

# Accelerating High Impact Assistive Technology for Independent Living

A Report for LIRNEasia  
by Vihara Innovation Network



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## Credits

The AccelerateAbility: Disability Innovation Pre-Accelerator Lab is ideated and is the direct outcome of insights from the previous research programme conducted by Vihara Innovation Network in partnership with LIRNEasia and funding support from Ford Foundation.

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AccelerateAbility: Disability Innovation Pre-Accelerator Lab



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# 1 Executive Summary





One out of every forty Indians live with a disability, yet they remain far underrepresented in all segments of daily life: experiencing lack of access to information, living with scarce livelihood opportunities, inaccessible healthcare and assistive caregiving support, confronting stigma in public infrastructure and transport, and non-contextual or unaffordable assistive tech solutions, the rights and diverse concerns of people with disabilities remain underserved. While technology has been an enabler in resolving challenges in human existence, Information, Communication and Technology (ICT) and Assistive Technologies (AT) have mainly casted exceedingly niche solutions in response to the needs of persons with disabilities. To this effect, despite having a flurry of assistive tech solutions, most of them only partially meet the requirements of persons with disabilities at best and fail to achieve higher impact, as often users are forced to adopt more than one solution to actualise their potential. Such approaches to solution building underline the gaps and deficiencies inherent in the disability ecosystem that go beyond the challenges of underserved financing ie. limited demand side insights and infrastructure, a distance of dialogue between persons with disabilities and stakeholders and severely under-developed capacity for service delivery and scaling solutions.

A consortium between Vihara, and LIRNEasia was formed with funding support from

Ford Foundation in May 2019, for an ethnographic study to understand: grassroot lived challenges of persons with disabilities, role of ICT and AT in enhancing their quality of living, and potential systemic gaps in meeting the user needs and barriers to access. Most people interviewed and studied in the research, expressed themselves as repeatedly missing out on opportunities to explore human potential, due to inaccessible tech solutions that fail to cater cultural, social, linguistic, or literacy barriers. This absence of context specific tailoring, access to knowledge on user needs, and siloed approaches in designing solutions was realised as the emerging challenge in empowering the said community.

The study revealed the lives of individuals having speech and hearing impairments, faced challenges in communicating for healthcare support, natural disaster emergencies posed hostile environments coupled with lack of multilingual, and accessible quick response solutions. Dearth of single one-stop ICT/AT product solutions to address a challenge with multiple subsets in all segments of disability, indicated the absence of a coordinated approach between product developers and users needs, if not the inexperience of product developers in utilizing user-driven approaches. While the country continues its journey to digitalisation, the visually impaired population is still observed to struggle with accessible online interfaces to maneuver banking/e-commerce

on varied devices, having to continually deal with inconsistent softwares and hardwares. People repeatedly missed out on avenues to realise ambitions, aspirations, and human potential, not because assistive innovations did not exist, but because tech already developed did not reach them, or tech they used did not adhere.

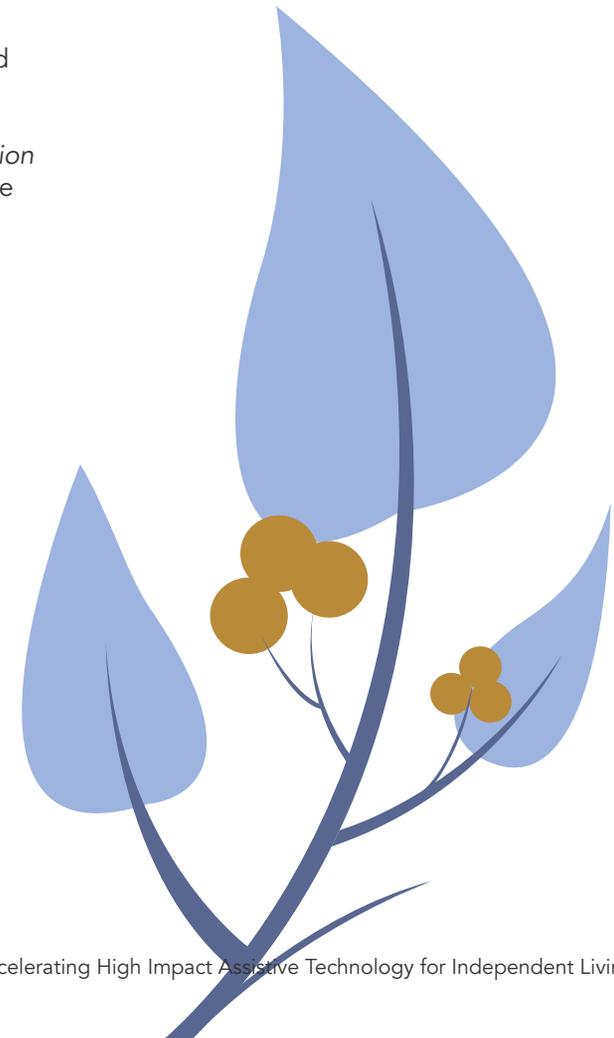
These gamut of intertwined challenges surfaced through the research, entailed for a coordinated approach of bringing disparate stakeholders together to share knowledge on multidimensional challenges faced by persons with disabilities to the larger innovation community. While the users were realised to be insight givers, the research also indicated the absence of actionable learnings for the innovation community to keep users in the center of product innovation for enhanced accessibility.

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Vihara from its past experience of convening innovation labs and acceleration programs for budding sector-focused innovators, thought leaders, and industry experts, coupled with rich insights from the research, conceptualized a pre-accelerator lab for early-growth stage innovators: **AccelerateAbility Lab.**

Advocating the need of institutionalizing ecosystem level actionables through innovation lab approach, the team realised a greater merit of bringing value-based partnerships to systematically snowball the learnings in the larger community—think tanks, rights-based organizations, tech-industry enablers, incubators, and accelerators. With a profound understanding of user challenges from the research, the team was primed to unfold the peripheral/indirect challenges and further support the innovator community with actionable learnings for product innovations, market and financial linkages for growth and scale. While systemic challenges like inaccessibility of products solutions and information were validated in lab; paucity of concerted approach between users, innovators, cost optimizers, market validifiers, product sellers, and financiers/funding agencies to support disability focused innovators, surfaced as new learning.

