

**Comments by Svayam on Consultation Paper
“On Making ICT Accessible for Persons with Disabilities”**

<p>Q1. Which are the disabilities, with specific accessibility requirement, other than those mentioned in para 2.3 of the Consultation Paper that require consideration for preparing a framework?</p>	<ul style="list-style-type: none"> - Framework should also include Persons having stroke/ brain lesion, higher level lesion of spinal cord injuries and deaf-blind in to consideration. e.g. Stroke; a neurological disorder which involves various aspects that can impair functional level of the person. (Hand dexterity, cognition, perception, speech and vision etc.) - Degenerative diseases such as Parkinson’s and Multiple sclerosis with progressive dysfunction at multiple level - Deaf with no literacy (as close captioning will not help in watching TV or using mobile phones) - Framework should also include inputs from stakeholder from different sectors of society as efforts regarding the advancement of the use of ICT in disability-inclusive efforts often suffer from the isolation of efforts and thus desirable results are never achieved.
<p>Q2. Apart from the challenges enumerated in para 2.3 of the Consultation Paper, what other challenges do PwDs face while accessing telecommunication and broadcasting services?</p>	<ul style="list-style-type: none"> - Many persons with disabilities will need more than one type of assistive technology solutions to enhance their independent living and socioeconomic participation. - Higher level disability (Spinal cord injuries at cervical level where a person cannot use hand to touch the screen or operate mobile) - Problems in comprehending a bright screen and changes in users interface such as constant flickering or moving web content/lines. (Constant flickering makes it difficult to concentrate and the complex layout of the information makes it difficult to understand what is being communicated) - Set top boxes and most electronic hardware products don’t comply with international accessibility standards and therefore are not usable for persons with disability. Buttons on Set top boxes, remote etc. do not have tactile notations and audio enabled feedback mechanism for visually impaired persons.

<p>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?</p>	<ol style="list-style-type: none"> 1. Lack of sufficiently trained rehab professional/community workers who transfer the knowledge to the persons with disabilities as a part of rehab process. Even when assistive technologies such as TV, mobile phone are made affordable or free, assistive technologies/ inbuilt accessibility features in commodity products might still remain unused if there are no expert/ rehabilitation professionals trained in the 2. Lack of Sales/ After sales service – users often do not buy technologies even when affordable due to presumption of absence of reliable service centres & spare parts. 3. Limited language options- even when ICTs are made accessible; they remain available in limited language options. India is culturally and linguistically diverse and therefore ICT services in regional languages are required (India -22 official language). Most of the assistive technology/ software are not available in regional languages 4. Lack of aggressive public campaigns for awareness and sustained advocacy to enforce stringent accessible ICT policies. 5. Responding to changing population demographics- A market shift is expected in India. WHO report indicates that population of elderly people is expected to grow more than 2.8 per cent and make up one-fifth of the total population by 2025-2030. 6. Targeted reach- Persons with disabilities are often excluded as there is lack of targeted campaigns. 7. Lack of collaboration with private sector and International organizations working on accessible ICT applications/products to replicate most affordable, well accepted and tested hardware and software technologies [e.g. 1) Perkins using crowdsourced data from local contributors to develop technology that helps the visually impaired to navigate the gap between GPS and the real world. 2) TDI is developing software to make live captioning services more affordable and more available for the deaf and hard of hearing.] <p>Other reasons –</p> <ul style="list-style-type: none"> - lack of effective implementation mechanisms in time bound manner
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	<ul style="list-style-type: none"> - Absence of periodic stakeholder coordination including manufactures, third party to update about products innovation, implementation gap and policy review - Lack of harmonization – (global best practices) policy and regulation harmonization of policies along with regulation across world to adhere uniform standards. (monitoring adherence to the policies, notifying the specific actions to be taken and auditing are insufficient.) - Most guidelines are made applicable only for government entities and not for all establishments including private sectors which comprise major service providers. - No direct involvement of PwDs (Representing all specific disabilities) in product development and therefore, wider acceptance of ICT services is less. In fact, individual with disabilities should be consulted during all phases of product development, testing and marketing. - Keeping in pace with constantly emerging new and improved technologies. - High cost of specialized assistive technology
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<p>Q4: What additional or corrective measures can be taken by the Government to enable better access to telecommunication and broadcasting services and devices to PwDs? Please give a rationale for your response.</p>	<ul style="list-style-type: none"> - Strategy to improve wider awareness (Awareness through mass media, aggressive public campaigns, Social media involvement, Conference and seminar) - Consider organizing events such as annual international trade fair for assistive technology and accessibility solutions. This will create appropriate enabling environment for local manufacturers and sellers to showcase their products to international audience. - All the provisions in the policies concerning access to PwDs must be made applicable for “all establishments” (including government, private, autonomous, non-government, etc.) and not just government entities. The same should be communicated explicitly in opening statements itself: This is in line with Rights of Persons with Disabilities Act 2016 - Provisions made in guideline should be legally binding. Also, clauses specifying substantial penalties for non-adherence should be incorporated.
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- To avoid ambiguity, the definition of “everyday use products” must be clearly defined and detailed. It should include products used for personal use, at home, office, public infrastructures, malls, etc as elaborated in Q6. There is a possibility of misinterpretation or using it as a loophole to justify non-compliance.
- Should have a dedicated helpline number to assist PwDs for accessibility issues. Data of all complaints received be published on the website along with resolutions provided. This will help to identify the problems related with accessibility at user end and would also ensure that the manufacturers remain on guard to not get caught in the wrong foot.
- Involvement of DPO and CBO for coverage in rural areas.
- Well defined access service roll-out strategy to connect to all users so that they can avail the service.
- Accessible Customer Care Services – Dedicated Customer Care Center which can arrange for an alternate billing format such as Braille or large print and can advise customers with hearing, vision, mobility, and/or speech disabilities about equipment, accessories, features and calling plans.
- Dedicated retail stores which provide fully accessible counters, indoor directions by artificial voice guide with a number of accessible services such as options of Braille and are operated by sign language proficient staff.
- Accessible social media for disabled community to network and knowledge share
- Mandatory and stringent formal procurement process for accessible ICT (*accessibility should be addressed prior to purchasing and accessibility issues should not be fixed afterwards purchasing the equipment*)
- Mandatory minimum standards of accessibility in all public ICT services as part of Quality of Service regulations.
- Formation of monitoring committee, company code of conduct, guidelines about accessible ICT services.

