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AssisTech Foundation

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Ministry of Housing and Urban Affairs
Government of India

BASIC
Building Accessible, Safe & Inclusive Indian Cities

NIUA
National Institute of Urban Affairs

COMPENDIUM OF SMART AND INNOVATIVE SOLUTIONS FOR AN INCLUSIVE & ACCESSIBLE URBAN FUTURE

Smart Solutions Challenge
& Inclusive Cities Awards

COMPENDIUM OF SMART AND INNOVATIVE SOLUTIONS FOR AN INCLUSIVE & ACCESSIBLE URBAN FUTURE

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Foreword

India is celebrating its glorious 75 years of Independence and is progressing towards the vision @2047 with even more zeal and enthusiasm. As a young nation, we are developing fast and stepping into the India of the future. Amrit Kaal, as referred to by our Hon'ble Prime Minister, is a vision for India for the next 25 years. A vision that will be powered by the youth of the nation, with their entrepreneurial vigour. In his address on the 76th Independence day, the Hon'ble Prime Minister emphasized the importance of digital India and the role of startups and young minds from all corners of the country. Urban India is already experiencing this shift, small towns and cities are becoming the booming centres of innovation. The resounding call to action for an "Atma Nirbhar" Bharat promotes and highlights the role of technological advancement and home-grown solutions as the defining characteristics of India@2047. Progress is important, but progress founded on the principle of Inclusion is truly transformative. We have seen this with the Smart Cities Mission, which has realized the power of innovation and digital transformation to improve the quality of life of ALL including the vulnerable demographics of persons with disabilities, elderly, women, and children, among others.

The National Institute of Urban Affairs has been working towards mainstreaming disability inclusion into various facets of the urban development agenda through its Building Accessible, Safe, Inclusive Indian Cities Programme. Its latest endeavour was venturing into the intersectionality of technology and innovation and leveraging its power to develop an inclusive urban narrative through the Smart Solutions Challenge and Inclusive Cities Awards 2022. The journey from its conceptualization to me penning this down has been a truly explorative and extremely educational experience for all of us. I am delighted to see such a wide array of solutions coming across from the length and breadth of the country. Solutions that cover key areas such as policy and governance, transportation and mobility, health and sanitation, disaster risk reduction, and data collection and management, among others to help overcome the social, physical, attitudinal, and informational barriers in urban environments.

I congratulate all the innovators for developing these solutions and participating in the challenge. Because it gives us the opportunity to support our 4000+ Urban Local Bodies in addressing several complex accessibility and inclusion-related challenges. I must also congratulate the BASIIC team and UNRCO office for taking up this joint endeavour of collating selective scalable and adaptable solutions. I hope these solutions will soon be adopted by the Indian cities, urban local bodies and other relevant departments and will contribute to achieving the vision of an Inclusive India.

In order to make this compendium widely available, we have uploaded the document to NIUA's website: www.niua.in

Hitesh Vaidya
Director, National Institute of Urban Affairs (NIUA)

Message

Emerging technologies and innovations are increasingly critical to advancing the 2030 Agenda for Sustainable Development. Nowhere is this more evident than in India, where world-class digital governance systems, a dynamic tech sector and accelerating ambition on climate action are converging to deliver inclusive prosperity and resilience towards achieving the Sustainable Development Goals (SDGs).

With this repository of 41 smart and innovative solutions collated by the Smart Solutions Challenge and Inclusive Cities Awards 2022, India also demonstrates its rising position as a global centre for innovation on accessibility and inclusion for everyone in urban areas, particularly the most vulnerable – persons with disabilities, the elderly, and girls and women. These low-cost and home-grown technological solutions and innovations provide a blueprint for truly transformational change that can drive equal opportunities and full participation for everyone in India's cities.

I would like to thank the National Institute of Urban Affairs for its enduring commitment to disability inclusion in urban planning and development, and for their collaboration in collating these solutions.

The vision of inclusive urban development presented in this volume, powered by an innovative, scalable and people-centric ecosystem, has the potential to accelerate disability, gender, and age inclusion in the Decade of Action not just for India, but for the whole world. We across the UN System, from the global level to the UN Country Team of Agencies in India, are privileged to partner with the Government of India, civil society organisations, innovators, the private sector and other partners in pursuing this noble vision.

Shombi Sharp
United Nations Resident Coordinator in India

Acknowledgements

We are grateful for the collaborative partnership between *National Institute of Urban Affairs (NIUA)* and *United Nations in India* which has led to several initiatives that have contributed immensely to strengthen the commitment to mainstream gender and disability inclusion in the implementation of the Sustainable Development Goals in India, particularly SDG 11.

We are particularly grateful to the United Nations Resident Coordinator, Mr. Shombi Sharp and the Director, National Institute of Urban Affairs, Mr. Hitesh Vaidya for their leadership in taking forward the mandate of inclusion and accessibility and making it a core agenda for our respective organisations.

The Smart Solutions Challenge and Inclusive Cities Awards 2022 was designed after several rounds of consultations and one-on-one meetings with domain experts, organisations of persons with disabilities and colleagues from NIUA and UN in India. We would like to express our sincere gratitude to Pulkit Aggarwal and Ankita Rajesh Shirodariya (Social Alpha), Kavita Vij (Prosus), Mohan Sundaram (Artilabs), Padmaja Kankipati (WHO-SEARO), Parul Aggarwala, Parul Sharma, and Adishree Panda (UN-Habitat India), Juhi Jain (AIM, NITI Aayog), and Ajay D Suri (NIUA) for their guidance and support in the design, implementation, and evaluation process of the Challenge.