Clear emergence of the need to strengthen all the stakeholders, the lab concluded with profound understanding for a need for an ecosystemic catalyser to innovate the existing ecosystem. The said catalyst was discussed by experts to be a social marketplace to scaffold ongoing efforts of individual players and catalyse the making of ICT/AT accessible, affordable, user-focused innovations, with an assurance for deeper reach in the community through on-field partnerships. This report is a narrative of the insights and challenges gathered from its past research and eloquently establishing the need and details of its recent work *Disability Innovation Pre-Accelerator Lab* aimed at catalysing the ecosystem for building situated solutions.





# 2 Background

- 2.1 Disability in India
- 2.2 Background to AccelerateAbility, the Disability Innovations Pre-Accelerator

## 2.1 Disability in India

Conservative estimates of the number of people with disabilities in India place it close to 27 million, with a majority (nearly 70%) living in rural areas, with low access to education, belonging to low income groups, and experiencing the limitations of low resources. The experience of disability, a barrier in itself, gets further compounded through limited access to opportunities and resources.

Despite comprehensive rights based legislation (the current act lists 21 disabilities with detailed provisions for representation, access, and reasonable accommodation), India's disabled populations continue to have their rights violated, face discrimination, and experience restrictions to access in nearly every public sphere of human participation. Legally, a person with disability in India is defined as someone "with long term physical, mental, intellectual or sensory impairments which, in interaction with barriers, hinders his full and effective participation in society equally with others." This definition entails more than just a medical impairment in functioning, and extends the scope of disability (or the experience of disability) to 'barriers', or external, disabling factors as well.

However, the understanding of disability as being the experience of predominantly

external barriers has not fully penetrated to mainstream attitudes. The current threshold to be eligible for disability benefits in India stands at 40%. Anyone with impairments which fall below the 40% mark is not assigned a disability certificate—the main validation of disabled status. However, disability assessment processes do not reflect the social or environmental aspects of disability. In addition to largely inaccessible built environments, people with disabilities in India also experience lower enrollment in primary schools and higher education, and lower rates of workforce participation and economic inclusion. In the past two decades, India has witnessed a shift in orientation in handling disability. While most policy has shifted focus from a charitable to a rights-based approach, attitudes on ground are yet to undergo a complete overhaul.

The transition in the society towards inclusivity translates to equal partnerships of individuals: abled and disabled. Understanding technology as the major enabler in troubleshooting newer challenges of the developing world, was envisioned to aid the PWDs the most. Assistive technology based solutions introduced to, enable persons with disabilities to undertake activities to empower them in daily activities, and thus assisting in their enhanced functioning and overall well

being, proved insufficient to cater nuanced challenges of PWDs at cultural, societal, and human level. With current unsavory conditions of support offered by misaligned tech solutions that don't understand the contextual challenges of the disabled community, the present assistive technology driven aids have proven insufficient and inaccessible in the diaspora of disability.



## 2.2 Background to AccelerateAbility: Disability Innovations Pre-Accelerator

The Innovations for Independent Living among People with Disabilities in India study, funded by Ford Foundation, aimed to assess the daily living challenges of people with disabilities, and how Information and Communication Technology (ICT) and Assistive technology (AT) can promote independent living. This study was conceptualised by LIRNEasia, a Sri Lanka based ICT and policy regulation think tank, and conducted by Vihara. The study is an extension of the two prior studies conducted in Nepal and Myanmar by LIRNEasia to strengthen people with disabilities' independent living opportunities in South Asia.

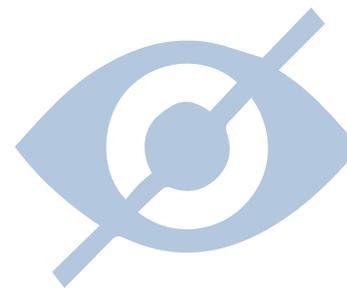
For the purpose of this study, three segments from the disability space were selected :

### **Speech and hearing impaired, and deaf segment;**

(It is important to appreciate this differentiation, as our deaf respondents identified themselves as different from hearing impaired people who use hearing aids. They see their challenges and solutions to be separate from the latter)

### **Visually impaired and blind segment;**

### **Locomotor or orthopaedically impaired segment.**



## 2.2 Background to AccelerateAbility: Disability Innovations Pre-Accelerator

Vihara conducted in-depth, qualitative, ethnography-led research in Delhi and Lucknow with 86 people with disabilities and 9 key informants including policy makers, activists, government officials, and social entrepreneurs. Insights generated from the field data helped us understand the experiences of people with disabilities, visualise the challenges they faced in achieving independent living outcomes, and identify problem areas for targeted interventions development. The following highlights illustrate the life-worlds of the people with disabilities we interacted with over the course of the study. For further reference, please go through our detailed [report](#) published on the LIRNEasia website.

Research was conducted to understand the daily living challenges of people with disabilities in private life, transport and public life, education, employment, economic inclusion, health and emergency services, accessing ICTs and ATs, and accessing government and affirmative action services. While challenges experienced multiply and through nearly every aspect of daily living, technologies (information & communication as well as assistive) to enable independent living existed in significant measure, leading us to question if ground zero innovation could present a sustainable way forward.

The imminent need of the hour was to enable innovators of existing products to solve problems of scale and uptake, and a program based on principles of accelerating social entrepreneurship offered a gainful way forward.

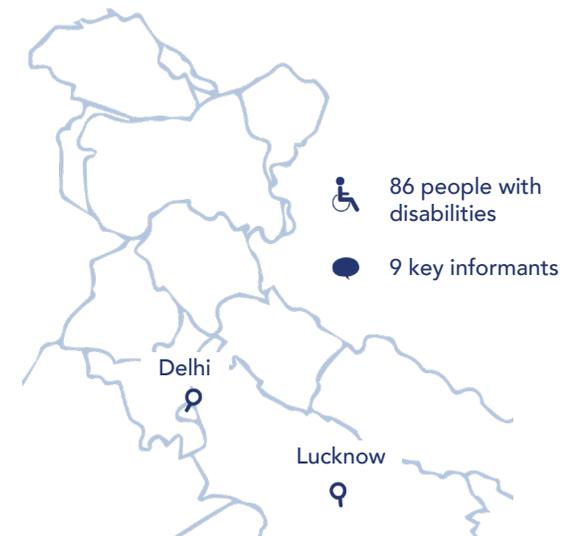
Our research also indicated the lack of integrated solutions for barriers experienced by people with disabilities. For instance, the metro rail systems in cities are investment heavy spaces for incorporating accessibility initiatives, but with little focus on last mile connectivity, we found only a small percentage of India's disabled millions actually reached the metro stations.

