



**Broadband
India
Forum**

...enhance, expand & usher the true value of broadband



To,

11th February 2018

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Response to Consultation paper no 17/2017 on Making ICT accessible for persons with disabilities

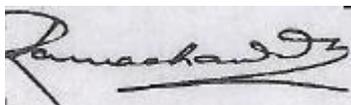
Dear Sir,

At the outset and on behalf G3ict, advisory @TVR, Broadband India Forum, European Business Group (EBG), The Daisy Forum of India, and European Project SESEI (Seconded European Standardisation Expert in India) we'd like to state our appreciation to TRAI for suo moto taking up the issue of enabling ICTs for persons with disabilities and seeking consultation on this. Given the ubiquity of technology today to function in society, the failure to ensure ICT inclusivity has excluded persons with disabilities and other groups like the elderly, from exercising their basic rights to education, employment, equality and non-discrimination and live independently. While some policy initiatives have been made, mostly at the behest of Disabled Persons' Organizations (DPOs), no serious efforts were made or resources allocated to implement these policies.

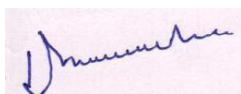
We, the undersigned, provide herein most respectfully our joint response to the questions in the Consultation Paper. We understand that the failure to have implemented these policies or schemes was not due to a lack of true concern on the part of agencies, but perhaps a lack of insight and close collaboration with the beneficiaries and other stake holders. We trust our observations and submission as summarised below are useful to develop a better policy and implementation framework going forward, which will take into account a multi-stakeholder perspective. We remain eager and available to provide further information and assistance.

Thanking you, Yours sincerely

Dr. Nirmita Narasimhan (Senior fellow and Programme Director), G3ict



Mr. T.V.Ramachandran, Founder & CEO – Advisor@TVR, President, Broadband India Forum and Chairman, Telecom Committee, European Business Group



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Enclosures:

- 1) Brief about the supporting organisations for this submission**
- 2) Response to TRAI Consultation paper on Making ICT accessible for persons with disabilities**



Response to TRAI Consultation paper
on
Making ICT accessible for persons with
disabilities

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G3ict Comments and Responses to the TRAI Consultation paper on Making ICT accessible for persons with disabilities

Comment: It is mentioned on page 5 para 1.8 of the Consultation Paper (CP) that the universal design definition is in the Optional Protocol. The definitions of universal design are actually found in the [UNCRPD itself in articles 2 and article 4.1.f](#) and not the protocol.

Answers to questions:

Q1. Which are the disabilities, with specific accessibility requirement, other than those mentioned in para 2.3 that require consideration for preparing a framework?

Answer:

Please refer to the list of 21 disabilities enumerated in the Rights of Persons with Disabilities Act, 2016 (RPD Act) as listed below in Appendix 1. In many cases however, a technology solution could benefit persons with multiple disabilities, for instance, text to speech could benefit persons with blindness, those who are dyslexic or are otherwise unable to read, even illiterate. Hence there are several aspects to be considered, the disability itself and the functional outcomes. Appendix 2 as below includes the list of disabilities covered by the international certification of professionals in accessibility core competencies (IAAP – CPACC) and for which accessible ICTs and assistive technologies solutions exist.

Recommendation:

We recommend that globally accepted accessibility standards be identified and adopted for all aspects of telecom and broadcasting which will ensure accessibility to all persons, irrespective of disability type. For eg. [EN 301 549](#) on Accessibility requirements suitable for public procurement of ICT products and services and for Broadcasting [H.702 \(Accessibility profiles for IPTV systems\)](#) & [H.721 \(IPTV terminal devices: Basic model\)](#)]

Q2. Apart from the challenges enumerated in para 2.3, what other challenges do PwDs face while accessing telecommunication and broadcasting services?

Answer:

Persons with disabilities face several barriers while trying to access telecom and broadcasting services. Apart from the issues mentioned above, inaccessibility of communication affects a whole gamut of services essential to the adoption of telecommunication and broadcasting services by persons with disabilities. Those include but are not limited to marketing and sales, information about services, making payments, support to learn how to use interfaces, accessing customer care services, and so on. They also face difficulties in accessing information on available accessibility solutions including on app stores, identifying accessible public and private apps, unavailability of affordable technology solutions such as text to speech solutions for all Indian languages and access services such as captioning and video descriptions for programmes, lack of training in using accessibility features, lack of emergency and disaster response framework, etc.

Finally, since the vast majority of persons with disabilities live on limited income, the pricing of telecommunication and broadcasting equipment and services is often a critical barrier to adoption.

Q3: In your opinion, what are the reasons for the desired benefits of ICT (telecom and broadcasting) not reaching the PwDs despite several policy measures and scheme being implemented?

