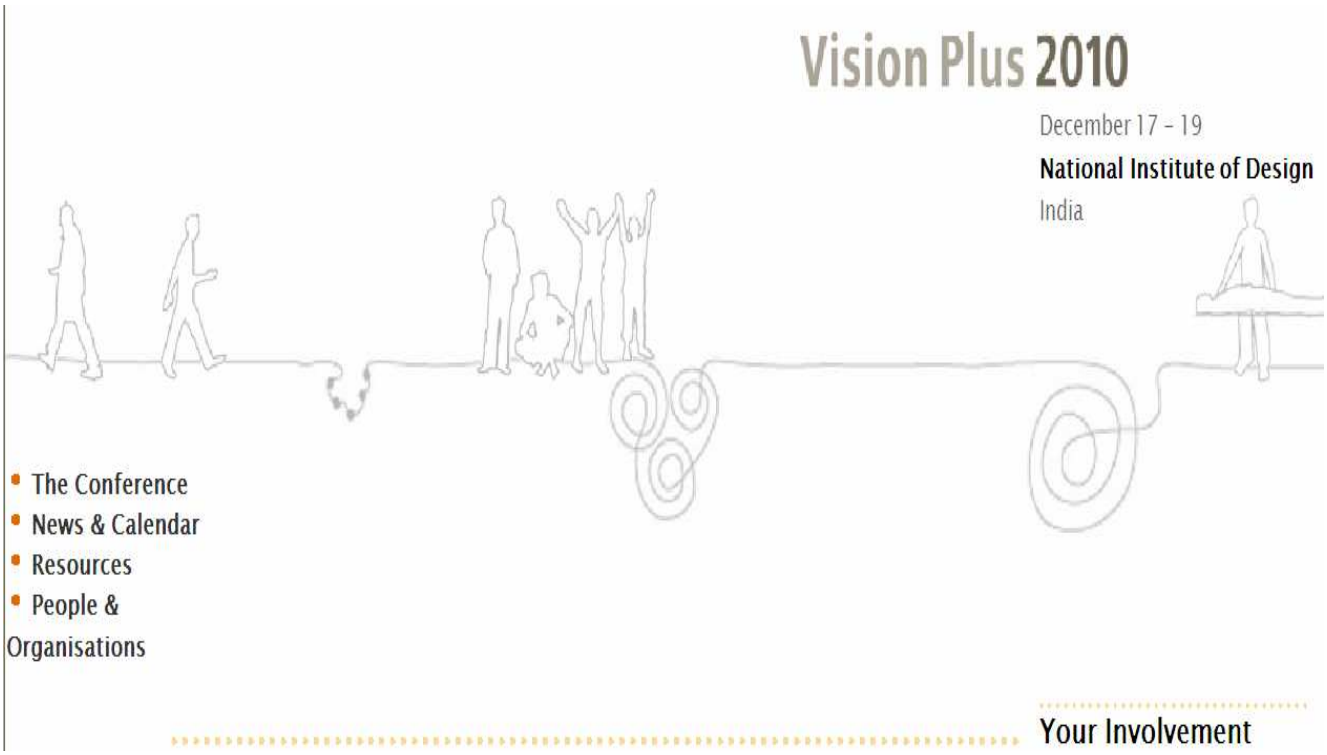
Authors will be notified of acceptance, in writing by: **28th February, 2011**

Authors will be invited to submit a final version of the abstract by: **14th March, 2011**

Abstracts of accepted presentations will be published in Conference proceedings. Selected papers may be invited to form part of a dedicated publication which would be published in 2012.

2.

3.



4.

5.

4th International Conference on Design, Innovation & UX

18th to 20th Nov , HICC, Hyderabad, India

Designing User Experience for the **Emerging Markets** and Beyond….