People with mobility impairments interviewed in our study found vocation and independence by participating in wheelchair sports, but were unable to prepare for tournaments given the lack of accessible stadiums. At the same time, nation-wide affirmative action measures such as reservations for all disabilities exist in educational institutions as well as government offices, but people with speech and hearing impairments continue to be least represented in nearly every official domain.

Several such experiences in the field led us to a world of half-realised visions and failures to

achieve independent living goals, not because solutions or measures did not exist, but because they did not speak to differentiated contexts, and were rarely imagined as operating in a complex arrangement of socio-cultural and economic phenomena.

Designing interventions without sufficient thinking on contexts of users with disabilities, can set us back several years in the technology for independent living sprint. AccelerateAbility, the Disability Innovations Pre-Accelerator takes off from where the formative research ended, and incorporates user insights from research, mapping of existing smartphone based assistive technology solutions, and market insights.



# 3 Experience of Multi-Dimensional User Challenges



Through research, we understood the multi-dimensional challenges people with disabilities face in their daily lives, and how their independence and associated choice making gets further curtailed due to lack of equal opportunities and inaccessible environments.

- A. The experience of isolated youth and pervasive discrimination and significantly limited social circles cut across the different disabled segments we spoke to, regardless of gender and/or community. People with disabilities experienced extreme isolation in their youth because families were either embarrassed or over protective, peers were unsupportive and unempathetic, and teachers were not aware. This was often exacerbated due to low income capabilities and remote area locations.

“Before coming to a specialized school for blind girls, I used to study in a normal, sighted school ... Actually, we didn’t know that blind children can even study. I used to feel like apart from me, there is no one else who is blind in the entire world ... I used to pity myself and cry all the time. I used to think that because I am blind and I can’t see, nobody will take care of me in my house and will throw me out. But when I stepped out of my house and saw that there are a lot of people in this world who don’t have anything, they can’t speak, can’t hear, can’t walk but still are living their lives, I felt that maybe I am better off than they are.”

Rita, 17 year old student studying at a school for the visually impaired, Lucknow

- B. Despite development of some of the best assistive tech products and apps for the visually impaired, technology in education and learning has still not sufficiently penetrated. Even with some of the best innovations existing for the visually impaired, we still came across people who compromised their life ambitions and goals, and faced increasing restrictions in higher education and career choices due to inaccessible schools, colleges, learning materials and workplaces.

“I studied in a mainstream school ... It was a different approach to life ... Teachers were more skilled and more committed. The choices were far more. In blind schools ... if the subject was difficult, they immediately made compromises...They were compromising on teachers, they didn't expect too much from students, or what these students will become. The answer to that was, they are blind, what can they do?”

George Abraham, Founder, Score Foundation, and disabled rights advocate

- C. Within the disabled community, people with speech and hearing impairments are further marginalised. Speech and hearing impaired people faced a lot of challenges in expressing their disability as they did not 'look' disabled. Out of all the categories of disability we looked into, they struggle the most to adapt to new, dynamic environments (busy intersections, transport hubs, etc.) They were also least preferred among all disability categories in public sector hiring (which has a mandatory 4% reservation for people with disabilities). However, smartphones and easy and cheap mobile internet schemes were a significant boon. Most used WhatsApp video calls not only to communicate with their social circles, but also to mobilise and collectivise for rallies, protests, and even sports. However, lack of sign language interpreters in public spaces meant that sign language speakers spoke mostly to members of their own community, severely restricting their social circles.

“I am not saying that you should provide everything but you could at least provide an interpreter. My main aim is to be able to communicate independently.”

Munish, 29 year old male, Sign Language Speaker, Lucknow

- D. The market might offer a plethora of assistive aids but they are often too expensive, and they can fully be of use only if the environment is supportive. People with locomotor impairments often choose not to use crutches, callipers, or manual wheelchairs if the environment itself is not accessible. Often, they end up investing in low-cost ATs that do not fully support them in their everyday life nor fulfill their assistive purpose. Some even modify existing devices/modes of transport on their own or through local vendors to suit their needs. In India, such personal innovation, or everyday hacks are commonly referred to as 'jugaad' .

Riaz, is a 26 year old male and smartphone user from Delhi, suffering from polio in both legs. He loves playing sports and is currently preparing for national and international level wheelchair basketball and cricket games. He saved money to buy himself a scooty, and got it customised with the help of a local welder. He has stopped using public transport, as it was difficult to board the bus or travel by the metro. He gave away his crutches as it slowed down his speed and now prefers squatting and walking with the help of his hands and feet. However, he faces difficulty in accessing banks and ATMs as the counter is too high for him. He uses a wheelchair donated to him by an NGO, but would some day want to trade it for a well functioning automatic wheelchair without arms that can help him play cricket and basketball smoothly. He also would like to have a car designed for people with locomotor disabilities and specifically customised for him; he has driven a similar car that belonged to his friend and loved it.

Riaz, 26 year male, suffering from polio in both the legs, New Delhi

While Neha uses a wheelchair now, she did not always need to. A polio survivor; for most of her life, she was able to walk without assistive technology, but certain tasks such as walking long distances, and standing for long periods of time posed challenges. Neha loves to cook and she has ensured all surfaces and shelves in her kitchen are accessible from a sitting position. Her cooking range is placed in a corner, and not against a wall as is the usual practice. This allows her to be able to see the entire kitchen using her peripheral vision while she is at cooking on the range. Before she started using a wheelchair, Neha asked her local carpenter to fix small wheels to the legs of a stool, which she would sit on and use to roll from one surface of the kitchen to another while cooking. This kept her arms and torso free and allowed for quick and easy rotation, and also came at a fraction of the cost of a customised wheelchair.

Neha, 63 year old female, locomotor impaired, wheelchair user, Lucknow

- E. Interestingly, while we had one set of respondents who were willing to reveal their disability but failed to do so in certain circumstances, we had another set of respondents who at times did not want to reveal their disability and came up with unique ways to cover it up. Disclosing one's self as disabled was a complex process, sometimes enforced, sometimes evident, and sometimes necessary.

“When I go out with my blind friends for shopping I do not carry the walking stick, I wear sunglasses. I give my walking stick to my other blind friends. I do not want people to know that I am blind, it does not go with my personality.”

Damini, 21 year old female, visually impaired, stays in a hostel for the blind in Delhi

“So, what are some of the challenges that you are facing, or barriers, if you think, because of which the institutions are not adopting inclusivity?”