Answer:

There are several reasons for ICT not being able to achieve the desired impact on the lives of persons with disabilities in India. They are enumerated below:

Failure to identify accessibility standards - although several policy initiatives were made, none of them clearly identified the standards which were to be complied with for different domains of accessibility. Only the Guidelines for Indian Government Web sites (GIGW) in part adopted some level of accessibility requirements from WCAG 2.0, but since they did not clearly reference the corresponding WCAG guidelines and techniques and success criteria, there was very little clarity on what and how to implement them. Being advisory in nature, they were ignored in a large part by most government agencies. The National Policy on Universal Electronics Accessibility again failed to mention any accessibility standards, and hence there was really very little information by way of what was required to be complied with. This situation is still not completely remedied today and there are several domains of ICT such as procurement, broadcasting, telecommunications, smart cities etc. where it is imperative to notify accessibility standards.

Lack of prioritization - until recently accessibility was not given priority for implementation amongst government departments and was considered to be an isolated issue and not part of mainstream development. For instance, it should have been included in the Make in India policy, Smart Cities Mission and other mainstream initiatives. Even where policies were formulated with the persistence of DPOs, little attempts were made to draw up a roadmap or allocate resources for accessibility implementation. Hence policies like the National Policy on Universal Electronics Accessibility of 2013 remain a paper policy. There was no implementation roadmap to execute its strategies or set targets.

Lack of awareness of existing policies, guidelines and initiatives amongst government agencies and industry to prompt adherence.

Lack of training, capacity and monitoring to implement accessibility- There is little awareness and expertise in accessibility standards amongst technology professionals in both the public and private sector. Hence, even where guidance in the form of technical standards existed, there was no implementation. For instance, the GIGW was first notified in 2009. Until today, all government web sites are still not accessible and government web developers are still grappling with lack of knowledge about how to develop and maintain accessible web sites. There was also no implementation plan for ensuring that web sites became accessible over the years and to train government web developers and no regular audit to check for compliance. There were also cases where the work of making a web site accessible was outsourced to a third-party agency. However, this did not prove to be a sustainable plan for accessibility, since afterwards the web site would continue to be updated and maintained in house by the department/ ministry/ agency concerned, so again instances of inaccessibility would start appearing on the accessible web site. Furthermore, these guidelines were advisory in nature, hence there was almost no accessibility adoption. Thus the need for a strong legal mandate with strict deliverables, time lines, resource allocation, training and audit mechanism clearly stand out as key requisites to implement ICT accessibility.

Failure to involve industry interest and participation in technology solutions- in the past, key government initiatives to develop assistive technologies such as text to speech and OCR software for Indian languages failed to result in any practical outcome in the hands of persons with disabilities. Projects such as these, which spanned several years and utilized large scale resources were not able to reach the intended beneficiaries. This could be because of a failure to facilitate transitional research and involve the industry, to help bring the prototypes into a marketable product. As a result, despite work going into this for over a decade, persons with blindness still do not have good indigenously developed solutions for technology and are dependent upon private players making this available. At the moment, there is very little incentive amongst the industry to do this and Google is the only entity which has made this available as an on-line solution.

Failure to conduct adequate consultations and involve DPOs in planning and implementation activities. Without input from disabled persons organizations, it is difficult for any organization to identify, develop and implement relevant and sustainable accessibility solutions. Furthermore, without participation of DPOs in the monitoring of implementation of accessibility policies, systematic follow-up with analysis of issues and corrective actions is unlikely to occur.

Cumbersome bureaucratic processes - While the USoF launched a scheme for pilot projects to connect persons with disabilities, it is doubtful as to whether many, if at all, projects were funded and implemented under this scheme. One of the issues here was that the responsibility of finding a TSP partner and a content provider to apply for the project was entirely upon the DPO, since the TSPs themselves did not evince much interest in this. Additionally, since the USoF can only fund TSPs and not DPOs directly, it would be very difficult for a DPO to constantly follow up and have the project implemented, given the severe human and financial resource crunch that DPOs face. Having a more flexible approach to providing funding and project implementation, using a carrot and stick approach to urge active industry participation would go a long way to make programmes and schemes more meaningful.

Lack of accountability on accessibility spending and activities- There is very little information available, whether in public domain or through RTIs on what funds were spent on disability in a year and the kinds of activities/ initiatives funded. It is likely that a large portion of this budget remains unspent. Requiring government agencies to actively disclose accessibility initiatives and spends as part of their annual reports, would be helpful to prompt more action in this regard.

Lack of proper coaching and support of persons with disabilities to understand and adopt accessibility solutions. Most organisations who are in the business of providing ICT awareness and support have limited resources and are mostly in urban areas and are able to reach only a small percentage of persons with disabilities. In the case of schemes for providing assistive technologies for persons with disabilities, there are three issues hindering its success:

- there is not enough awareness about the existence of these schemes amongst persons with disabilities and their families and secondly
- even in cases where Assistive Technologies (ATs) are successfully provided to a person with disability, whether in an urban or a rural area, this is not accompanied by any training. Hence the recipient of the assistive technology is unable to use it and it consequently remains unused or used by a family member and so on. Hence, providing coaching/ training to persons with disabilities is critical to ensure successful technology adoption.
- Finally, accessible resources are required to use assistive technology effectively, for instance accessible documents or web sites to be read by a screen reader. However, as noted above, the lack of awareness of both public and private sector organizations about accessibility results in the vast majority of resources to be inaccessible.