18th Nov, 2010

Time

08:30 - 09:15

Registration, Tea/Coffee
5 Lucky winners selected through Luck draw from the participants who will arrive at the conference hall by 9:00 AM will win surprise gifts

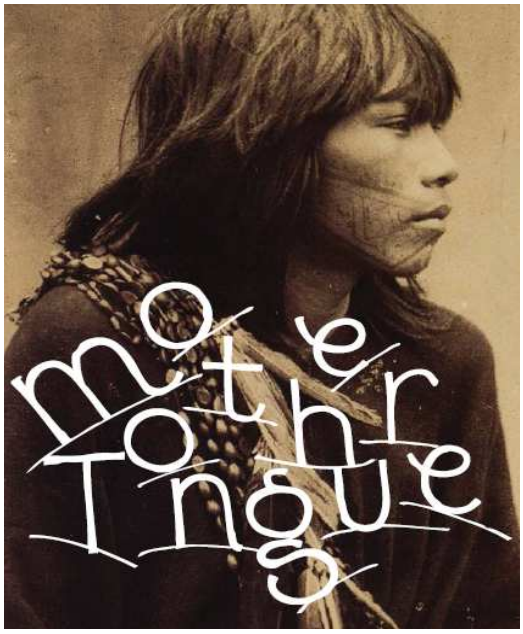
6

INTERNATIONAL DESIGN EXCELLENCE AWARDS '11

2011 International Design...

DULLES, Va., Nov. 10, 2010 – Beginning Dec.1, the Industrial Designers Society of America (IDSA) is accepting entries to its 2011 International Design Excellence Awards® (IDEA) program from designers, students and companies worldwide

7



Call for submissions

Mother Tongue is an open, multidisciplinary, online exhibition. You may submit multiple entries, but each submission must be a single piece. The form of response is yours to determine–a poster, a photograph, a poem, a product, a piece of architecture–that interprets the spirit of Mother Tongue.

WHO CAN ENTER
Mother Tongue is an open to all. To participate you must create a user account or log in if you are already part of the network.

KEY DATES
Submissions will be accepted starting **12 Jul 2010**
The deadline for entries is **1 Dec 2010**

FEE
There is no fee to participate.

EXHIBITION
Submissions will be presented in a digital gallery on **indigodesignnetwork.org**

COPYRIGHT
As the creator of your submission, you retain all intellectual property rights associated with your entry, except those as outlined below.

By submitting your entry, you acknowledge that your piece is original work and does not infringe on the work of any other individual or group. If your entry uses other's work, you acknowledge that you have obtained permission to use these components.

By submitting your entry, you grant INDIGO and Icograda royalty-free, non-exclusive, perpetual, worldwide rights to reproduce and distribute your submission for the purposes of promoting Mother Tongue and INDIGO.

How to Submit

- Image and audio files should be uploaded through the online submission form.
- For video submissions upload your file on YouTube. Take note of your YouTube video ID, which you will need to provide in the online submissions form.

ACCEPTED FILE TYPES

Image
poster, illustration, photograph, short text, poetry or prose:
- Format: JPG or GIF files
- Dimensions: 792 px wide x 1224 px high
- Resolution: 150DPI
- Colour space: RGB

Video
- H.264, MPEG-2 or MPEG-4 format
- 640x480 (SD) or 1280x720 (HD) for 4:3 & 16:9 aspect ratios
- Frame rate should be the same as original video
- Sampling rate: 44.1KHz for MP3/AAC audio

Audio
- Upload file to INDIGO website
- Length: 3 min
- Format: .mp3
- Size: 10MB

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Cover image
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8

THE NEXT GENERATION ACCESSIBLE BUS

2011 Design Competition
Call for Submissions

ACCESSIBLE PUBLIC TRANSPORTATION
State-of-the-Science Workshop

International Conference on BEST PRACTICES in UNIVERSAL DESIGN

FICCDAT
The Festival of International Conferences on
Caregiving, Disability, Aging and Technology

Living Longer Living Better

June 5-8, 2011
Sheraton Centre Hotel
Toronto, Ontario

Competition Sponsors

IDeA Center for Inclusive Design & Environmental Access (IDeA Center)

RERC APT RERC on Accessible Public Transportation

Burton Blatt Institute

Competition Background

Public transportation plays an important role in creating an accessible society because it is critical for ensuring employment, citizenship, social role participation, and social interaction for people with disabilities.

This design competition challenges the public (students, transit professionals, designers, and futurists) to think creatively about what they envision for "The Next Generation Accessible Bus" of 2030. Designs must incorporate advanced technologies and accommodate people of all ages and abilities equally.