Special mention needs to be made for the support and valuable insights provided by various domain experts and organisations of persons with disabilities during the on-line Focus Group Discussion (FGD) which was organised on Friday, 26th November 2021 to understand the city-level accessibility and inclusion challenges faced by persons with disabilities and other marginalised and vulnerable communities: Abha Khetarpal, Adishree Panda, Anuj Jain, Anusha Fatima, Apoorv Kulkarni, Arman Ali, Danesh K Reddy, Dipendra Manocha, Dr. Kavita Murugkar, Javed Ahmed Tak, Karthik Chandrasekar, Kimberly Fernandes, Mohammed Asif Iqbal, Nilesh Singit, Parul Agarwala, Parul Kumtha, Parul Sharma, Rajiv Alathur, Rama Chari, Shruti Pushkarna, Smitha Sadasivan, Sruti Mohapatra, Subhash Chandra Vashishth, Suvarna Raj, Vaishnavi Jayakumar, Viakalathur Sunder, Ummul Kher, and Ananta Jain and Udya Hasija for providing sign language interpretation.

We are also grateful for the support extended by *Atal Innovation Mission* for the evaluation process and the post-award phase, incubation support, for the winning solutions under Category 1: Early-stage Innovations. We are also thankful to *AssisTech Foundation* for providing outreach support for the Challenge and helping us reach out to the community of innovators and changemakers. We are particularly grateful to the team at UN Office of Information and Communication Technology (OICT), led by Alka Arya, for developing and hosting the challenge platform (www.goforchange.org), and for hand holding the team on the on-line application and evaluation process.

We would like to express our gratitude to the pre-screeners and screeners: Utsav Choudhury and Nabamalika Joardar (NIUA), Parul Sharma and Adishree Panda (UN-Habitat), and Juhi Jain (AIM, NITI Aayog); and our eminent panel of jury members: Papiya Sarkar (DMRC), Padam Vijay (NIUA), Parul Agarwala (UN-Habitat India), Shivani Gupta (CBM International), Dilip Ramesh (Thinkerbell Labs), Purushottam Kaushik (World Economic Forum), and Prof. Gaurav Raheja (IIT Roorkee), for taking out the time from their busy schedules and participating in the evaluation process.

We would also like to extend our sincere thanks to our colleagues at NIUA who have worked on compiling the solutions and putting together this Compendium: Monica Thakur, Neha Sharma Sangma, Toreiloi Ronglo and the Design Team. The compendium would not have been possible without your support and hard work.

Last but not least, we would like to acknowledge the contribution of the United Nations Partnership on the Rights of Persons with Disabilities (UNPRPD) in supporting this initiative. We would like to thank all those colleagues that contributed to the compendium but whose names may not appear in this short note.

We hope this compendium will be a useful repository for decision makers and urban practitioners as a ready reference for a collection of innovative solutions and practices promoting accessibility and inclusion for all in India.

Utsav Choudhury
Team Lead, BASIIC

Aarti Thakur
Disability Rights Officer, UNRCO

About the Challenge

The growth of India's cities is fuelling the world's largest urban transformation. India's urban population is projected to increase from about a third to 40% by 2030 - that would mean 600 million living in India's urban centres. Roughly 8 million persons with disabilities or a third of all persons with disabilities in India are estimated to be living in cities, a number expected to increase. These facts juxtaposed together mean that persons with disabilities, women & girls, elderly, and other vulnerable populations are constantly competing for access to essential resources with the rest of the population. A tall order with increasing odds that eventually increases their vulnerabilities and curtails their access to transport services, sanitation, health, education, and other public services.

The pandemic has demonstrated the necessity to reimagine the nature and use of public spaces and infrastructure, especially with the accelerating trends. These include digitalization and use of ICT-enabled infrastructure and services, data-driven decisions and operations for enhanced citizen services, and the quality of life of its residents. There is an urgent need to raise awareness and foster learning and knowledge sharing among urban planners, practitioners, and policymakers around universal design and the immediate need for accessible and inclusive urban development through citizen-centric and participatory approaches.

The Smart Solutions Challenge and Inclusive Cities Awards is an initiative of the National Institute of Urban Affairs (NIUA) and the United Nations (UN) in India to address city-level accessibility and inclusion challenges faced by persons with disabilities, women and girls, and the elderly. The initiative sought to crowd-source innovative solutions to align with the New Urban Agenda and promulgate the principle of 'Leave No One Behind' (LNOB) to achieve the Sustainable Development Goal 11, particularly Target 11.7 - '*By 2030, provide universal access to safe, inclusive, and accessible, green, and public spaces, in particular for women and children, older persons, and persons with disabilities'*.

The *'Smart Solutions Challenge'* was designed **to identify smart innovative solutions which can be easily adapted or replicated, and potential ideas or prototypes which can be incubated by the cities**. The '*Inclusive Cities Awards'* was designed **to identify innovative solutions, initiatives, and programmes already implemented within cities in India that are addressing the accessibility and inclusion needs of the target population**. The Awards sought to encourage such innovation within Indian cities by acknowledging and recognizing their efforts for creating inclusive and accessible urban spaces for all.