“When we are talking about inclusivity ... schools have to create that environment, no? Now that [reluctance] could be a funding issue ... also mostly it is the mindset. That when I look at you it is an invisible disability, what problems could you [who shows no signs of disability] possibly have?! I mean if deaf people looked very visibly like persons with disabilities, then the empathy would come, but they look so ... regular, no?”

Conversation with Ruma Roka, key informant, deaf inclusion and skilling advocate

- F. We identified that independent living is defined by and dependent on a range of choices available to people, to which disability poses further constraints. This gave rise to the choice framework with indicators that helped us to assess each respondent's ability to perform everyday tasks/activities, by asking if they felt they had a choice to be able to conduct these tasks on their own, or if they required human, or even systemic support. However, not every task which required human assistance was assessed as impacting independent living potential.

Madhuri is blind. She uses the tactile paths in metro stations to be able to walk in a straight line. However, without any further guidance as to where the tactile path is leading her, she finds that she relies most on asking people for the way. The tactile path as a navigation aid, for Madhuri, fulfils its function best when coupled with human assistance. When we asked her if she felt her independence was being curtailed by having to ask for human assistance from time to time, Madhuri responded, “Don’t you need to ask someone for directions when you go to a new place? Do you always rely on Google Maps yourself? Asking for human assistance is normal.”

Madhuri, Female, undergrad student at Delhi university, Visually impaired

Challenges were broadly experienced in the domains of infrastructure, artefacts, and behaviours. This led us to examine the possibility to examining those smartphone based or ICT solutions that could perform the following:

Enhance independent living by assisting daily activities and help achieve human potential



Enable barrier free movement both within the home and outside



Offer systemic change in knowledge, attitudes, and perceptions on disability





# 4

## The Need for an Ecosystemic Approach to Disability



The rapidly growing technology industry inducing a pool of tech-driven interventions, the last-mile reach of smartphones, and increasing awareness around myriad challenges experienced by PWDs indicate that the ecosystem is primed to empower PWDs, but in the absence of an informed decision-making process. Lack of user base understanding, viable price-point checks, and user validation, has reduced the efficacy of the existing interventions. Even if product innovators develop user-focused solutions, they have failed to experience deeper penetration in the community due to lack of on-ground partnerships for making the products available to the consumers.

Parallely, amongst the PWDs, fear of being dissuaded creates an attitudinal barrier in PWDs to reveal their identities, thus depriving them of receiving available accommodative assistive tech support. The absence of a cohesive approach between content-generating organizations and innovators for making information accessible further has created a digital divide, often keeping them away from necessary information, especially in crisis times. This divide widens during natural disasters or health emergencies, posing even larger constraints for the population who struggles with an already constrained pool of choices in the ordinary course of life. Constantly evolving environmental challenges, where health systems are left unexposed with numerous challenges and gaps, the disability segment is prone to get affected by service

infrastructure barriers. In health emergencies like COVID, the directive of keeping oneself safe through maintaining physical distance, not touching surfaces, and wearing masks has become the primary challenge for the people reliant on caregivers, tactile surfaces, and sign language interpretations, respectively. As the pandemic affects vulnerable sections of the society, it gets even more significant to re-ideate the pathways of creating disability-inclusive product solutions to enhance learning systems, increase employment opportunities, strengthen healthcare support, and effective channels to access information.

All the existing challenges do not indicate the absence of solutions at the technological and policy level. Instead, they express a lack of a non-coordinated approach between product/service developers, supply chain industry, and disability space thought leaders. These stakeholders take siloed routes in contributing to the lives of PWDs, which has not proved effective in the current times of the challenged world continuously. To build an inclusive society through ICT/AT solutions, all stakeholders need to undergo mend. Producing new devices to cater to the distinct needs of PWDs may not be an immediate answer, but relooking and enhancing the accessibility concepts in the existing devices with the support of diverse stakeholders can instantly cater to the needs and concerns of people with disabilities.

The gamut of entangled challenges demands a new culture and a collaborative platform for learning, reflection, partnerships, and innovative funding mechanisms to support innovators and innovation, enabling organizations to enhance scalability and deepening products' reach. Such platforms behold the opportunity of bringing together disparate cross-sectoral stakeholders to ideate solution pathways that stay valid under continually changing contexts. This comprehensive and coordinated approach can get a pool of multi-pronged interventions that serve the evolving concerns and issues of people with disabilities protecting their rights of leading lives with equal access to facilities.