Competition Challenge

Designs should address at least one of the following bus features:

Boarding / disembarking (ramps, lifts, stairs, fare payment)
Interior circulation (space clearances, seating layout, flooring, storage)
Safety (handrails, wheelchair securement, lighting)
Communication / info systems (route info display, signage, acoustics)

Design suggestions include buses for rural and suburban routes, and BRTs.

Submissions

- To submit: Go to **www.ficcdat.ca** 1) Sign-up for an account, 2) Login, 3) Go to the Universal Design conference section, 4) Click "Submit/Edit Abstract," 5) Select "Design Competition," and 6) follow the remaining instructions
- Provide a brief description of the overall concept/design in the "abstract" field on the Submissions website
- Submit one 20" x 30" PDF poster with drawings, images, and diagrams that demonstrate the design and its innovative features
- Include team member names, location, organization/school, and contact information on poster
- Submission deadlines: Abstract: December 1, 2010; Poster: April 29, 2011

Award

The winner will be announced on May 13, 2011, and will receive an award, one free FICCDAT registration, one free night stay at the conference hotel, and $500.

Rules of Entry and Additional Information

There is no fee to enter. Participants may work in teams of no more than four people. Only one entry per person or team will be reviewed. Entries will be reviewed by the RERC-APT staff and advisory board. The IDeA Center reserves the right to publish all submitted materials without compensation. For more information, contact **Jordana Maisel.**

Email: **jlmaisel@buffalo.edu** | Telephone: **+1 (716) 829.5902**

9

At National Institute of Design (NID) it is our endeavor to facilitate and sensitize design fraternity about Intellectual Property Rights as a part of its activities of IPR Cell. The series of awareness programmes was conducted on "Industrial Design registration and Protection" jointly with office of Controller General Patents, Designs & Trademarks, Government of India at five different cities. These one day programmes have been held at five cities namely Ahmedabad, Pune, Bengaluru, Delhi and Kolkata received overwhelming response from the design fraternity and innovators.
One
such programme is being held at National Institute of Fashion Technology (NIFT), Opp. Hitech City, Madhapur, Hyderabad-500081 on Saturday, 27 November 2010 for Design Professionals and Innovators.
There are no fees charged for the participants to attend this programme. However, the registration is mandatory and participation is allowed on first cum first basis. Your registration shall be sent to ipr@nid.edu.

The programme will enable the design professionals and innovators to gain a comprehensive introduction to the fundamental areas of Intellectual Property with specific reference to registration and protection of Industrial Designs under the Designs Act. The topics covered under the workshop will demystify the myths prevailing with regards to Intellectual Property.
We would further request you to kindly circulate this information to other interested beneficiaries. You may also like to put these up on the notice board of your organization. Thanking you in anticipation of your active participation.

10

Workshop on `Conducting Usability Test'
Usability tests are a Simple, Efficient and Non expensive way to get valuable feedback on your Products and Web Applications. Get insights into how to conduct Successful Usability Test and how to analyses results to get user insights.

Workshop will include...
• What is Usability Testing and How is it conducted
• Types of Usability Tests
• Live usability tests on two of attendees' sites
• A chance to practice conducting a test on your own site
• Tips on how to interpret your findings and decide what changes to make
Questions and Answers

Who should attend this workshop:
• Product Managers
• Usability professionals
• Technology Teams
• Anyone who has online presence

About Workshop instructor
Neha Modgil, Co founder and Design Director, Techved Design
Neha Modgil – Neha is an expert on User Centered Design and Web Usability. She has taken various workshops for Web Usability and Trends in Web Design for Technology and Product teams of leading portals in India and overseas, Technical & Management teams of Internet startups and The Indus Entrepreneurs (TiE) member companies. She has been a speaker at various national and international conferences including CHI – Canada, UPA – China and CUE – Pune. Neha has also taught Interaction Design courses at MIT, Pune.
Neha is also the Co-founder of a leading Usability Consulting & Research firm – Techved Design. The firm has offered Usability consultancy to clients like GE, Paypal, shaadi.com, naukri.com, Dell etc. She has experience in strategizing and conceptualizing designs for various domains like E-commerce, Social Networking sites, Intranets, Banking and Finance applications etc. She has also helped internet

businesses look at their web logs and usage data to interpret user behaviour.