Q4: What additional or corrective measures can be taken by the Government to enable better access to telecommunication and broadcasting services and devices by PwDs? Please give a rationale for your response.

Answer:

Given that the major reasons for the failure to implement accessibility and increase adoption of ICTs for the disabled are lack of notification of standards and guidelines, lack of implementation road map, lack of technology and capacity training, adequate resources and monitoring, these would be the areas in which corrective measures need to be undertaken.

Disability and Accessibility Advisory Committee- We would like to propose that the Government set up an ICT disability advisory committee involving all relevant Ministries and Standards Development Organizations to notify standards and set out guidelines and policies for provision of telecom services, ICTs and continue to monitor implementation of the same. This advisory committee shall set up Working Groups (WG) on Key Domains and some of the key domains with which the Committee may engage through these WGs and notify ICT accessibility standards could include telecommunications, broadcasting, procurement, smart cities, communication and publications and general ICT software and hardware accessibility. The formation of such Standing Committee is recommended by the ITU – G3ict ICT Accessibility Model Policy as a key process to ensure the proper involvement of multiple stakeholders: organizations of persons with disabilities, industry and government agencies in policy development, deployment and monitoring. Such process is in place in countries which have ratified the CRPD and are involved in implementing ICT accessibility policies.

The rationale for this recommendation is that it is a proven good practice, and that both users and providers must be involved in the development of policies for those to be realistic and effective.

Systematic policy development, implementation and monitoring in core areas of regulated ICT areas. In each core domain such as mobile, TV, ATMs, government web sites, a specific policy including a negotiated roadmap with key stakeholders with metrics and timelines should be adopted. The Advisory Committee should be involved in such process. It should in each domain help convene and involve multiple stakeholders such as organizations of persons with disabilities, broadcasters and mobile service providers in prioritizing which features must be made available and in defining realistic implementation roadmaps.

The rationale for this is that without input from users, service providers are prone to choose ineffective solutions with poor implementation while only service providers can assess realistic time lines and ways of implementation.

Awareness and incentives - the Government should actively publicize that accessibility compliance is now a mandate under the law with enforcement mechanisms. It may also provide incentives to promote those organisations which have proactively embraced accessibility and taken steps to promote it further. It should publish an annual audit report of compliance progress as well as regular sectorial surveys of the accessibility of essential services along the lines of the IDA-DPI-G3ict CRPD decennial call for action.

The rationale for this recommendation is to foster mobilization through regulatory pressures and incentives. Both approaches have proven to be effective in other countries.

Licensed services: The Government should include in the general conditions for license to operate (telecom and broadcasting services) a section on accessibility features and services. Given the pace of technology innovation, it may be best not to specify accessibility obligations in the operators' individual licenses themselves but to refer to general conditions that can be updated at all times.

Rationale: This approach allows the regulator to include new terms and conditions referencing new technologies while ensuring a level playing field among all operators irrespective of the date of issuance or renewal of their license.

Training - One of the fundamental reasons for non-compliance is that technology professionals lack the awareness and expertise to implement accessibility standards. It is also evident that there is no easy fix around this issue. For accessibility to be sustainable, it has to be a part of training curriculum at Universities, IT professional courses and at the organizational level, with certification for both web sites/ technologies, as well as for developers. In this context, we would like to recommend looking at the certification programme offered by the International Association of Accessibility Professionals (IAAP), whose mission is to define, promote and improve the accessibility profession globally through networking, education and certification in order to enable the creation of accessible products, content and services. This is a global body having 1360 members across 41 countries with a chapter in India. Its certification programme offers a solid framework for the training of professionals in accessibility. Please check IAAP reference given here¹.

Census methodologies: the Government should explore the option to use the United Nations protocol (Washington Group) for its population census using functional questions. The rationale is that such census methodology gives a far more precise evaluation of the actual population excluded from services due to functional limitations. In most countries, the population of persons with disabilities identified as functional limitations is around 15% including 2/3 with severe disabilities. Understanding the full scale of disability demographics further motivates public authorities and private sector organizations to address the issue of accessibility.

Include persons with disabilities in the Universal Service Obligation charter so that the USOF can freely allocate funds to programs promoting the usage of ICTs by persons with disabilities and set out an easy mechanism to fund schemes and projects.

Rationale is that USOF mission is to ensure equal access to telecom services among all citizens including persons with disabilities who are among the most underserved group of individuals.

Regulate the adoption by service providers of special tariffs and plans for PWDs. Such step should be taken in ways that ensure a level playing field among competing mobile operators.