# 5 Disability Innovations Pre-Accelerator

5.1 Partnerships to Catalyse Ecosystem

5.2 Onboarding the Cohort of Pre-Accelerator Lab

5.3 Actioning the Lab

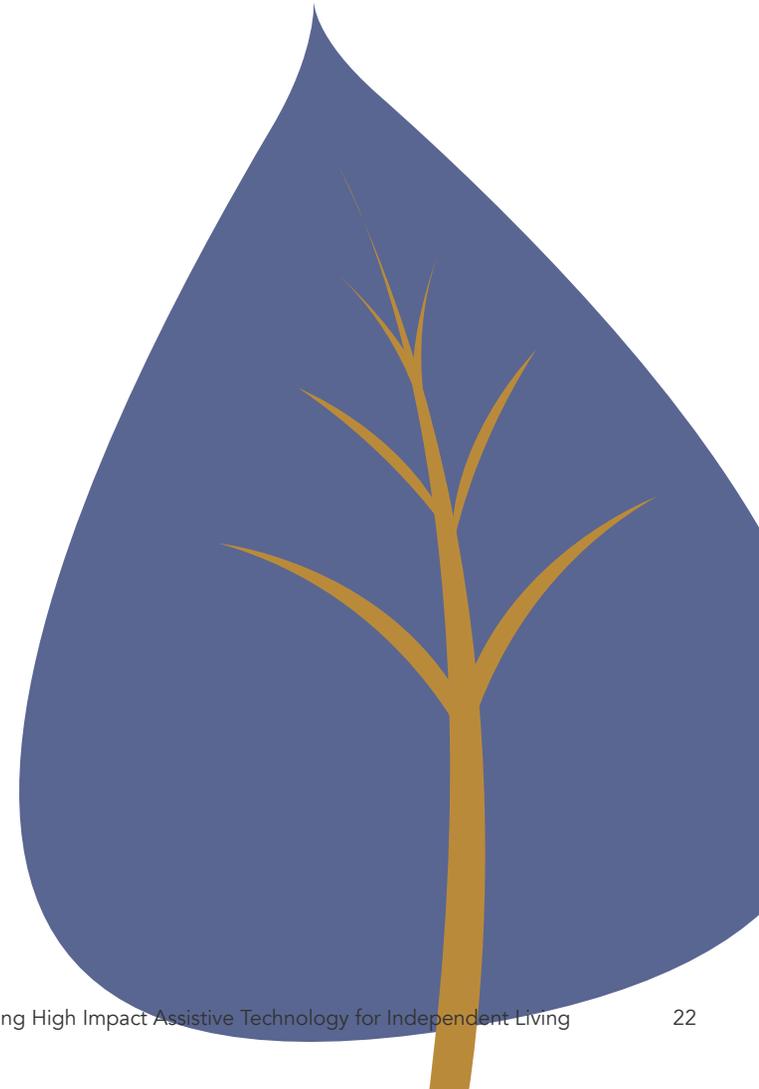
5.4 Lab in Action

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With Vihara's expertise in conducting innovation/acceleration programs, the program team designed a pre-accelerator lab in partnership with LIRNEasia in February 2020. Focused on addressing the existing shortage of capacity to develop affordable and accessible solutions, the lab also wanted to surface ecosystemic barriers and upskill the innovators on the interconnectedness of current challenges and unmet user pain/needs. As designed, the lab's innovation was in coming together with various stakeholders to accelerate PWDs and innovators' ability to develop localized solutions.

AccelerateAbility - a disability innovation pre-accelerator lab was conceptualized as an ecosystemic catalyst to enhance, accelerate, and scale promising need-based technologies that help disabled people exercise choice and achieve their human potential. Intending to rethink methodologies of creating need-based solutions, the lab aimed to:

- to convene government organizations; industry, law, and policy experts; incubators; accelerators; and innovation consultants to facilitate hybrid interventions deployment.
- to systematically inform the acceleration cohort of existing policy interventions and build grounds for new avenues for state action; and
- to nurture and take technological interventions to scale by ensuring people with disabilities are at the core of all intervention development stages.



## 5.1 Partnerships to Catalyse Ecosystem

Vihara has been a strong proponent of introducing value-based partnerships with ecosystem-level organizations to add value to the on-going programs. To kick off the lab and meet objectives, the team at Vihara required state-of-the-art learnings from all the stakeholders contributing in various segments of the disability space: rights advocacy, innovation, thought leadership, activism, demand, and supply generation. By leveraging on the partnerships, the team also wanted to ensure deeper penetration of learnings, awareness, and actionable responses to existing challenges in the wider ecosystem. In the interest of upskilling budding innovators and ideate coherent solutions to empower the lives of PWDs, it was essential not just to strengthen the knowledge base of the innovator community but also to the learnings of varied partners to contribute equally in the change-making.

This multi-pronged approach of introducing value-based partnerships to scaffold each entity in the ecosystem was primarily focused on capacitating the budding innovators with actionable learnings to recreate/refurbish innovative propositions for the beneficiaries. Through this pre-accelerator, Vihara also wanted to assess and distill the requirement of such labs/convenings and types of opportunities it cements for stakeholders to

cater to the challenge more closely. To kick off this unique lab, the team invited a gamut of leading research organizations, incubators, accelerators, quasi-government organizations, tech-innovation industry bodies, and digital media platforms to form Disability Innovation Coalition that can provide:

- Access to broader reach into the community to source-in potential startups with unique product propositions to be accelerated through lab
- Access to deep-tech knowledge and nuanced understandings of the domain for context-specific for product enhancement advisory through mentorship
- Access to digital media channels for socializing the launch of the lab and further influencing their partner channels
- Access to post-lab incubation support and funding opportunities for accelerated startups
- Wider acknowledgment of lab in ecosystem along with thought leadership to work with the team on further amplification of the lab's impact in the form of accelerator



## 5.1 Partnerships to Catalyse Ecosystem

As a part of the pre-accelerator disability coalition partner portfolio, following organizations working in the disability space and innovation industry joined the effort:



### 1. ARTILAB Foundation

A dynamic social sector organisation, dedicated to foster innovations to develop affordable products/solutions for people with disabilities, offering incubation support for startups working in the domain.



### 2. Startup India

Startup India is an initiative of the Government of India to hanhold startup community of India through partnerships, incubation, and funding support, and also disrupt restrictive state level regulations and policies.



### 3. FISE powered by Social Alpha

A technology business incubator approved by the Department of Science and Technology, Government of India, offering select social entrepreneurs access to incubation services, accelerator programs, funding, and grant support.



### 4. Kerala Startup Mission

Kerala Startup Mission forges and implements forward-looking policies for creating a vibrant startup ecosystem in the state, to foster innovation growth and lead technology entrepreneurship.

## 5.1 Partnerships to Catalyse Ecosystem



### 5. T-Hub

T-Hub leads India's pioneering innovation ecosystem that powers next-generation products and new business models. Since its incorporation in 2015, it has provided 1,100+ national and international startups access to better technology, talent, mentors, customers, corporations, investors and government agencies.



### 6. Maharashtra State Innovation Society

A nodal government agency to boost innovation-driven entrepreneurial ecosystem in the state of Maharashtra. Established under the Department of Skill Development and Entrepreneurship, Government of Maharashtra, the society aims to foster innovative approaches and create a conducive environment for innovative businesses to operate in Maharashtra.



### 7. Amazon Web Services

Amazon Web Services (AWS) is the world's most comprehensive and broadly adopted cloud platform, offering infrastructure technologies like compute, storage, and databases—to emerging technologies for making reach faster, easier, and more cost effective to move applications to the cloud and build nearly anything you can imagine.



### 8. Zoho

Zoho focuses on web-based business tools and information technology, including an office tools suite, Internet of things management platform, and a suite of IT management software.



### 9. Yourstory

A digital platform bringing stories of change-makers, funding analyses, resource pieces and the first glimpse of emerging trends from India's entrepreneurial ecosystem, as well as profiles of great businesses and entrepreneurs from all over the world.

## 5.2 Onboarding the Cohort of Pre-Accelerator Lab

The lab envisioned bringing together ecosystem players to upskill the budding innovators catering to the hearing/visual/locomotor segment (representing the most considerable numbers amongst disabled people), having ready ICT/smartphone-based enabled prototypes and high impact potential. Intending to accelerate 15-18 startups in the said segments, startups with market-ready tested prototypes, a potential to cater to the mass, but need sharpening to meet user perspective were considered potential entities for the lab.

With the coalition partners having deeper reach in the ecosystem of different states of India and a deeper understanding of mushrooming innovators in the disability space, call for applications in email invites was rolled out to 5000+ entrepreneurs. Email invites having application form, asked for details about the startup (for-profit/not-for-profit), segment focus, problem statement, product solution status, founder details, and the number of years of operation of a startup to ensure only aligned and applicable entrepreneurs from assistive tech background apply for the lab.