<p>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?</p>	<p>Convergence is required as there are very few accessibility professionals and industry working for accessible solutions for ICT and built environment.</p> <p>Software developers and hardware vendors/suppliers tend to not blend their expertise with each other and use exclusive proprietary solutions developed in-house. Therefore, a committee should be formed to build synergies to address the challenges faced by PwDs.</p> <p>Product User manuals (including drawings, images, if any) should be accessible with assistive technologies used by the blind like screen reading software. The user manual should be also published on their online portal in accessible format.</p>
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<p>Q6. What are the areas where collaboration between various stakeholders would be useful and how?</p>	<ul style="list-style-type: none"> - Collaboration between private accessibility partner / third party services for development of accessible applications - Collaboration with National Institute of Electronics & Information Technology, Govt. of India for digital accessibility campaign - Alliance with disability organization specifically working in domain area (Accessibility, deaf-blind, autism, smart cities etc. for knowledge sharing and cooperation during product development and awareness generation. - Collaboration with identified training partners for necessary training, sensitization and awareness regarding accessibility standards among manufacturers, professionals working in relevant fields and professionals of IT and engineering fields. - Partnership with MSJE – Accessible India Campaign
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<p>Q7. Should the Government/TRAI direct the telecom and broadcasting service providers to provide information pertaining to billing, usage, pricing and</p>	<p>Yes, it should be mandatory. Indeed, contents written for terms and conditions and billing information are not legible for even for persons without any disability. There should be provision of audio enabled information system/ interactive voice response systems that provide users with menu of choices including terms and conditions.</p>
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<p>contracts in the form accessible to PwDs? Please provide a rationale for your response.</p>	<p>Broadcasting and telecom services portability should be enforced so that users can switch to another operator if the quality of content is not as per global accessibility standard.</p>
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<p>Q8: Should the Government/TRAI mandate that the devices used for watching television provided through cable, satellite/DTH, fiber, etc. should be made accessible to PwDs?</p>	<p>Yes, in present scenario, there is not a single service provider that enables a visually impaired person to access a basic facility such as watching television independently.</p> <p>There is an urgent need for producing accessible broadcasting devices i.e. Television, set top boxes because even though the content is produced while keeping accessibility in focus it doesn't reach the targeted audience.</p> <p>Government should establish a separate department for ensuring the compliance for accessible ICT through monitoring cell.</p>
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<p>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 provider's/device manufacturers.</p>	<p>Yes, However, the service providers and device manufactures should be consulted and given reasonable time frame to ensure compliance to the adopted standard. This also may require repealing or amending national standards/ rules that may be directly and indirectly related and also adapting it in light of socio-cultural practices.</p> <p>Provisions can be made for providing first preference during procurement to products and services from organizations complying with international accessibility standards.</p>
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<p>Q10. What additional measures can be taken or technologies can be deployed by service providers or equipment manufactures to assist PwDs?</p>	<ul style="list-style-type: none"> - Mobile with intelligent camera/audio and navigation system to guide the blind and deaf people - Use of virtual picture board and communication solutions for speech impairment & technology that converts typed text into real-time, online interpretation in sign language to facilitate communication between those who do not know sign language and illiterate deaf users and can also be useful for children learning sign.
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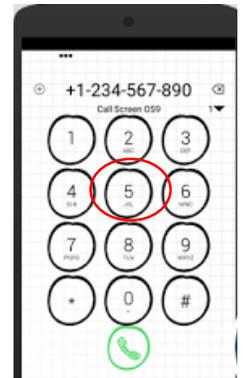