Public Broadcaster in lead: Access solutions for PWDs need to have public broadcasters in the lead. The present CP currently asks for steps to be taken to mandate development of certain percentage of content meant only for PwDs viz. audio and visual captioning, additional audio track, etc by all broadcasters. We recommend that a detailed consultation be carried out on this issue with public and private broadcasters and disability groups to ensure that concerns of all stakeholders are taken into account while identifying targets and implementation plan for this purpose. We also recommend that the Government extend support such as funding/ subsidies to private broadcasters to assist in the process and that the measures undertaken should facilitate access to persons with different types of disabilities.

¹ www.accessibilityassociation.org

Industry collaboration: Rather than an immediate implementation of law, a joint task force can be constituted with industry to define the next steps on what to do and what is practically possible instantly and what cannot be done. This was also recommended in the MIB sub-group meeting for standards to facilitate access to TV for PwDs.

Align CSR efforts: TRAI CP recommends a CSR corpus for PwD access. This could be a good idea enabling the government to incentivise the manufacturing and development of ICT tools and devices for accessibility for PwDs.

New STBs to have disability feature: Industry can take lead in developing and popularizing new devices (such as STBs) and have the option of at least one model of handsets for PwDs with accessibility features compatible with assistive technology features such as hearing and visual aids including emergency buttons.

Q5: Apart from the measures suggested by ITU, what additional measures can be taken by the TSPs and equipment vendors/suppliers and other stakeholders to address the challenges faced by PwDs while accessing telecom and broadcasting services?

Answer:

The biggest missing piece in ITU's recommendation is the coaching and support of persons with disabilities in using the accessibility features available in mainstream products and services, especially among older PwDs. Such coaching can occur via multiple channels including service providers themselves, non-profit organizations or community centers. As for Assistive Technologies, those are typically provided and supported through schools and universities, rehabilitation centers and for workplace accommodation. Training of professionals in accessibility is another critical element which needs to be further emphasized.

Q6. What are the areas where collaboration between various stakeholders would be useful and how?

Answer:

- Coordination at government level among ministries for Social Welfare, MHRD, MEITY, Department of Telecom under Ministry of Communication and any other relevant ministries can yield considerable economies of scale in promoting assistive technologies.
- Developing policies, negotiating roadmaps by sector, carrying out surveys, study and adoption of relevant global standards, monitoring results with agreed upon metrics.
- Carrying out annual research and consultations to design meaningful projects which are of most value to the beneficiary population and thereby ensuring large scale adoption which would provide for a sustainable business model.
- Assessing success of on-going projects and schemes, identifying gaps and taking corrective action.

- Discussing users experiences, providing feedback to service providers and promoting adoption of accessible goods and services available in the market.
- Helping manage channels to promote adoption, coaching and support to PWDs.
- Joint funding to promote research & innovation

Q7. Should the Government/TRAI direct the telecom and broadcasting service providers to provide information pertaining to billing, usage, pricing and contracts in the form accessible to PwDs? Please provide a rationale for your

Answer:

Yes, to all sub questions. The rationale for this is that it is necessary and already mandated as per law to provide information in accessible formats. Second reason is that increasing awareness amongst persons with disabilities on all of the available schemes and provisions will increase adoption and success of the schemes.

Q8: Should the Government/TRAI mandate that the devices used for watching television provided through cable, satellite/DTH, fibre, etc. should be made accessible to PwDs?

Answer:

Yes, this is a critical element of accessibility and should not be missed and unnecessarily complicated with expensive technologies and standards.

Several examples of policies exist, for instance FCC rules under Section 255 of the Communications Act require telecommunications equipment manufacturers and service providers to make their products and services accessible to people with disabilities, if such access is readily achievable. Where access is not readily achievable, manufacturers and service providers must make their devices and services compatible with peripheral devices and specialized customer premises equipment that are commonly used by people with disabilities, if such compatibility is readily achievable. FCC rules cover all hardware and software telephone network equipment and telecommunications equipment used in the home or office. Such equipment includes telephones, wireless handsets, fax machines, answering machines and pagers.

Q9. Should international accessibility standards be adopted for telecommunication and broadcasting services and devices in India? Please suggest steps required to ensure their adoption by the service providers/device manufacturers.

Answer:

Yes, In case of ICT interoperability is key hence adopting international accessibility standards is critical to ensure that Indian ICT products and services are on par with global products and services. Also, this will help technologies to be compatible with international products and give persons using assistive technologies a barrier free experience, and help achieving the economies scale hence the much-needed affordability for India. The steps required are given below:

- Identify different sectors in which standardization is required: a group of experts can prepare a report on each of these domains within 3 months. Sectors which are immediately critical include telecommunications, procurement, smart cities, broadcasting, general ICT hardware and software, emergency services, public access points and technologies to access financial services such as ATMs.
- Once these domains are identified, each ministry responsible for these issues may constitute a working group which shall along with Indian Standards Development Organisations such as BIS and/or TSDSI assess existing global standards, existing practices and prepare a report which will identify the standard to be followed and propose an implementation plan.
- These standards shall be notified by the relevant ministries, and also may be recommended to BIS to notify as an Indian standard. BIS may also publish this as the relevant Indian standard in that domain. It is important to note that the Indian standard should get updated automatically as the corresponding international standard or to have a provision to review the standard from time to time in the Policy.
- Details of the standard to be followed may be communicated by the relevant ministry and in all contracts and procurement by the Government. Ministries shall also dedicate a separate section on their web sites which will describe all accessibility initiatives they have undertaken, as well as accessibility standards to be followed etc.
- A time line and action plan may be evolved for achieving compliance with the standard in consultation with the public and private stake holders.