With the help of coalition partners' efforts in the outreach and pooling in aligned startups, the team received 60 applications from entrepreneurs representing all three segments and geographies (international and national). The team aimed to select for-profit organizations with a history of being supported by an incubator and having undergone the iterations to improvise the product solution for catering to the challenge of mass. Based on the said indicators, the six parameters for final selection in the lab further assessed the applications: product solution, team strength, scalability and impact potential, user traction, and pitch deck and presentation skills.

The evaluation of startups highlighted the dearth of aligned and focused innovators in the ecosystem, who possess the appetite to understand the user perspectives and potential of troubleshooting the inadequacy of products that may aid PWDs. These insights gathered from the screening processes were equally significant for the team to design tailored learning sessions during the lab to ensure the cohort receives the capacity building sessions to strengthen their weak spots.

A total of 18 startups having ICT/smartphone-based components in their product solutions were selected to participate in the lab, representing visual (7), hearing (6), and locomotor (3). The other two startups

represented cross-disability segments with a split focus on more than one segment focus: hearing/visual/locomotor and another secondary disability segment were also considered part of the cohort. The startups selected had a robust product prototype, market traction, and an understanding of the need for user-focused product innovation but a fragmented approach.

Coming from different geographies of the world, these startups exhibited strong alignment with the objectives of the lab, strong potential to survive the market challenges, a team of experienced professionals, established partnership channels, and broad recognition of their work from different organizations (government, industrial, and academics). These startups being bootstrapped and pre-revenue stage entities with significant requirements for relevant market and finance linkages, and actionable learning support for product growth strategies, were additionally found to be in perfect alignment with the pre-accelerator program.

## 5.3 Actioning the Lab

With learnings from the research phase on users' unmet needs and potential unsaid ecosystem fragmentation, causing demand and supply gaps, pre-accelerator was primed to understand the critical peripheral ecosystem-level challenges. Through a blended approach, the lab convened industry experts from the disability ecosystem to: discuss pressing multidimensional challenges fueling the dearth of context-specific assistive tech solutions and empower innovators with actionable learnings for rethinking existing interventions to fill the current gaps in the ecosystem.

The team realized dependency on professionals' collective intelligence, entrepreneurs' needs, and the ecosystem to further ideate the next set of requirements to foster the disability space. The lab was designed with a different target audience in two phases: Learning, Reflections, Re-ideation of innovations, Proposition Pitching,

and Visioning of the next more extensive program. The lab's first phase focused on gathering learnings on ecosystemic issues, sharing actionable learnings for innovators on user-focused innovation, rapid refurbishment of product solutions/strategies, and pitch presentations to shortlist startups with cognitive and product readiness to raise funds. With distilled learning from the first phase, the lab's second phase was planned to envision, outline a program required to catalyze and mobilize the ecosystem, and engage the innovation community for a more extended period.



## 5.4 Learning & Reflections

The first phase of the lab was launched on August 10th, 2020. Critical experts from long-established disability rights-based organizations, academic institutions, law, and policy organizations PWDs were invited, to establish the need ecosystem-based innovation lab and educate the cohort with distinct ecosystem-level challenges. Having exposure to multi-faceted challenges in the ecosystem, these experts brought rife knowledge of key barriers faced by PWDs, and different institutions' and stakeholders' siloed attempts in bridging the gaps. The lab brought up learnings for entrepreneurs like gaps in current policy frameworks, non-adherence in following mandatory accessibility guidelines while designing interventions, lack of field trials, and successes and failures of assistive tech solutions in promoting independent living. These insights were also proven further instrumental in offering potential directions to gauge the startup's fitment and positioning in the larger ecosystem and reideate/improvise the product base to ensure user alignment.

Bringing the rich experience of a user-centric approach in designing systems and solutions, Vihara has always realized the merit of ideating solutions and theory of change by understanding the users, their pain, and their journey using any specific product solution.

Recognizing the absence of knowledge around detailed processes to document the users' real needs and challenges and further responding to them with responsive solutions, the first phase of the lab also focused on discussing ways to map user journey and curate theory of change to ensure product solutions stay relevant. Actionable learnings curated by the Vihara team were disseminated in the form of templates and worksheets to aid startups curate their journey to product refurbishment during and after the lab.

**Designing context-specific solutions alongside ensuring their commercial viability, wider reach with the users, and promising returns for the investors has always remained a challenge for impact-focused startups. Lesser acknowledged disability space, taking its niche in the impact world, struggles even more in attracting funds for the innovators. While it's crucial for the innovators to understand users' direct and indirect challenges, designing context-specific adaptive product solutions, it's equally essential for the innovators**

**to establish market and financial linkages and pitch their propositions succinctly. The lab was also primed to screen startups and offer them a platform to exhibit their refurbished product solutions to the leading investors from the ecosystem and raise funds for growth scale. The said process was also instrumental in screening potential entrepreneurs from phase I, who had better-refined product development strategies and cognitive readiness to avail market and financial linkage benefits from the pre-accelerator.**

## 5.5 Visioning a larger platform to catalyse ecosystem

Concluding with a gamut of understanding around ecosystemic challenges, entrepreneurs' roles in innovating the system, actionable learnings on refurbishing solutions and theory of change, and ten shortlisted startups, the learning and reflection phase of the lab highlighted the dearth of such platforms. The gaps in the disability space emerged as not only on the demand side but also in the existing processes of supply and readiness of innovators in refurbishing targeted solutions and ensuring their uptake. These constraints surfaced during the first phase of the lab. They demanded a platform-based program to accelerate innovators' understanding of their interventions over a more extended period through a systematic process of handholding to enable an ecosystemic change in the disability space. Emerging as paramount pillars in building context-specific interventions, it included (not limited to): profound knowledge around user-needs, optimization of the unit cost for mass affordability, enabling disability associations and channels to ensure more comprehensive reach of products within the users, access to market and financial linkages for sustained growth of startups

Based on the emerging directions and indicators, the team was motivated to outline a vision of a more extensive program in

the form of an accelerator, aiming to accelerate innovators' learnings not only around product innovation but also ways to mobilize the ecosystem for the last-mile reach of user-validated products. However, to position a catalytic platform such as an accelerator, the team needed detailed insights on potential barriers and opportunities impact-focused accelerators behold to craft contextual innovations and responsive services for nuanced challenges faced by society's disabled population. With the help of development sector professionals from its own partner network, the team at Vihara, having deep expertise in advocating innovative approaches for accelerating impact in the developing economies, attempted to decode sequential challenges and social values in establishing a larger platform in the form of an accelerator.