Time :- 9.30 to 6.30
Date :- 27-11-10 Venue :- The Mirador,
131 B New Link Road,
Opp. Solitare Corporate Park,
Chakala, Andheri (E)
Mumabai 400 099
Workshop fees: Rs. 5000 for corporate registrations.**
Rs. 2500 for students (Please bring your id cards along)
****Registrations till 20th Nov will get you 10 % discount on Registration fees.**

Workshop Registration
For workshop registration, you can call at:
Hand phone: 9768885552
Landline: 022 40163004
You can also write to us at:
Email:- info@techved.com / saurabh@techved.com

11

Nearly 10% of the world's population is disabled. People with disabilities include people with vision impairment, hearing impairment, learning disabilities, and mobility impairment.
People with disabilities use assistive technology such as screen readers, speech to text softwares, onscreen keyboards, to use computers. These technologies help them to bridge the digital divide.
Web Accessibility is a step towards ensuring that people with disabilities have access to the web just like anyone else. The World Wide Web Consortium (W3C) has released the Web Content Accessibility Guideline 2.0 which has been adopted by different countries across the world.
In our 1 day training program on **Principles of Web Accessibility**, we would introduce the concepts and techniques to implement accessibility.

About BarrierBreak

BarrierBreak are pioneers of accessibility in India. When no one believed in the potential of accessibility, we went on to create awareness, training, products and services around this area.
We are an ISO 9001 certified company that specializes in web accessibility testing and development. To know more about us visit (www.barrierbreak.com)

Course Contents and Pre-requisites for Participants

- Understand the needs of people with disabilities
- Brief overview of various laws and guidelines governing accessibility
- Understanding the concepts of accessibility
- Explore accessibility techniques for web page elements
    - Images
    - Links
    - Tables
    - Forms
    - Frames
    - Multimedia
    - Content
- Overview of evaluation tools

Pre-requisites for Participants

- Basic knowledge of HTML and CSS

Who should attend

- Project Managers
- Web Developers
- Web Designers
- User Experience Professional
- Software Testers/ QA Professional

Date

December 16th 2010

Venue

Mumbai

To Register

Contact Head - New Initiatives:
Email : sales@barrierbreak.com
Telephone: +91-22-26860485/6
Register Now! Registrations close on December 8th, 2010.

12.

3rd International Conference on HCI

India HCI, bangalore 9-11 April, 2011

student design competition

Adding humor to telephony

Sponsored by NOKIA Connecting People

Event partners ABB

Job Openings:

1.

Napier Healthcare is looking for passionate UI Designers with 0 to 2 years of experience. Ideal Candidate needs to have a flair for designing User Interfaces and should be well versed with Usability Standards.

Technical Skills:

HTML, Javascript , CSS , jQuery , Photoshop , Dreamweaver

Adobe Catalyst (optional), Flex (optional)

Functional Skills:

Usability Standards ,UI Design Standards ,Interaction Design Standards

Communication and Presentation Skills

Work Location: Hyderabad

2.

If you have been working on Prototyping skills using DHTML, Photoshop and if you have been initiated on the path of UCD; we could help you find the destination.
Please forward your CV to hima.j@patni.com

3.

Palasa Inc., a Brand and Marketing House based at Lower Parel, Mumbai seeks a dynamic and talented (and wacky!) Communication designer as the design team lead. Eligible candidates would need an experience of 4+ years in various fields of communication design such as branding, packaging and environment graphics. Practical knowledge of exhibitions and space design would be a bonus. Those interested, may please contact Sandeep Bomble (Owner) at sandeep@palasa.in

4.

Interested people , pl mail your resume to work@studioabd.in
post : Business Development Manager - Bangalore, India The Business Development Manager (BDM) is responsible for identifying and delivering highly qualified and consistent streams of revenue. The position has two primary areas of focus: Business Development (70%) and Account Management (30%). We are seeking a seasoned professional with a minimum of 1-3 years of experience in the design /creative industry with a background in design management, client-servicing or brand communications. The ideal candidate will be inquisitive and thoughtful by nature, possess a high level of business acumen, be articulate in all forms of communication, possesses a pleasant and professional demeanor.
From a *Business Development* perspective, the BDM will be responsible for creating and executing a marketing and new business plan for various segments like consumer, luxury, packaging and accessories. This includes