DPOs should be an integral part of this process as noted above in previous recommendations. Important Global standards, which need immediate attention are [EN 301 549](#) on Accessibility requirements suitable for public procurement of ICT products and services and for Broadcasting [H.702 \(Accessibility profiles for IPTV systems\)](#) & [H.721 \(IPTV terminal devices: Basic model\)](#)]

- For devices, a market driven approach is preferable since accessibility innovations by the private sector have often outpaced standardization processes. It is recommended that TRAI, or relevant government agencies such as DEPD/MEITY/DoT-MoC, similarly to the U.S. FCC or Australian and Canadian regulators adopts the [MWF GARI database](#) and makes it a web page of its own web site. The GARI database provides information on available devices with an easy to select series of accessibility features.

Q10. What additional measures can be taken or technologies can be deployed by service providers or equipment manufactures to assist PwDs?

Answer:

We would like to propose that the Government address the issue in the following manner:

Formulate in consultation with the private sector and disabled persons organizations a Policy/ Guidelines for telecommunications manufacturers and service providers which should include but not be limited to the following:

- Accessible equipment and software: require all hardware and software telephone network equipment and telecommunications equipment used in the home or office to comply with accessibility/ universal design standards. Such equipment could include telephones, wireless handsets, fax machines, answering machines and pagers.²

² Please refer web site of the Federal Communications Commission given in the references section.

- Accessible public access communications devices and services: require providers of public access services and stand-alone public access devices to ensure that these are accessible and conform to universal design standards. At the minimum at least 20% or one in every five public access points in a location should be accessible for persons with disabilities.
 - Accessible customer service premises, facilities and practices:
 - i. Provide bills and terms of service, contracts etc. in accessible formats on demand,
 - ii. Develop and publicise services, tariffs and plans which are available for persons with disabilities and seniors;
 - iii. carry out training for their customer care personnel to ensure that they are able to support requests and enquiries from persons with disabilities and seniors in a sensitive and efficient manner;
 - iv. carry out annual research and survey on compliance with accessibility practices by service providers and manufacturers;
 - v. Provide accessible communication and a special response number for situations of emergencies; ensure that public is aware about accessible communications and services in situations of disasters and emergencies;
 - vi. Provide priority fault repair and easy procedure/ mechanism to file and resolve complaints,
 - vii. Ensure that operators premises open to the public and facilities conform to accessibility guidelines laid out in the National Building Code.
2. Consider including adherence with the above notified policy and required disclosures as part of the general conditions for license to operate (see answer to question 4 above as reproduced below)
- *The Government should include in the general conditions for license to operate (telecom and broadcasting services) a section on accessibility features and services. Given the pace of technology innovation, it may be best not to specify accessibility obligations in the operators' individual licenses themselves but to refer to general conditions that can be updated at all times.*
3. Promote the accessibility eco-system in India through:
- Supporting initiatives to make available to PWDs accessibility features in multiple languages, notably text to speech and voice recognition software.
 - Use alternative channels addressing specific types of disabilities (rehab centers, DPOs etc.) to promote the adoption and usage of accessible ICTs and assistive technologies
 - Promote tablets usage among seniors with disabilities which appears to be the most popular type of form factor around the world among aging users.
 - Provide easy to use databases of mobile apps and services showing what's available in multiple minority languages in addition to English, Hindi, Tamil etc.

Q11 Should device manufacturers be mandated to allow in their device's operating system those applications which are meant to assist the PwDs? Please justify your response.

Answer:

- There are hundreds of apps and services for PWDs and only a tailored approach to users needs may foster greater adoption. We recommended a three-fold approach:
 1. TRAI may mandate that essential accessibility features such as text to speech and voice feedback be included in the operating systems of new phones when available. Those essential features allow the user to access the device in alternative modes of communications. In particular, mobile phones providers using Android operating systems on smart phones or tablets should be required to respect Google terms and conditions that all the Android accessibility features be implemented by its Android licensees.
 2. TRAI may facilitate the discussion among persons with disabilities and operators/manufacturers of possible packages of pre-loaded apps addressing a particular type of disability.
 3. Given latest technology trends, MEITY may consider fostering among Indian IT vendors and operators the development of wizard types of interfaces for persons with disabilities leveraging artificial intelligence and allowing devices to automatically adjust their accessibility features to the user profile while offering to automatically download relevant assistive apps residing on vendors or operators app stores.
 4. TRAI/ MEITY/DoT-MoC may facilitate the development of solutions to ensure unrestricted access to app stores by persons with disabilities seeking to download assistive apps.