Objectives: Through the launch of the Smart Solutions Challenge and Inclusive Cities Awards, NIUA and UN in India aimed to involve the citizens in the nation-building process by crowd-sourcing innovative ideas, technologies, products, and business solutions that can potentially:

- break down and resolve the complex city-level inclusion and accessibility challenges faced by women and girls, the elderly, and persons with disabilities; and
- be easily adopted and implemented by cities for mainstreaming gender and disability inclusion into urban planning for creating inclusive, accessible, safe, and resilient urban spaces.

Key Thematic Areas: The challenge sought solutions in the following five key thematic areas:

1. Policy and Governance
2. Mobility and Transportation
3. Health & Sanitation
4. Disaster Risk Reduction
5. Disaggregate Data Collection and Management

Categories: The challenge received entries for technological solutions, for pan-city development, innovative assistive technologies, and business models for scaling such innovative solutions, in the following three categories:

- **Early-stage Innovations:** Solutions under this category are either at the ideation stage or a proof of concept or a prototype that had the potential to be developed into promising solutions that address the challenges faced by women and girls, elderly, and persons with disabilities in cities. Gender-sensitive submissions are particularly welcome.
- **Market-ready Solutions:** Solutions under this category are either at the pilot stage or tested and market-ready or ready for implementation and should address the needs and challenges faced by the diversity of persons with disabilities in cities in a gender sensitive manner.
- **Good Practices:** Solutions under this category are already implemented and/or are already considered good practices for addressing the existing gendered needs and challenges faced by the diversity of persons with disabilities and elderly in cities.

Types of Solutions: The solution submitted could be - hardware, or a software programme, or a product or system that increases, maintains, or improves the quality of life of the elderly and/or persons with disabilities or makes structural changes to the infrastructure and services being provided by the city to help serve the population better. In addition to this, solutions that do not have a hardware or a software programme but have a business model innovation could also be submitted. Therefore, the received solutions were be of the following three types:

- **Pan-City Solutions:** Solutions that involve the use of technology, information, and data to improve the quality of infrastructure and services in cities to support decision-making and governance processes and provide better access to women and girls, elderly, and persons with disabilities.
- **Assistive Technologies:** Technological solutions (devices and services) that can be assistive, adaptive, and rehabilitative to support healthy, productive, independent, and dignified lives for persons with disabilities or the elderly population, enhancing their ability to participate in education, the labour market, and civic life.
- **Business Model:** Solutions that may not have an existing product or technology but addresses the sustainability needs by providing a transformative/innovative business model from concept design, detail design to implementation and includes value proposition, revenue model to partner networks, among others.

Outcome: The Smart Solutions Challenge and Inclusive Cities Awards sought to crowd-source and provide cities with technological solutions that would help:

1. Identify and address some of the most-pressing accessibility and inclusion needs within Indian cities;
2. Provide adaptable solutions that can be incubated by or pilot-tested and implemented in Indian cities;
3. Achieve and scale up citizen participation in urban planning and design for inclusive and accessible cities;
4. Promote peer-learning among cities by encouraging and highlighting cities working around accessibility and inclusion needs of their citizens;
5. Create a repository of innovative solutions and good practices within India for adapting or replicating between and within cities and between and within countries.
6. Localise the tenets of LNOB by leveraging technology to achieve the Sustainable Development Goals and bridge the digital divide for access to socio-economic opportunities for all.

Who can Apply? The Challenge was open to all - any individual, student, project team, social impact organization, start-up, entrepreneur, private entity or cities with an innovative solution or idea around ICT (Information & Communications Technology) and technology that addressed city-level challenges faced by persons with disabilities, women and children, and the elderly applied to the challenge.

The Challenge was hosted on the https://goforchange.org/ platform.

Jury

Ms. Papiya Sarkar

Ms. Sarkar is presently the Chief Architect in Delhi Metro Rail Corporation Ltd(DMRC). and has worked for creating barrier-free environments for over 30 years. She was earlier a Senior Architect in CPWD and the Ministry of External Affairs and has created barrier-free environments in India as well as in Indian Missions abroad. She is currently working on Intermodal Urban Transport Systems in India, with the objective of designing and implementing an integrated barrier-free universally accessible urban transport infrastructure in the National Capital Region.

Mr. Padam Vijayvergiya

Mr. Vijayvergiya is a seasoned technocrat with over 25 years of experience in the area of Smart and Safe cities, Intelligent infrastructure Management, Data centers, emerging Technology solutions, among others. He is presently associated with NIUA as Technical Adviser, supporting Digital transformation programs and also providing handholding support to 100 Smart Cities thru smart cities mission. A firm believer of usage of the technology for co-creation and bottom-up innovation, he brings a distinctive blend of expertise both in the information Technology and procurement.

Ms. Parul Aggarwala

Ms. Agarwala is the Country Programme Manager of UN-Habitat India. She has extensive experience in implementing urban initiatives for sustainable spatial planning and local economic growth, while applying urban design concepts for visible urban transformations. Prior to India, she managed the Clean and Green Cities programme at UN-Habitat in Afghanistan which was developed to improve lives of the urban poor – with a special focus on women - by providing job opportunities and stability through paid work. Ms. Agarwala has a Master's degree in Public Administration from Columbia University, in New York, USA, and a Master of Planning degree from University of Southern California, Los Angeles, USA.

Dr. Shivani Gupta

Dr. Gupta works as Technical Advisor Inclusion with CBM. She has over 25 years of experience working in disability inclusion with a special focus on creating accessible and inclusive environments and has experience working with diverse stakeholders including UN agencies, corporate houses, and Organizations of Persons with Disabilities on accessibility audits, disability-inclusive disaster risk reduction, creating accessible tourism routes, and addressing policy interventions for inclusion. Shivani has a Ph.D. from the University of Maastricht, The Netherlands.