## 5.5 Visioning a larger platform to catalyse ecosystem

Advocating the importance of innovative funding mechanisms and the role of partnerships in embedding innovations of change-making in the market, the experts also highlighted the merits of an impact accelerator to bring enhanced social value and challenges in the development space. However, its working modality was acknowledged as a newer domain, with traditional funding mechanisms recognized as redundant. The impact accelerator as a concept demands a fresh approach on financing models in the form of social return on investments, with a key facilitator anchoring the process of mobilizing and keeping a keen eye to ensure scale, impact, and sustainability. Beholding the strength of creating social value by strengthening all the stakeholders in the ecosystem, the theory of impact accelerator was vouched as an emerging modality answering the wicked deep-rooted challenges that exist in any development related issue.

The outlined vision for the larger accelerator program as one of the pre-accelerator lab outputs was furnished and improvised with the help of gathered nuanced insights from sector and development industry

experts. A mass share out was planned with eminent funders, donors, quasi-government bodies, and tech-industry bodies to ensure the vision gains much-needed traction and recognition at the national and international levels. This was aimed as a soft launch to gather further insights on operational and funding mechanisms of such impact-focused accelerators and build a detailed program that answers the evolving needs of donors or funding organizations. The mass share out was also a way to call active players in the disability rights/ ecosystem mobilization to join as future partners on the program to bring the latest insights on the subject and wider connections with all stakeholders in the ecosystem.

## 5.6 Proposition pitching and winning startups of pre-accelerator

Parallel to the soft launch of a larger accelerator program, the pitching sessions planned in the first and second phase of the lab selected four winning startups from the cohort basis their performance. These sessions, where leading experts and investors tested startups' cognitive and investment readiness, also proved to be a medium for the team to gauge the translation of learnings into refurbished products/strategies. It was exciting to know that all four disability segments brought up one winning startup that exhibited a profound hold on the learnings and requisite market readiness to initiate further dialogues with experts in taking the product on to the next stage of growth and scaling. Ranging across the product uniqueness, market traction, impact potential, and actual laid impact, and most importantly, understanding the user needs and acknowledging demand and supply gap that was expressed to be filled by the individual products, made these four startups outshine the rest.



## 5.7 Winning Startups

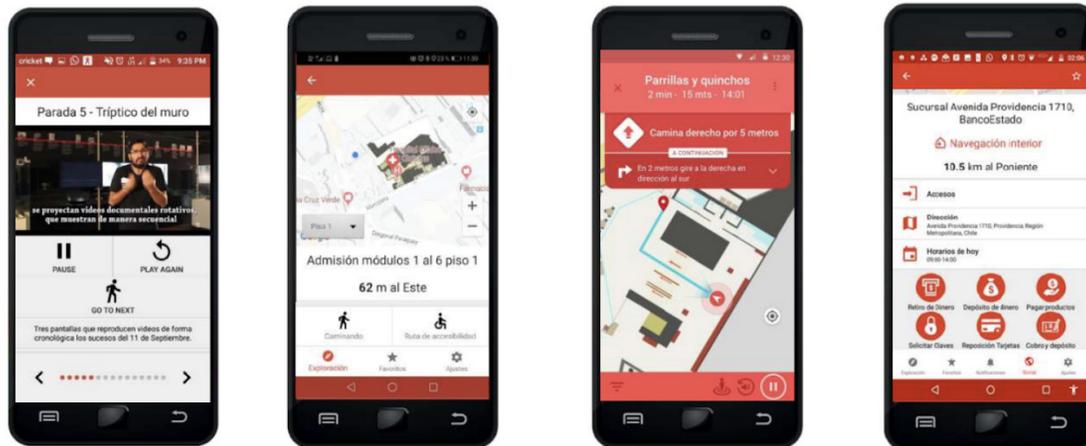
### a. Lazarillo | Making the World Accessible

**Segment focus:** Visual impairment

**Product:** Lazarillo App serves as a digital guide for the blind. As a person walks, the application notifies them of nearby places and objects that may be of their interest through voice notifications and warnings. So it might tell them if they're approaching a bus stop or there's a nearby restaurant.

**Achievements:** With Lazarillo app, people have circled the world more than 1,684 times and 90% of disabled people out of 160,000 users have increased their autonomy to navigate around in their surroundings

**User Base:** 160,000 Users; More than 17,000 Monthly Active Users



## 5.7 Winning Startups

### b. India Signing Hands

**Segment focus:** Hearing impairment

**Core Team:** Alok Kejrial, Aqil Chinoy, Mansi Shah

**Product:** ISH News is India's leading online News and Entertainment channel producing content in accessible formats such as Indian Sign Language, subtitles, voice-overs as well as attractive graphics. These are created by a team of Deaf professionals & CODAs (Child of Deaf Adult) using Indian Sign Language (ISL). At ISH News, the staff comprises 90% Deaf Individuals who work as Actors, Interpreters, Script Writers and Video Editors.

**Achievements:** Deaf Leaders Foundation Excellence Award 2019; International Deaf Summit 2020 - Guest of Honour; International Deaf Summit 2020 - Guest of Honour; International Deaf Summit 2020 - Exhibition Award; International Deaf Summit 2020 - Exhibition Award; India 500 Startup Awards 2019 (Trophy); India 500 Startup Awards 2019, Media Partner in Deaf Festival 2019 by Vidarbha Association of the Deaf, Nagpur, Media Partner in Deaf Festival 2019 by Vidarbha Association of the Deaf Nagpur, etc.

**User Base:** Over 3.6 crore views on Facebook, YouTube & Instagram, since launch in November 2018.



## 5.7 Winning Startups

### c. MyUDAAN

**Segment focus:** Locomotor impairment

**Core Team:** Ravindra Singh, Anil Pereira, Bashar Hamood

**Product:** myUDAAN is a Technology Driven Social Impact startup solving PEOPLE MOBILITY problems especially for Disabled, Elderly, Bedridden, expecting mothers & temporarily disabled. The product has been designed for PwD & being Leveraged through the Elderly

**Achievements:** Winner at 'Meet the Drapers' with Tim Draper, globally renowned Investor airing startup TV show; Invited by Mercedes Benz Research & Development; Finalist at Villgro iPitch; Finalist at BIRAC by Social Alpha; Incubated at CIBA (Centre for Incubation and Business Acceleration); Top 10 startup at TATA Social; Faster Capital committed Technology Funding

**User Base:** 1000 downloads; ~600 users with a 48% retention rate

The image displays the myUDAAN solution across two platforms: an App and a Website. The App interface is shown on the left, with a vertical navigation menu on the far left containing 'Services', 'Accessibility', 'Assistance', and 'Mobility'. The main content area of the app shows various service options and a map. The Website is shown on the right, featuring a large banner for 'Expert Wheelchair Assistant At Your Fingertips' and several smaller service tiles. The website also includes a 'myUDAAN' logo in the top right corner.