the establishment of industry target profiles, prospecting, engaging clients, proposal writing / project planning and closing new business opportunities. From an *Account management* perspective, the BDM will work collaboratively with a dynamic and creative team and provide overall account leadership. The BDM will advise the team on how to build long term relationships with senior level executives and position Studio ABD as a trusted design + strategic adviser. The BDM is a relationship success manager who's responsible for making sure that both client and agency view their relationship as mutually beneficial
About Studio ABD
At Studio ABD we design from our heart. Emotion underlines our products, giving them poetic and inspired meaning. They connect deeply with the user by telling vivid stories, by overlaying the familiar with the new and surprising. We believe in celebrating creativity that combines fragments of Indian tradition with cutting-edge technology, and fuse cultural motifs with new age thinking. This conjures up sophisticated products that resonate with India's rich past. Propelled by humor, craft, rituals, people, situations and Indian heritage, we create products that speak a unique language - an Indian design vocabulary.
5.
Job Title Visual Designer
Location Pune
Eligibility Criteria
Educational Qualifications Bachelor of Fine Arts/Commercial Art, Any design Certification
Relevant Experience 3 years +
Certifications Visual Design
Technical Skills required Wireframing Tools, Design Tools, Adobe Design tools
Soft Skills required Communication skills
Role Details
Job Summary
Roles and Responsibilities "Visual Design
1. Understanding Client requirements and creating new and unique design to represent an idea
2. Good Understanding of Typography and colour sense
3. Should be able to build stories around designs created
2. Designs wireframes and the user interface of application, web sites, online interaction points
3. Provides mockups and interaction flows for applications/sites and create visual style guides
4. Should be updated with latest design trends.
Understanding knowledge of Usability Enginerring and HTML development
1. Involved in Task Analysis, Wire frames, low and high fidelity prototyping
2. Participates in setting standards and templates for usability tasks
3. Iinvolved in client interaction, requirement gathering etc
Interested? Send your resume to l.sapre@zensar.com
6
JR. Visualizer / Art Director / Graphic Designer
Exp: 0-3 Years
Education: Preferred degree/Diploma in fine art / Applied Art / Graphic Design (Apeejay Institute of Design / Delhi College of Arts / Jamia / NID /

NIFT or any other pure design college not computer institutes like Arena Multimedia)
Skills: Layout Design, Graphic Design, Logo Design,
SR. Visualizer / Art Director / Graphic Designer
Exp: 2 - 5 even 7 Years
Education: Preferred degree/Diploma in fine art / Applied Art / Graphic Design (Apeejay Institute of Design / Delhi College of Arts / Jamia / NID / NIFT or any other pure design college not computer institutes like Arena Multimedia)
Skills: Layout Design, Graphic Design, Logo Design,
for any further information or clarifications, please feel free to connect
Design Mechanics India Private Limited
136 A, First Floor, Humayun Pur,
Safdarjung Enclave, New Delhi - 110029, IN.
Ph.: +91 11 4602 3804-05-06 Extn: 32
Mobile: +91 98113 10728
US Local: +;1 917 558 8005
Website: http://www.designmechanics.in

7.

IILM school of design, Gurgaon, is looking for full time faculty for Interior and furniture design (4 year diploma course).
Interested candidates may forward there CV to the Dean at sasi.menon@iilm.edu

8.

Required Skills: 3D MAX/Maya, Aftereffects
The duration of the project is 7 Days. 18-25. The team need to be stationed at Chennai during the period as its a live show. Here is a link to the video mapping medium, and the benchmark for the content.
http://vimeo.com/15749093
Travel/Stay will be taken care of. Remuneration to be discussed on finalization. Please contact me on +919967960018