Q12. What measures can be taken in India so that emergency services are made more accessible for PwDs? Should the implementation of these measures by TSPs be made mandatory by the Government?

Answer:

Access and aid during times of disasters and emergencies is an essential human right and as such it should be mandatory for all agencies which are involved to provide support, whether government or private agencies/ TSPs.

Several measures need to be taken throughout the disaster management cycle and emergency response system in order for the services to be accessible. These would include-

- **Raising awareness amongst emergency response** volunteers and staff and persons with disabilities on how to access services. Ensuring that disaster management personnel are sensitized to accessibility, that their training curriculum includes servicing persons with disabilities, that persons with disabilities are included in training drills, that training materials are available in accessible formats,
- **Communications** - ensure that communication about disasters and situations of emergency are conveyed to persons with disabilities through multiple communication channels in an accessible manner, that persons with disabilities have the means to communicate and ask for help, ensure that throughout the relief process adequate persons with disabilities are able to access information relating to rehabilitation, medical personnel, where their families are located etc.

- **Broadcasting** - Ensuring that during times of emergencies, communication over television and other broadcasting means are accessible - that they are done in multiple formats,
- **Provide accessible call centers** capabilities to deaf, hard of hearing and speech impaired persons. Specific initiatives could include enabling accessible communication through 100, designating a separate number for emergency help for persons with disabilities with video relay/ sign language communication and text messaging with acknowledgment of receipt,
- **Data collection** - gather information on where persons with disabilities are located and what their requirements are leveraging GIS and mobile GPS technologies. Provide access to such information to emergency response services while protecting the privacy of persons with disabilities.

Q13. Should the device/handset manufacturer be mandated to manufacture at least one model of handsets for PwDs which is having accessibility features and which are compatible with assistive technology features such as hearing and visual aids including emergency buttons etc.?

Answer:

Yes, such a measure could help. Key outcome must be the availability and choice of devices at a reasonable price. At the moment accessible solutions/ accessibility compatibility is not available on low end phones. Changing this would really make a huge difference in the uptake of technology by persons with disabilities, most of whom currently may be unable to afford smart phones.

Q14. How should companies be encouraged to utilise their CSR funds for development of applications, devices and services for the PwDs? What kind of devices and applications can be envisaged/ designed to make achieve ICT accessibility for PwDs?

Answer:

Companies may consider a variety of activities to promote accessible ICTs. There are two aspects to this.

- Firstly, that accessibility should not be taken as necessarily a separate issue. This requires mentioning because if a company has chosen education or health care as their CSR focus areas, one often gets the response that the disabled are not within their purview. However, this approach needs to be changed since all issues such as education, health care, livelihood etc. are also issues which concern persons with disabilities as well, hence such companies shall actually fund specific sub- programmes for persons with disabilities under these programme headers.
- Secondly under ICT accessibility/ disability, CSR can focus on activities such as:
 - Funding provision of technologies such as netbooks/ mobile phones preloaded with assistive technologies to persons with disabilities accompanied with training to use these.
 - Coaching, training and support of persons with disabilities in adopting technology.
 - Funding DPOs in their support projects such as help lines to aid persons facing difficulties while using technology, news/directory services etc.
 - Funding the localization of existing effective applications in minority languages
 - Supporting initiatives for the training and certification of accessibility professionals

- Fostering innovation among apps developers to address the needs of PWDs
- Supporting conferences on the topic of ICT accessibility

Q15. Should any other funding mechanism for the development of applications, devices and services meant for the PwDs be considered? Please give a rationale for your response.

Answer:

As stated above in question 4, the Universal Service Obligation charter should include persons with disabilities as one of its explicit target groups. The USOF, if administered in accordance with plan, is the best mechanism to fund special services for persons with disabilities, including labor intensive services such as relay services. The rationale is that this is one of the original purpose of such fund, i.e. ensuring equal access to telecommunications to all citizens and that it is a recurring funding model not subject to year to year variations, allowing to build an accessibility infrastructure in a predictable way. A relay service based on fluctuating funding would for instance be unmanageable. Several leading countries use the USOF purely for this purpose. Other sources of funding such as CSR and ministerial budgets shall also be explored for implementation. There is also a recommendation to set up a separate fund for supporting provision of access services and technologies for broadcasting.

Q16. How can effective campaigns be designed to create awareness about use of ICT accessibility tools? Can such campaigns be funded by CSR funds? If not, what other mechanisms can be used to fund such campaigns?

Answer:

The Accessible India campaign was a great idea to raise awareness about accessibility. However, this should be considered to be a starting point and the campaign should be expanded to include more stakeholders, more concrete deliverables, more communication channels.