Mr. Dilip Ramesh

Mr. Ramesh, an alumnus of BITS Pilani Goa, is the co-founder and CTO of Thinkerbell Labs working on making education more inclusive. Strongly driven by the motto of tech for good, he has put his tech skills in use to develop 'Annie', the world's most comprehensive Braille literacy device. He is also involved in transforming Strategy into execution by streamlining internal systems, processes and policies and handles Product Management, New Product Initiatives and International Business Development. Prior to this, he was the President of Nirmaan Goa, an NGO with 100+ student volunteers working in the fields of education, health, livelihood and community participation.

Mr. Purushottam Kaushik

Mr. Kaushik has 25 years of experience in Telecom and IT in sales leadership and management consulting roles. He currently heads the Centre for the Fourth Industrial Revolution Network (India), World Economic Forum. Prior to this, he worked in various companies including Alcatel Systems, Lucent Technologies, Nortel Network, Cisco India, McKinsey and Larsen and Toubro Ltd. He is also the Board of Director for Bhopal Smart City and has been on the Board of Governors for Punjab Engineering College. He has a BE in Production Engineering from Punjab Engineering College, Chandigarh and an MBA from Faculty of Management Studies, BHU, Varanasi.

Prof. Gaurav Raheja

Dr. Raheja is a Professor of Architecture and Professor Incharge of Inclusion and Accessibility Services (IAS) at the Indian Institute of Technology (IIT), Roorkee. He is the principal consultant and author of the Harmonised Guidelines for Universal Accessibility 2021. He has been appointed by Govt. of India to conduct accessibility assessment for the New Parliament Building project under the Central Vista Redevelopment at New Delhi. He has also been appointed to develop accessibility guidelines for the Ministry of Tourism, Ministry of Railways, and the University Grants Commission (UGC) under the Ministry of Education.

Methodology

The **Smart Solutions Challenge and Inclusive Cities Awards 2022** was organised in stages including submission of solution/innovation to the open call, pre-screening and screening, individual jury assessment and demonstrations, and final selection and scoring. The overall evaluation and selection process is shown in the following figure.

Evaluation Criteria

The evaluation parameters are based on the five **Universal Design India Principles**. The UDI principles are stand-alone universal design ideologies that focus on Indianness and inclusivity as they relate to age, gender, disability, caste, class, religion, poverty, and urban/rural background. UDI principles neither make any connection nor build on the seven Universal Design Principles. They recognize the overarching importance of seven Principles and extend it to Five Principles to contextualise their relevance to India. They are:

1. **Equitable (Saman):** The design is fair and non-discriminating to diverse users in the Indian context.
2. **Usable (Sahaj):** The design is operable by all users in the Indian context.
3. **Cultural (Sanskritik):** The design respects the cultural past and the changing present assist all users in the Indian context.
4. **Economic (Sasta):** The design respects affordability and cost considerations for diverse users in the Indian context. However, it does not imply 'Sasta' as a compromise on quality and adequacy. Rather it intends to promote economic value and reasonable accommodation as a guiding principle.
5. **Aesthetics (Sundar):** The design employs aesthetics to promote social integration among users in the Indian context.

Universal Design India Principles paves a context specific direction towards achieving greater accessibility and inclusion of diverse population groups in Indian contexts. This may include diverse population contexts, low resource settings, diverse geographical and regional locations along with new technological paradigms. Further, based on the evaluation criteria, the following metrics / parameters was used to evaluate the submissions received under the Smart **Solutions Challenge and Inclusive Cities Awards 2022**:

S. No.	Parameters	What evaluators should look for?
Category 1		
1	Relevance	How aptly is the solution solving the identified challenge i.e., Challenge/Problem-Solution Fit?
2	Usability (ease of use)	How user-friendly and accessible is the solution?
3	Feasibility and Scalability and Replicability	How feasible (technically and commercially) is the solution? What is the scope of scale-up strategy - can be scaled to an economically sustainable solution and business model?
4	Robustness and Impact	How impactful, reliable, and responsive is the solution w.r.t. social, economic, and sustainable factors?
5	Innovativeness	How creative / innovative is the solution in addressing accessibility and inclusion challenges for the target population in the respective context / areas?

Further, the jury were required to consider the following points while evaluation the submissions.

1. The participation of persons with disabilities in the design, creation, development, or testing of the solution is highly encouraged.
2. If the solution is not targeted towards persons with disabilities or elderly persons, the application should outline why the solution would be especially beneficial for them.
3. Innovations already existent in high-income countries being adapted to the Indian specific context will also fall under innovativeness.
4. All applications should respect the Articles of the UNCRPD and all basic human rights principles and should not discriminate against any minorities because of their ethnicity, religion, language etc.

Innovation submissions to open call and screening

The **Smart Solutions Challenge and Inclusive Cities Awards 2022** was launched on Thursday, 28th April 2022 at the three-day *National Conclave on Gender and Disability Inclusion in Indian Cities* held in New Delhi, India from 28th to 30th April 2022. Initially, the call for submission was open for a period of 43 days with Friday, 10th June 2022 as the deadline. However, an extension for call of submission was extended till Wednesday, 22nd July 2022 making it a 55-day open challenge.

The format of the application consisted of three sections requesting for, 1) basic information, 3) information about the innovation / solutions, and 3) achievements and the submissions were made through an on-line platform developed and managed by UN-Office of Information and Communication Technology (OICT) to leverage the global community for collaboration on innovative ideas and technology for sustainable development: www.goforchange.org.