9

Minimum Job Qualifications:
 # 2-6 years experience in graphic and visual design. Excellence in branding is a big bonus
 # A graduate or post graduate degree or diploma in graphic/web/multimedia design or design-related field
 # High quality design capability is a must with great attention to detail a continuous requirement
 # Expert with design tools Adobe Photoshop/Illustrator,Flash and ability to use effects, gradients and other tools to create rich designs
 # Comfortable working with a creative brief and references to unleash your own creative instinct
 # Experience and knowledge of Silverlight- MS Blend is must have requirement and will be key selection criteria
Your responsibilities will include:
 # Communicating conceptual ideas and visual design rationale
 # Designing visual design themes and concepts for cutting-edge,Healthcare web applications
 # Design of all visual artifacts for example icons, typography and Visual layout
 # Define overall styles and imagery, including page layout (screen

schematics) and interactions (user paths)
 # Define and Update on Styleguide for all products including web and client-server
10.
UBRIS is a product creation enterprise devoted to breakthrough ideas that are intuitive, delightful and chic. Technological prowess, humanistic design and matchless quality are at the heart of any UBRIS product. A rare assembly of multidisciplinary talent from space design, product design and engineering backgrounds lead this endeavour. Ubris is brought to you by a team that gladly owns up to each of its path breaking creations.

Ubris branches out of ONE EVOLVE enterprise which been steadily growing - from medicare to construction to engineering consulting to newer things. It has added development of office spaces, avant-garde product design, sports development, club gymkhana projects, villa construction besides high-end apartment enclaves.
Its driving philosophy is succinctly expressed in a single word 'evolve' - to direct its efforts and resources to taking things to the next level in every undertaking.

Ubris is hunting for an accessories designer specialized in 'bag designing'. A good knowledge on styling, trends, colours, size & ergonomics. The designer must have an experience of at least two years in designing & manufacturing of the same. If you believe your inventive thinking sync with ours, do share your portfolio with us at career@ubris.co
Ubris Design Pvt Ltd.
Survey No 1000,
Devidayal Road,
Mulund West,
Mumbai 400080
Website : www.onegroup.in
Phone : +91 22 2591 2633 / 34
11.
An opportunity for young design enterpreneaurs who plan to start up their own venture in communication design. who are based in delhi or dont have a problem moving in to delhi.
Anyone with a 2+ years of design work experience, with great work, and most importantly with an quench to do great in the field of design can get in touch with us or share your work/experiance and contact details at lal.subhash@gmail.com,
12.
02 spa is looking for a talented jewelery designer with efficient skills in jewelery design and visual merchandising in similar field. candidates with relevant experience, skills and degree in design can apply.
Job title: jewelery designer
Job location: Delhi
for further information please contact hr@o2spa.org
for more details about company, please check http://www.o2spa.org/
13.

Desired Candidate Profile
1. Strong knowledge in Object Oriented Programming

2. Hands on experience on developing Iphone applications using Xcode and Objective C
3. Must have worked on atleast 2 Iphone applications
4. Knowledge on JSON and web communications would be an added advantage
5. Good communication and analytical skills
Job Description
Responsible for iPhone Programming and related work ,should have knowledge & exp in C++, objective C,cocoa,cocos 2D, xcode 3.0 & above,phone sdk 3 & above.
Company Profile
Apppli Ltd is a bright and dynamic Software Product and Services startup based out of UK. We have in-house web-based products and are moving into iPhone product development. We are also offering iPhone and enterprise web development services to other clients. We have a 100% owned subsidiary in NOIDA which is our development centre.
Company Location: Sector-63, NOIDA
Interested candidates please send your resume to careers@apppli.com or call +91 9910027922
14.
TCS (Tata Consultancy Services) is Hiring Sr. UI Designer Location- Mumbai

We are currently looking for senior UI Designer to join the User Experience Group based out of Mumbai.

Job Overview – Sr.UI Designer

This position is responsible for working closely with management and architects to create highly complex and sophisticated User Interface design for web based applications.

Key Responsibilities

●Ensure all UI designs meet usability objectives and user requirements.

●Coordinate with product solution teams to gather requirements and to ensure standards are understood and followed.

●Generalize design techniques to apply and contribute to corporate UI standards and consistency with other products.

●Work on UI designs in the form of sketches, story boards, wire frames, and interactive prototypes

●Independently produce detailed user interface specifications

● Conduct Usability tests during formative and summative stages of development

Role Definition

This is a senior level professional role. Evaluation, originality or ingenuity required. Should know and apply the fundamental concepts, practices, and procedures of usability. Provide creative and innovative User Interface design solutions based on business requirements. Implement Usability life cycle process in software development. Do expert (usability) review and usability recommendations

Preferred Education

Graduate or Masters degree in Human Computer Interaction, Information Design, Industrial Design , Human Factors, Cognitive Psychology, or related HCI discipline

Work Experience

Should possess a portfolio demonstrating 4+ yrs of exp in UI design demonstrating expertise web based applications. Should have been involved in Customer engagement, usability testing and analysis. Well versed with tools like MS Visio, Axure, MS Powerpoint and Morae recorder, eye tracking devices, graphic tools such as Adobe Photoshop.