The goal for example could be to reach every person with a disability in India and provide him/her with ICT. It could be derived from the Sustainable Development Goals (SDGs) theme of *leaving no person behind*. Furthermore, it would be in line with the [new five year action plan of the Incheon Strategy](#) which was concluded in December 2017.

The campaign could focus on:

- **Making technologies available** (would include work to support targeted distribution programs in partnerships with industry, creating a commercial market for this and etc.)
- **Making mainstream resources accessible** - making the existing ICT infrastructure resources accessible (web sites, electronic documents, public access terminals, etc.)
- **Supporting resource generation** projects such as publishing digital books and
- **Training** - providing the necessary training to use these technologies, (tying up with DPOs, ICT training institutions, schools, universities, industry CSR programmes, volunteer drives,
- **Awareness raising** - Actively working to raise awareness amongst the public, technology professionals and public and private agencies to highlight the need for ICT accessibility. This

could include posters at public locations such as hospitals, metro stations, educational institutions, clinics,

The campaign should be at a very large scale, like a national drive. This is critical since it is what drives the future.

Other important strategies are to include important stakeholders such as:

- Private sector operators using marketing techniques
- Private sector association of service providers
- Accessible grassroots social media

Q17. Should the Government incentivize the manufacturing and development of ICT tools and devices viz. tools for mobile accessibility, TV accessibility or for web accessibility for PwDs? Please give a rationale for your answer.

Answer:

In order to make the overall ICT ecosystem universally accessible and inclusive, there are two things which need to be done.

- **Firstly, bringing accessibility requirements into all government procurement contracts.** By specifying accessibility technical standards as part of award criteria, studies, maintenance contracts, qualification criteria etc., the government shall ensure that all government funded ICT infrastructure and services by all ministries including those being developed and deployed under the Smart cities mission initiatives are accessible. The most important latest version of procurement standard [EN 301-549](#) and its [implementation toolkit](#) shall be adopted and implemented in this regard. This will additionally also help create more capacity and skill amongst the private sector to provide a wider choice of accessible goods in the market. Hence, the Government should first and foremost adopt a systematic public procurement ICT accessibility policy aligned with the EU standard EN. 301-549. And from a Human Rights perspective, it is unjustifiable to spend public money to buy inaccessible goods and services discriminating against a specific category of citizens.
- The second thing which needs to be done is for the government to incentivize creation of assistive technologies, focusing on ease of use, affordability and language localization, which is compatible with mainstream products. Given the huge number of persons with disabilities in India, there is a good business case made out. Special attention needs to be given to promote marketing of these goods and tying up with the relevant institutions to provide training to end users. Government may consider different incentives and initiatives such as tax breaks, subsidies, awards and even incubating innovative Technologies & Solutions. Regarding innovation, the government may consider using its purchasing power to trigger localization and innovation in specific domains. It is possible that the most important opportunity will be localization investments in local languages.
- Regarding television, it would be useful for the government to subsidise devices such as set top boxes or any other technologies or provision of access services, especially in the case of small broadcasters. Government may consider setting up a fund for Accessible Broadcasting, or an Accessible ICT Fund which would provide support to accessible technologies for ICTs and



broadcasting. Government could also consider other useful projects such as creating a school or training programs at existing universities for sign language interpreters, captioners, accessibility experts and to support the training and certification of accessibility professionals by supporting existing initiatives of DPOs in India.

Q18. Please give inputs/suggestions/comments on any other issues which you feel are relevant to the subject matter.

Answer:

No additional inputs/suggestions/comments

Appendix 1

List of disabilities specified under the Rights of Persons with Disabilities Act, 2016

1. Physical disability.—

Locomotor disability (a person's inability to execute distinctive activities associated with movement of self and objects resulting from affliction of musculoskeletal or nervous system or both), including—

- (a) "leprosy cured person" means a person who has been cured of leprosy but is suffering from—
 - (i) loss of sensation in hands or feet as well as loss of sensation and paresis in the eye and eye-lid but with no manifest deformity;
 - (ii) manifest deformity and paresis but having sufficient mobility in their hands and feet to enable them to engage in normal economic activity;
 - (iii) extreme physical deformity as well as advanced age which prevents him/her from undertaking any gainful occupation, and the expression "leprosy cured" shall construed accordingly;
- (b) "cerebral palsy" means a Group of non-progressive neurological condition affecting body movements and muscle coordination, caused by damage to one or more specific areas of the brain, usually occurring before, during or shortly after birth;
- (c) "dwarfism" means a medical or genetic condition resulting in an adult height of 4 feet 10 inches (147 centimeters) or less;
- (d) "muscular dystrophy" means a group of hereditary genetic muscle disease that weakens the muscles that move the human body and persons with multiple dystrophy have incorrect and missing information in their genes, which prevents them from making the proteins they need for healthy muscles. It is characterised by progressive skeletal muscle weakness, defects in muscle proteins, and the death of muscle cells and tissue;
- (e) "acid attack victims" means a person disfigured due to violent assaults by throwing of acid or similar corrosive substance.