The call for submissions was open to the public and disseminated through social media platforms, websites of partner organisations and through e-mailers to various listservs. Further, organisations working with innovators and changemakers were also contacted to provide outreach support. A total of 155 applications were received.

First phase of evaluations

The first phase of the evaluation process consisted of a two-step process and was reviewed by an internal core team of experts and professionals from the partner organisations: NIUA, UN in India and Atal Innovation Mission.

- Step1: *Pre-screening*, where applications were sieved based on whether the application received is complete and not duplicate. Out of the 155 applications received, 103 complete applications were shortlisted for the next phase by two pre-screeners from 23rd to 24th July, 2022.

- Step 2: *Screening*, where the relevancy of the pre-screened applications was checked against 'valid and invalid' criteria by a total of five screeners from 25th to 29th June, 2022. Applications screened as 'Valid' by all the screeners were shortlisted for Round 2 of the evaluation process. Out of the 103 pre-screened applications, only 41 applications were shortlisted for the next phase.

Follow-up with innovators for additional information

The 41 solutions and innovations screened for the second phase of evaluations were given the option to add more information to their application. The challenge platform was open for the 41 applicants for a short duration of 2 days only in case they wanted to utilise this opportunity to make their application stronger with more supporting documents and information. However, it is to be noted that this was not a mandatory step in the evaluation process.

Second phase of evaluations

The second phase of the evaluation was further, adjudicated by an eminent 7-member jury panel with representation from four major sectors within the innovation system: government, UN agencies, civil society organisations, and industry and domain experts. This phase of evaluation consisted of a three-step process:

- **Step 1: *Individual Assessment***, where each member of the Jury was required to individually assess each of the 41 submissions and score them on a scale of 1 to 10. On the completion of the individual assessments, the average of the scores received from all the 7 jurors for each application was tallied and the final scores were generated through the system. The top 5 scorers in each category (including solutions that were at a tie), total 17 solutions were then taken forward to the next phase which was the Demonstration / Interview Round.

- **Step 2: *Demonstrations / Interview,*** contingent to the request from the Jury, a demonstration / interview was

set-up with the list of applicants shortlisted for final evaluation process. Innovators were called to present their solutions. / innovation for a 5-10 minute presentation followed by a 10-15 minute discussion with the jury members on Thursday, 21st July, 2022. This round in the evaluation process was organized for the jury to clarify their queries and acquire additional information about the submissions directly from the applicant. Innovators were given the opportunity to present a detailed description of the solution / innovation including a demonstration of the working prototype (if available) while broadly covering the following areas:

- » Understanding of the Problem Statement - WHAT are you trying to solve? Describes the existing environment where the problem occurs, what are its impacts and propose what the expected environment looks like (Relevance)
- » Solution / Innovation - HOW are you trying to solve? Innovativeness of the solution that must potentially give a competitive edge (Innovativeness)
- » Target Market / Segment - for WHOM are you trying to solve? - Identifying potential customer segments and early adopters for the proposed innovative solutions & participatory approach used for user group satisfaction surveys, perception surveys or pilot run (if any). (Usability)
- » Impact - economic / environmental / social - Analyse the economic, environmental and social impact of the proposed innovative solution (Robustness and impact)
- » Budget / Commercials - WHAT would it take to solve? Looking at the feasibility of the . (Feasibility)
- » Plans and Projections - 3-year / 5-year plan to scale up & how it can be integrated within the city (Scalability and Replicability)

- **Step 3:** ***Jury Deliberations***, where post the demonstration / interviews, the Jury members deliberated on all the submissions in the final round and finalized the top winners in each category.
  Further, based on the demonstration / interview and the jury deliberations, the expert panel finalized their score for each of the submissions in the final round of the evaluation process. The scores of the 7-member panel were averaged and tallied by the system for the final selection of winners. The jury decided on the ten best technology-based solutions submitted under the challenge which our country has to offer in making our cities inclusive and accessible for persons with disabilities, women and girls, and the elderly. Three winning solutions were finalized under Category 1 (Early-stage Innovations) and Category 2 (Market-ready Solutions), and four winning solutions were finalized under Category 3 (Implemented Solutions).

Jury Meeting

During the evaluation process, two meetings of the 7-member jury panel were convened in the month of July 2022. The first meeting was organized on Friday, 8th July 2022 as an introductory meeting for the jury members and for them to exercise their judgement and give an opinion on the evaluation process while finalising a common approach based on the evaluation parameters for the evaluation process. The second meeting of the jury panel was organized on 21st July, 2022 right after the demonstrations / interview to give their final opinion on the final submissions and to deliberate on any other matter of concern regarding these submissions based on which the scores were finalized and the top ten applications finalized.