Skills

●Expertise in UI design and prototyping skills. Ability to document root cause of UI design issues instead of symptoms and propose clear solution

●Comprehensive knowledge of advanced HCI principles

●Comprehensive understanding of UCD analytical methods and how/when they effect the design process

●Proficiency in the ability to perform usability tests, cognitive walkthroughs, heuristics evaluations, surveys, interviews, competitive analysis, card sorts, task and needs analysis, user profiling, and other usability methodologies.

● Data gathering methodology, either direct (1-on-1 interview, contextual enquiry) or indirect (Joint Application Design - JAD sessions, usability round tables, Online Surveys)

●Possess excellent written and oral communication skills.

●Knowledge of Core Java/J2ee technologies and Web UI technologies with

Tata Consultancy Services

Amita.gandhi@tcs.com ,Cell:9870095095

15.

UBRISis a product creation enterprise devoted to breakthrough ideas that are intuitive, delightful and chic. Technological prowess, humanistic design and matchless quality are at the heart of any UBRIS product. A rare assembly of multidisciplinary talent from space design, product design and engineering backgrounds lead this endeavour. Ubris is brought to you by a team that gladly owns up to each of its path breaking creations.
Ubris branches out as an separate vertical from Planet 3 Studios a young, internationally award winning practice represents the vanguard of future-forward design in India. The focus is always on the context, the constraints and the opportunity that a project presents. We like to create designs that maximise the positive impact of design on the environment, use appropriate technologies & materials and source labour locally.
Website : http://www.planet3studios.com/
Recruitment point:
· Title - 'Accessory designer' with a specialization in bag designing.
*** · A fine knowledge on styling, trends, colours, size & ergonomics**
*** · A good hands on software's & sketching skills.**
*** · The designer must have an experience of at least two years in designing & manufacturing of the same.**
If you believe your inventive thinking sync with ours, do share your portfolio with us at
Email : career@ubris.co
Tel : +91 7738466111

16.

Think Design is looking for a full time Industrial Designer for its New Delhi office.
Details about our company can be viewed at www.thinkdesign.in
Ideal candidate should have minimum 2 years experience preferably in a Design studio environment. In addition to this, certain prerequisites are:
1. Experience in handling project/s that have seen entire design development process through (from Product Definition to Developed product).
2.The candidate should have interacted with various people during design development process (from marketing/ sales personnel to technical/ R&D staff to consumers).
3.Thorough knowledge of processes and tools (softwares, prototyping processes, manufacturing processes and trouble shooting).
4.Excellent proficiency in communicating with design experts as well as non designers.
Please revert with your Resume and Portfolio to hari@thinkdesign, before 31st November 2010.

17.
Zeppelin Design and Environments is a multidisciplinary firm based in Delhi. We are looking for graphic designers(two) with 1 to 2 years of experience from leading institutes. Freshers with impressive portfolios will also be considered.
The main area of work will be Strategic Branding, Print and Environmental

graphics.
Interested candidates should email a short portfolio(less than 4mb) to som.s@zeppelindesign.net.

18.

Position: UI Designer

Location: Mumbai and Pune

Experience: Relevant years of experience 2 - 5 years,

Education: Formal education Graphic design, BFA, MFA or B.Des or any other equivalent qualification

Core Skills & Responsibility:

1. **Understanding of UI Design techniques**
2. **Understanding of Design evaluation techniques**
3. **Generating functional design specs**
4. **Working with the engineering team to implement designs**
5. **Conduct quality evaluations to ensure the user experience vision, design and standards are being fulfilled in the applications**
6. **Able to coordinate with multi-disciplinary teams**
7. **Effective communication skills**
8. **Proficient in Adobe Products like Photoshop, Illustrator, HTML, CSS**

Other skills:

1. Creative and Proactive

2. Excellent visualization skills

3. Good understanding of prototyping tools (Axure, Visio)

4. Strong interpersonal skills working within cross-functional teams

5. Preferable if worked on small screen display environment (not mandatory)

6. Adobe Flash knowledge will be an added advantage

Interested candidates should forward their resume to vishalpotdar@gmail.com

19.