B. Visual impairment—

- (a) "blindness" means a condition where a person has any of the following conditions, after best correction—
 - (i) total absence of sight; or
 - (ii) visual acuity less than 3/60 or less than 10/200 (Snellen) in the better eye with best possible correction; or

- (iii) limitation of the field of vision subtending an angle of less than 10 degree.
- (b) "low-vision" means a condition where a person has any of the following conditions, namely:—
 - (i) visual acuity not exceeding 6/18 or less than 20/60 upto 3/60 or upto 10/200 (Snellen) in the better eye with best possible corrections; or

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- (ii) limitation of the field of vision subtending an angle of less than 40 degree up to 10 degree.

C. Hearing impairment—

- (a) "deaf" means persons having 70 DB hearing loss in speech frequencies in both ears;
- (b) "hard of hearing" means person having 60 DB to 70 DB hearing loss in speech frequencies in both ears;

D. "speech and language disability" means a permanent disability arising out of conditions such as laryngectomy or aphasia affecting one or more components of speech and language due to organic or neurological causes.

2. Intellectual disability, a condition characterised by significant limitation both in intellectual functioning (reasoning, learning, problem solving) and in adaptive behaviour which covers a range of every day, social and practical skills, including—

- (a) "specific learning disabilities" means a heterogeneous group of conditions wherein there is a deficit in processing language, spoken or written, that may manifest itself as a difficulty to comprehend, speak, read, write, spell, or to do mathematical calculations and includes such conditions as perceptual disabilities, dyslexia, dysgraphia, dyscalculia, dyspraxia and developmental aphasia;
- (b) "autism spectrum disorder" means a neuro-developmental condition typically appearing in the first three years of life that significantly affects a person's ability to communicate, understand relationships and relate to others, and is frequently associated with unusual or stereotypical rituals or behaviours.

3. Mental behaviour,—

"mental illness" means a substantial disorder of thinking, mood, perception, orientation or memory that grossly impairs judgment, behaviour, capacity to recognise reality or ability to meet the ordinary demands of life, but does not include retardation which is a condition of arrested or incomplete development of mind of a person, specially characterised by subnormality of intelligence.

4. Disability caused due to—

(a) chronic neurological conditions, such as—

(i) "multiple sclerosis" means an inflammatory, nervous system disease in which the myelin sheaths around the axons of nerve cells of the brain and spinal cord are damaged, leading to demyelination and affecting the ability of nerve cells in the brain and spinal cord to communicate with each other;

(ii) "parkinson's disease" means a progressive disease of the nervous system marked by tremor, muscular rigidity, and slow, imprecise movement, chiefly affecting middle-aged and elderly people associated with degeneration of the basal ganglia of the brain and a deficiency of the neurotransmitter dopamine.

(b) Blood disorder—

(i) "haemophilia" means an inheritable disease, usually affecting only male but transmitted by women to their male children, characterised by loss or impairment of the normal clotting ability of blood so that a minor would may result in fatal bleeding;

(ii) "thalassemia" means a group of inherited disorders characterised by reduced or absent amounts of haemoglobin.

(iii) "sickle cell disease" means a hemolytic disorder characterised by chronic anemia, painful events, and various complications due to associated

iv) tissue and organ damage; "hemolytic" refers to the destruction of the cell membrane of red blood cells resulting in the release of hemoglobin.

5. Multiple Disabilities (more than one of the above specified disabilities) including deaf blindness which means a condition in which a person may have combination of hearing and visual impairments causing severe communication, developmental, and educational problems.

6. Any other category as may be notified by the Central Government.

Appendix 2

Disability Types that can be addressed by Inclusive ICTs and Assistive Technologies

Source: Body of Knowledge, Certified Professional in Accessibility Core Competencies, International Association of Accessibility Professionals

1. Vision
 - a. Color Blindness
 - b. Blindness
 - c. Low Vision
2. Auditory Disabilities
 - a. Deafness
 - b. Hard of Hearing
3. Deaf-blindness
4. Mobility, Flexibility, and Body Structure Disabilities
 - a. Manual Dexterity/Fine Motor Control
 - b. Ambulation
 - c. Muscle Fatigue
 - d. Body Size
 - e. Body Shape or Form
5. Cognitive Disabilities
 - a. Intellectual Disabilities
 - b. Memory
 - c. Reading and Dyslexia
 - d. Math and Computation
 - e. Attention Deficit
 - f. Learning
 - g. Language
 - h. Autism Spectrum Disabilities
6. Speech Disabilities
 - a. No Speech
 - b. Articulation
7. Seizures
 - a. Photosensitive
 - b. General Seizure Disorders
8. Psychological or Psychiatric Disabilities
 - a. Social Disabilities
 - b. Emotional Disabilities
 - c. Behavioral Disabilities
9. Multiple/Compound Disabilities