	<ul style="list-style-type: none"> - Use of eye-gaze and gestures to control devices for high level spinal cord injuries - Development of user-friendly apps. Few examples are enumerated below- <ul style="list-style-type: none"> I.e. “App for everything” - Apps such as TapTapSee assist users with visual disabilities in recognizing objects by taking a photo and identifying it through a database of crowdsourced images. There are apps to scan barcodes and identify the product, read menus through optical character recognition, and pull up Braille keyboards. - Apps to aid with memory and organization, control smart devices in the home, note taking, object recognition including currency, recording personal information to use in case of an emergency, and reaching for assistance in case of need. - Ergonomic design of handsets to provide grip and stability – Used for poor hand dexterity and weak hand functions - Module on Accessibility should be incorporated in curriculum for courses in relevant domains like rehabilitation professionals, special education, medical engineering, management, technology, design, law, information technology etc.. - Collaboration with world accessible ICT manufacturer’s partner for accessible ICT solutions (i.e. The Neil Squire Society is developing solutions that allow individuals with limited use of their arms to interact with a mobile device via a mouth-operated controller)
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<p>Q11 Should device manufacturers be mandated to allow in their device’s operating system those applications which are meant to assist PwDs?</p>	<p>Yes. The penetration of mobile phones progressed very rapidly during the last decade (730.7 million mobile phone users in India in 2017 as per The Statistics Portal- Statista).</p> <p>With such market penetration, attracting new customers became more difficult. Potential to attract new customers among disabled and elderly is ignored till date. If analyzed, lack of accessible services and features are few key factors. Therefore, a comprehensive plan is needed to adopt accessible operating system for product development and service divisions to target the niche segment of the market.</p>
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<p>Please justify your response.</p>	<p>Mobile handsets can be made accessible to persons with different disabilities by integrating a variety of features in the hardware design and operating system and providing specific services and incorporating third party applications such as speech to text, text to animation etc. so that users can navigate menus and content. In fact, adoption of universal design practices for all user platforms, operating system and software/ hardware products should be mandated.</p>
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<p>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?</p>	<p>Disaster/ Emergency management – Accessible ICT can improve the capacity of persons with disabilities and their families as well as response personnel and disaster management authorities.</p> <p>A dedicated embedded App with accessibility features to help during emergency and disaster. The App will be helpful not only for persons with disabilities and people at risk but also for general population. i.e.</p> <ul style="list-style-type: none"> - Interactive text-voice messaging relay alert system - Accessible alert and response system- Individuals can use preferred formats to receive alerts - text, voice, video and multiple media - Accessible ICT application in school can be used for disaster preparedness and mitigation. - Keeping in view that emergency services are critical for all including PwDs , accessibility guideline detailing emergency services should be legally enforceable for TSPs
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<p>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?</p>	<p>Yes. Individual handset manufacturer be mandated to manufacture at least one accessibility embedded mobile phone which incorporates accessibility features keeping in view of multiple disabilities (Speech, hearing, dexterity, cognition, perception and visual impairment)</p> <p>These handsets should comply with universal accessibility standards/norms and should be easy to operate.</p> <p><i>Emergency button should have embedded instant GPS locator system and simultaneous video so that immediate</i></p>
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	<p>assistance and emergency services can be provided.</p> <p>Handset manufacturer should have trained and sensitized staff in their outlets for product demonstration and training. Data for accessible handset users should be maintained for post product launch success and gap analysis.</p>
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<p>Q14. How should companies be encouraged to utilize 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?</p>	<p>CSR must be mandated to incorporate accessibility as a crucial component in all products development, services or initiatives taken.</p> <p>In addition, technologies companies can promote research in accessible products/ services, provide accessible products to CBOs/ DPOs.</p>