Position	HFE
No. of openings	1
Experience (relevant)	6 - 8 years
Employment Type	Full time
Organization	Hewlett-Packard IPG R&D Hub
Location	Bangalore, India

Qualification, Skills and Competencies

- **Formal Education in Human Factors, Human Computer Interaction, or closely related courses is preferred.**
- **Theoretical and practical knowledge of user centered research and design methodologies/techniques.**
- **Proven experience in User Research, Usability Testing/Analysis, Information Architecture, Task Analysis, UI Wireframes creation and Interaction Design.**
- **Drive Ux design in product development from research to concept creation/validation to final design.**
- **Experience in designing UI for Enterprise Solutions and Mobile devices is preferred.**
- **Experience in working with multidisciplinary team distributed globally.**
- **Excellent English communication skills (Verbal and Written).**
- **Proven analytical, problem solving and creative thinking skills.**
- **Ability to work well in a team environment.**

Interested candidate can email his/her updated CV along with the Portfolio/ Sam ple work to siddharth.kalita@yahoo.co.in

IMPORTANT ANNOUNCMENT:

We have released a video film of approximately 40 minutes on concept of Universal/ Design For All/ Inclusive Design in the Month of June 2009 and speakers are

Prof Peter Zec of Red Dot, Germany,

Prof Jim Sandhu, U.k

Mr Mike Brucks , ICDRI

Prof Lalit Das, India

Mr John Salmen of Universal Designers & Consultants, Inc. USA

Mr Pete Kercher, Ambassdor EIDD (2nd Volume)

Prof Ricard Duncan, USA,(2nd Volume)

Ms Onny Eiklong, Norweign Design Council(2nd Volume)

Those who are interseted in free DVD kindly write to us along with their postal address or you can download from our website www.designforall.in or download from below links for single clipping

If you wish to download the film kindly click the below link of your choice

Prof Peter Zec of Red Dot Min -8

http://www.youtube.com/watch?v=3JML2EbzxDM

Mr. Mike Brucks of ICDRI Min 1.5

http://www.youtube.com/watch?v=4_7CbkLOkWc

Prof Jim Sandhu, UK Min-8

http://www.youtube.com/watch?v=Std4PuK4CmM

Index of the film Min-1.2

http://www.youtube.com/watch?v=kFyCLPuQgxk

John Salmen of UD Min-3

Universal Designers & Consultants, Inc

http://www.youtube.com/watch?v=bU770Vqu19o

Indian Example of Sari (female dress)

and Dhoti(Male dress) Min-4

http://www.youtube.com/watch?v=_vmAmRUFptE

Mr. Francesc Aragall Min- 5

http://www.youtube.com/watch?v=d-D3JH_ JGpA

Welcome note of Design For All

Institute of India Min-1.3

http://www.youtube.com/watch?v=yqW2vR- 3kRg

We solicit your cooperation and looking for feedback at Dr_subha@yahoo.com

For free Registration: write to
subscribe@designforall.in

Write to us about change of e-mail address:
address@designforall.in

Advertising:
To advertise in digital Newsletter
advertisement@designforall.in
Acceptance of advertisement does not mean our endorsement of the products or services by the Design for All Institute of India
News and Views:
Regarding new products or events or seminars/conferences /workshops.
News@designforall.in
Feedback:
Readers are requested to express their views about our newsletter to the Editor
Feedback@designforall.in

Dear Friends,
We need your feedback on our publication and your support for popularizing the concept of our social movement of Design For All/ Universal/ Barrier free/ Inclusive Design. It is our further request kindly submit your latest articles, research findings , news and events with us for publication in our newsletter.
With regards
Dr. Sunil Bhatia
Design For All Institute of India
www.designforall.in
dr_subha@yahoo.com
Tel:91-11-27853470(R)

Forthcoming Events and Programs:

Editor@designforall.in

The views expressed in the signed articles do not necessarily reflect the official views of the Design for All Institute of India.

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www.unmultimedia.org/photo/