# 5.7 Winning Startups

## d. BeAble Health

**Segment focus:** Cross Disability

**Core Team:** Habib Ali, Sreehari KG

**Product:** BeAble Health is committed to enabling health & lives, through design and technology. Our innovative solution ArmAble is solving a pressing need for intensive, engaging and regular rehabilitation therapy for the Upper Limb. Our connected application 'BeOne' connects patients to Doctors/Physiotherapists to monitor and deliver quality therapy decisions.

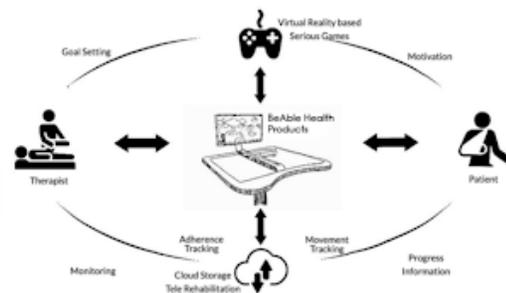
**Achievements:** 12 Users, 120 hours of therapy, 72358 repetitions, 119 km distance covered in rehabilitation

**User Base:** B2B Model with Hospital, Clinics, and Rehabilitation centers.

### SOLUTION

**armable**

Patented arm rehabilitation device



© BeAble Health Pvt Ltd



# 6 Emerging Needs and Strategic Directions for an Ecosystem Catalyst

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With rich insights distilled from the research around unmet user needs and intertwined ecosystemic challenges that fuel siloed approaches in meeting user expectations, the pre-accelerator lab that all stakeholders in the system are deprived of contextual understanding. It also concluded with a dire need to accelerate innovators and introduce different stakeholders that contribute to solution-making to enable barrier-free lives for PWDs. Crystallizing the thoughts shared in pre-accelerator by experts, we realized that Innovators are developing products without enough user understanding, price point checks, market validations, and business mentoring support. While accelerators/incubators focus only on scaling businesses, because only that gets quantified as impact, and funders do not have enough frameworks to evaluate the impact laid by innovators in the disability space. This fragmented approach of

solution making acknowledged by all experts also indicated a systematic process of scaffolding the immediate stakeholders: funders and the innovator community.

The advisory received from experts representing funding organizations strongly advocates for value-based partnerships to ensure social returns on invested money in impact-oriented platforms. For funding organizations to invest money, the programs need to exhibit impact, reach of products/services to users, and shift in the quality of lives, which can only be efficiently mobilized in support of distinct contributors: accelerators, incubators, market embedding partner organizations, and government bodies. These contributors also hold the responsibility of bringing quality to the product solutions by being the mediators of evolving requirements and channelizing users' changing needs to innovators. However, the innovator's community has been developing products/services devoid of such channels until now. Embedding varied partners and bringing value-based partnerships in the future acceleration oriented programs can derisk the program outcomes and ensure better returns on the invested money.

The existing wide gap in responding to user needs with aligned products produces no formalized insight generation on user demands. During the pre-accelerator course, the team's interaction with innovators surfaced a stark understanding of the lurking demand for upskilling and mentoring the innovator's community. Constant support and handholding of innovators in developing accessible and affordable products, along with deep immersions to know the user's journey, pains, and opportunities, is needed to accelerate change-making. However, this support is not limited to capacity building around user understandings but also survivability of potential innovations and associated startups. Knowledge around business viability, growth and scaling strategies, and impact metering was also realized to be a barrier for vital innovations to blossom and survive in the unforeseen turbulent times. Budding innovators of the startup industry who are primed to cater to pressing social challenges face frightening barriers in their path to growth and success. Focused mentoring support and focused upskilling sessions around product innovation and growth strategies from industry and sector experts can support them survive and device strategies for pathbreaking growth and impact.



At the center of the process, there remains a need for a unique approach of establishing a platform driven social accelerator that catalyzes the change-making by bringing a diverse set of stakeholders together. Gathered from the pre-accelerator lab, Vihara is primed to adapt and implement strategic directions to set up a new program that carries the potential of transforming the existing dynamics between all the stakeholders, while keeping users and innovators in the center of the universe of innovation. While thought leaders, sector and industry experts, accelerators, incubators, funders, investors, and market channeling bodies can collectively scaffold the process and innovators. Such an ecosystem of disparate partners will enable existing technologies to scale and catalyze situated technology-driven solutions for the disabled population. This ecosystem can perform the role of a social marketplace by bringing distinct stakeholders together to thoroughly map the ecosystem, boost concerted and contextual innovations development, and address accessible resources, reach, and scale.



7

Call to Action



Interest in the accelerator approach has been observed to have cascaded from the government bodies to private organizations for supporting acceleration/incubation programs. However, the unique ecosystemic approach of bringing distinct stakeholders together and strengthening the process of catering the user needs, while also simultaneously building the startup ecosystem with essential learnings on product innovation, development, and validation, is a model that the team at Vihara is keen on launching in the form of Disability Innovations Accelerator.

The new program will follow a de-risking strategy by bringing in a partner coalition for implementing different phases of the accelerator. To set up said accelerator, the team seeks to expand its existing partner coalition and invites development organisations, tech giants, key government and policy stakeholders, and global accessibility think tanks to join the efforts, along with donors or funding organizations supporting us in implementing it through.

**[www.accelerateability.com](http://www.accelerateability.com)**

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## Thank You Note



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Partners:

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6. Mr. Aruni Sharma,
7. Ms. Rupmani Chhetri, Executive Board Member of National Association of the Deaf and UN Volunteer Advocacy Specialist on Disability,
8. Ms. Mridu Goel, Chairperson at HANDICARE
9. Dr. Rakesh Jain, Chief functionary of Rehabilitation Services of the Visually Impaired
10. Ruma Roka, Founder-CEO, Noida Deaf Society
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19. Rosie Afia, Insights Manager, GSMA
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