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<p>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.</p>	<p>Governments can develop different types of financial assistance schemes to offset the cost of assistive technology such as loans, subsidies and grants to support purchase of assistive and accessible technologies</p> <p>Reduce cost of imported assistive technologies by waiving customs duties and fees as cost of specialized assistive devices are usually high as these assistive devices are manufactured in western countries. Devise methodologies for provision of subsidies and tax benefits for sellers and manufacturers based upon the revenue and product turnover. Encourage startups working for PWD by giving incentives to sustain and survive.</p> <p>Attract 100% FDI and allow foreign investment for funding on research, manufacturing and delivery of accessible everyday use products and assistive tech products. International expertise and resources will enable addressing the needs of a fast growing market.</p> <p>Public-private partnerships can promote greater local manufacturing of indigenous assistive technologies</p> <p>Government can start pilot programmes to incorporate innovative and accessible applications in specific regions through partnerships or through the Accessible India Campaign program fund.</p>
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	<p>Unique ideas- i.e. Google impact challenge encouraged big thinkers to create a more accessible world through grants, public engagement, and innovative technology. In 2015, Google through this unique initiative, awarded 29 grantees with \$20 million in grants to help address accessibility challenges all over the world especially for making assistive devices and accessible applications to help persons with disabilities.</p>
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<p>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?</p>	<p>CSR drive should prioritize on strengthening research and development for making innovative ICT enabled products for persons with disabilities.</p> <p>Companies should focus on funding for disability inclusive projects for empowering persons with disability by seeking RFP and EOI – Focus should be given on training / sensitization campaign for PWDs on assistive technologies for independent living, digital accessibility and empowerment etc. Also, CSR should Include accessibility as a criterion in the funding, monitoring, and evaluation of all social and economic development programs using ICT solutions.</p>
<p>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.</p>	<p>Yes.</p> <ul style="list-style-type: none"> - Govt. should subsidize making such products and technologies for manufacturers. This will motivate them to do research and create innovative products. - Offer tax incentives to employers and technology providers
<p>Q18. Please give inputs/suggestions/comments on any other issues which you feel are relevant to the subject matter.</p>	<p>Government should deploy adequate staff with accessibility & technology background for ensuring equal and equitable access to all programs, services, and activities for accessible ICT. Accessible ICT wings should be established in Information and Technology</p>

*****-Additional info**

Inclusive audio-based network navigation systems – (IABNNSs)

TRAI proposed policy should adopt a technology neutral approach by defining and explaining the functional characteristics of the system. The aim should be to give designers of audio-based network navigation systems the information that they need at the initial stages of development to anticipate and overcome any restrictions and barriers that prevent users with visual impairments from making full and independent use of the built environment.

Example of built environment where people with disabilities will benefit maximum of (IABNNSs) are-

1. Railway station- (Features should be incorporated to orient for stairs, escalators, lift, pedestrian hazards, escalators, Ticket control gates etc.)
2. Airports
3. Public/Govt. Building (Hospitals, Administrative buildings, Institutes etc.)
4. Museum
5. Cinema hall/Recreation center

*This Recommendation on audio-based network navigation systems does not consider the specialized requirements of people who are deaf or hard of hearing but widely applicable for visually impaired, elderly, cognitive disabilities and for general population.

Submitted by: -

SVAYAM

(An initiative of Sminu Jindal Charitable Trust)

Jindal Centre, 12 Bhikaiji Cama Place

New Delhi 110066, India

Email: subhash.vashishth@svayam.com, editor@svayam.com

Phone: +91- 11- 41462323, 41462080