Disclaimers

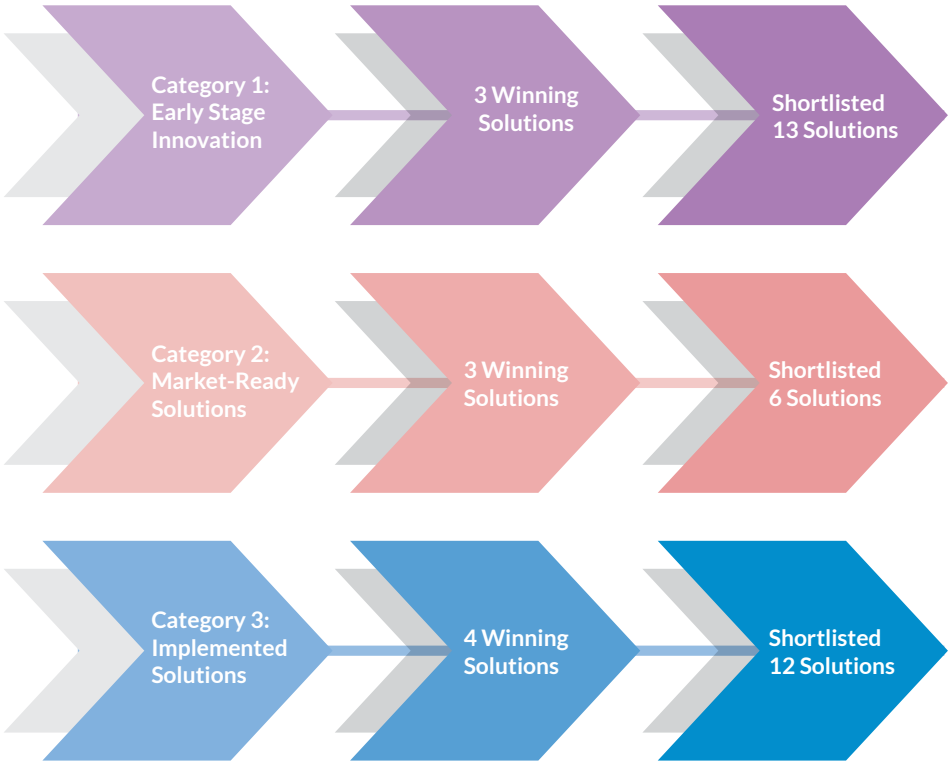
The eligibility of the solutions and innovation included in the Compendium is solely based on the applications that were screened and shortlisted for Phase 2 of the evaluation process by the pre-screeners and screeners listed in the Acknowledgements. Further, the evaluation of the submissions has been based solely on the limited assessment of the material and evidence provided by the applicant. There has been no physical testing or review of the solutions and innovations submitted under the challenge and neither does the Organization endorse or recommend any solution listed. Further, the Compendium does not constitute a warranty for any of the solutions or innovation for a particular purpose. It is the responsibility of the applicant to ensure the quality, validity, safety, and efficacy of the solution / innovation that has been submitted under the Challenge.

How to Read Me

The compendium lists information about the 41 solutions that were shortlisted for screening of the challenge. Out of these, 10 solutions were identified as the winners across the three categories. The solutions were categorised as per the three categories based on their development stage which are;

Category 1 - Early-Stage Innovations
Category 2 - Market-Ready Solutions
Category 3 - Implemented Solutions

The compendium collates information about these solutions categorically, with the winning solutions listed on the top followed by the others.



The compendium describes the problem statements and their solutions in a succinct manner. For a better understanding, the solution presents use cases where these solutions can be adopted and the benefits of adopting these solutions.

ICONS

For an easy understanding and a panoramic view of the solutions, various icons are used throughout the compendium to convey information about the Target Groups, Applicable Sectors and Type of Solution.

Target Groups

The icons on the left margin of the page provide information about the target groups with the applicable categories highlighted.


For all Diversities


Persons with Physical and Intellectual Disabilities


Persons with Temporary Conditions

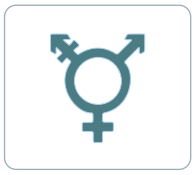

Hearing Impaired


Speech Impaired


Mobility I mpaired


Visually Impaired


Women


Transpersons


Children


Elderly

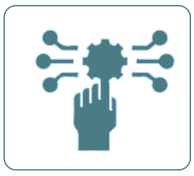

Caregivers

Applicable Sectors

The list of sectors placed at the bottom of the highlight the applicable domains for the solution.


WASH


Healthcare


Information and Communications Technology

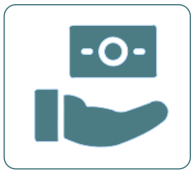

Education and Physical Development


Safety and Security


Transportation and Mobility


Housing


Recreation and Tourism


Livelihood

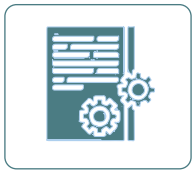

Data Management and Analytics


Disaster Risk Reduction


Built Environments

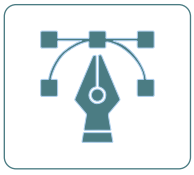
Type of Solution

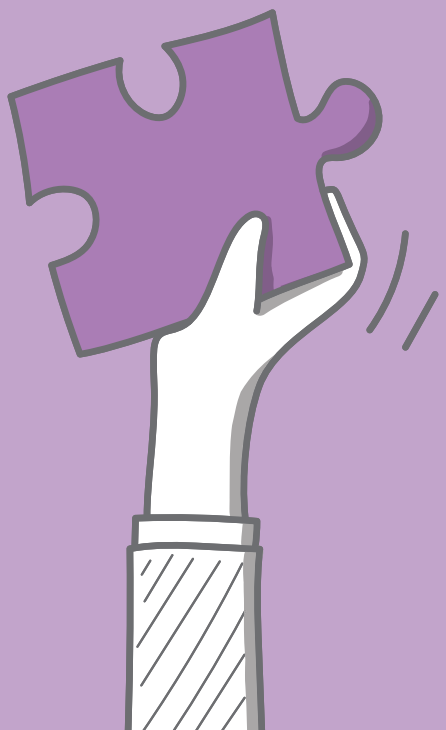
The list on the right side of the right page lists the category the solution belongs to and the nature of the solution.


Policies/Schemes/ Services


Training and Capacity Development


Assistive Technology


Design Solution



Category 1

Early-Stage Innovations

WINNING SOLUTION

Fifth Sense

By Glovatrix Private Limited

Problem Addressed

Problem 1: Fifth sense eliminates the communication barrier around people with hearing impairment by making sign language comprehensible to all. It is a wearable technology-based product that translates sign language gestures to speech and text using sensors and AI algorithms so that hearing impaired people can communicate effectively without being dependent on a sign language interpreter.

Problem 2: Teaching ISL at scale; Fifth Sense can also be used as an educational platform to learn Indian Sign Language in an easy, innovative, and interactive manner from any remote location and at an affordable cost.

Product Description

The product resembles a smartwatch with detachable finger rings. It also has an inbuilt microphone, speaker, and haptic motor to enable two-way communication for the user. The system converts background sounds to images and gestures so that hearing impaired people people can understand what is happening in their immediate surroundings.

Benefits and Use case

For example, when the doorbell rings, the device will vibrate and display a notification of the doorbell ringing on the screen. Similarly, fire alarm, car horn, cooker whistle, baby crying, and other such sounds can be converted and received as notifications. Apart from the ambient sounds, Fifth Sense can also convert conversations to text and images to enable two-way communication.

The Device along with the Glovatrix Private Limited's educational app can also indicate whether the sign language gestures are performed correctly or not using a real-time feedback mechanism for learners. It also allows the user to practise sign language using modern visual techniques for memory retention. Thus, Glovatrix Private Limited aims to make learning and practising sign language affordable and accessible for every hearing impaired person through a self-paced programme.

Target Setting

Fifth Sense can be used in government offices, hospitals, banks, and other public buildings to allow sign language users to access information and services easily. For example, a man with speech impairment will be able to communicate timely and effectively with the doctors about his wife's prior medical history, especially in case of an emergency, and an old hearing impaired woman

Place of origin:
Pune, Maharashtra, India

Category:
Assistive Tech/Wearable

Product Development Stage:
Prototype

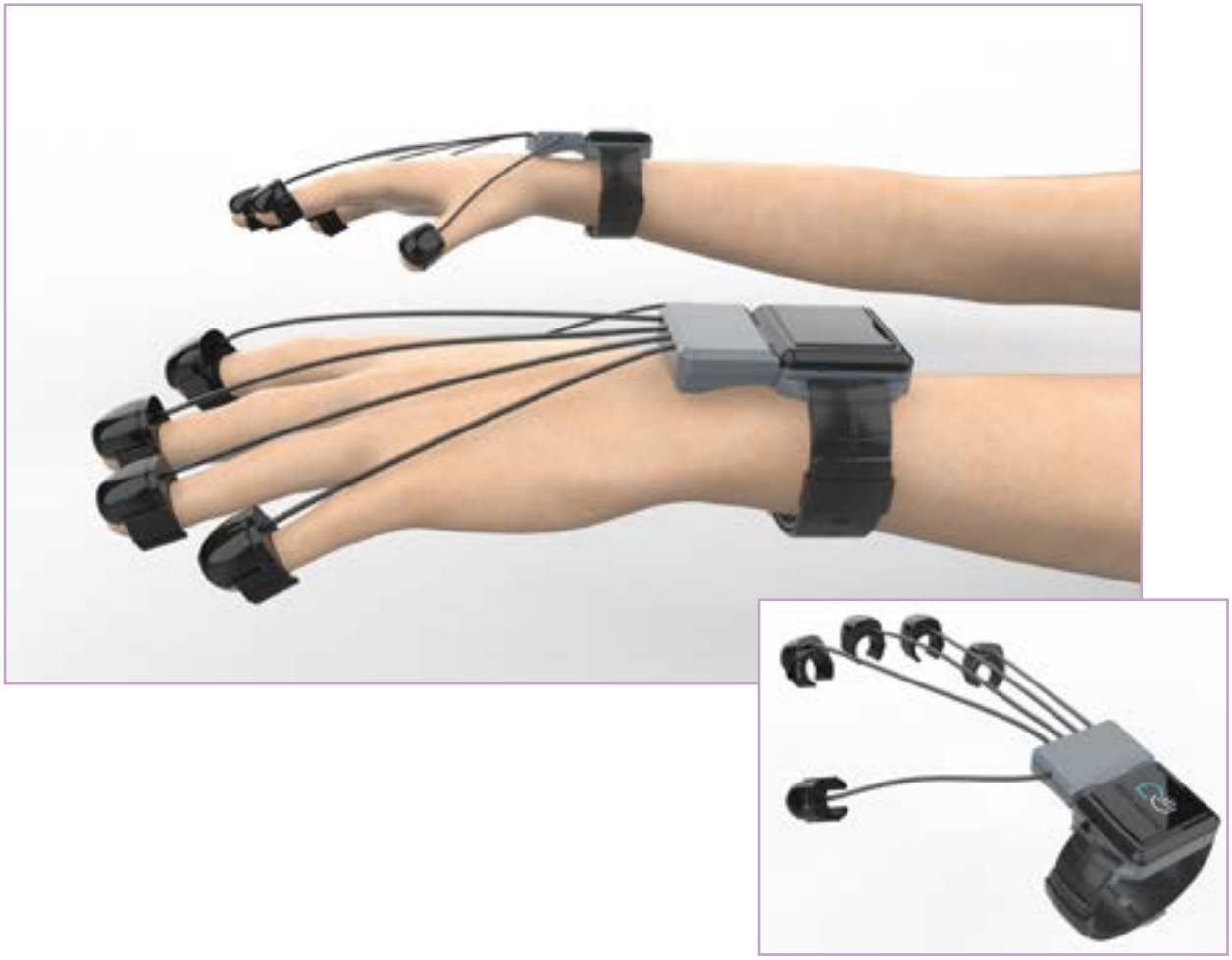
Commercial information:
NA

Year of innovation:
2020

Pricing:
NA

Revenue model:
NA

would be able to avail of services such as pension/Aadhar card by communicating her needs directly with the concerned authorities. Fifth Sense can also support the translation of all important announcements to sign language by incorporating large screens at railway stations, airports, or bus stations to integrate the hearing impaired community within mainstream society.



For more information contact: aishwaryakarnataki@gmail.com

WINNING SOLUTION

Digital Mobility Subsidy

By Ola Mobility Institute (OMI)

Problem Addressed

The current transportation system is not affordable for more than 23 crore urban citizens including persons with disabilities, women, and senior citizens. This inaccessibility to transport has kept the population at bay from unlocking socio-economic opportunities and leading an independent life.

Product Description

Digital Mobility Subsidy is a tech-solution conceptualised by OMI to make transportation more affordable for Persons with Disabilities, Women and Senior Citizens. It proposes leveraging the existing digital infrastructure of the National Common Mobility Card (NCMC), Aadhar, Direct Benefits Transfer (DBT), and Unique Disability Identity (UDID), to transfer travel subsidies directly to the bank accounts of the beneficiaries.

The idea suggests a four-step implementation plan:
Step1: Setting up backend where NCMC, UDID and DBT are enabled to interface with each other using Aadhaar as a common field where the beneficiary pays a full fare using NCMC.

Step 2: The user links their Aadhar with NCMC, UDID and DBT systems and gives permissions for three systems to interface with each other for sharing information about trips and their respective fares, compute travel subsidies based on predetermined logic and credit DBT-linked bank account.

Step 3: The subsidy scheme is designed as per the user eligibility which is determined based on gender, age, and disability. This could be full subsidy or subsidy as a % of the fare with an optional cap or flat subsidy with a cap or account-based subsidy, among others.

Step 4: Operationalising the scheme where the beneficiary takes a trip, pays full fare using the NCMC, and these trip details i.e., origin, destination and fare are stored in the backend system. Using this data, based on user eligibility and a predetermined logic, the beneficiary's subsidy is computed every day at the backend. The total subsidy is then credited to the beneficiary's bank account via DBT every week. The idea also proposes that below poverty line accounts may be credited with a one-time flat amount upon enrolment under the programme, subsequently the daily subsidy computed, can be credited via DBT.

Place of origin:
India

Category:
Subsidy Delivery Technology

Product Development Stage:
Ideation Stage

Commercial information:
NA

Year of innovation:
2022

Pricing:
To maximise the benefit to the end users the solution will be made available on a non-commercial basis. Hence, no pricing model articulated.

Revenue model:
Freely available for development with due recognition to OMI for the conceptualisation

Benefits and Use case

The solution aims to provide a tech-powered alternative to the current delivery models of travel subsidies. Presently, the state governments either issue zero-value tickets or concessional passes to the target beneficiaries. However, the existing models are open to fraud risks (over-claiming subsidy amount), operational overheads, and other challenges. The Digital Mobility Subsidy solution seeks to use the existing tech infrastructure to overcome these limitations.

Target Setting

The solution would be influential in improving the existing transport facility, make it affordable and inclusive and unlock socio-economic opportunities and reinforce the right to dignity for the target population. For the government, the benefits would include - reduction in fraud risks and leakages, lower operating costs, potential reduction in overall transport subsidy bill and the ability to run experiments for optimising subsidy schemes. The idea would also enable more digital transactions. It will be able to capture usable segregated travel data on gender, age, and disability. In addition to this, the solution overall encourages increasing shared mobility and reducing carbon footprint. It would also help in unlocking the full value of India's human capital by providing opportunities for improving the labour force participation of women and people with disabilities.

As a start, Digital Mobility Subsidy can be implemented in the cities where NCMC is currently in use, and travel subsidies are given to the target users. The learnings from these cities can be then incorporated to scale up Digital Mobility Subsidy to other cities.

For more information contact: apoorv.kulkarni@olacabs.com; mobilityinstitute@olacabs.com

WINNING SOLUTION

AxcesAble Places

By AxcesAble® Designs LLP

Problem Addressed

Lack of availability of detailed and reliable information about the spatial environment of a particular place, especially the existing accessibility features, deprives Persons with Disabilities, the elderly, and their families and friends from participating meaningfully in society. Locating a place of choice that is accessible affects them in terms of; productivity - it is time-consuming, safety - uncertainty about the nature of the built environment, finance - increased visit cost due to misinformation/no information, dependency - requires the support of others and health - adds on to the existing physical health challenges, affects mental wellbeing and induces fear, anxiety, and low self-esteem.

Product Description

AxcesAble Places is a mobile app that revolutionizes the unreliable and inadequate built environment information system by allowing users to find verified and authentic accessibility information about the place they wish to visit, resulting in a better place-visiting experience, increased environmental predictability, independent and informed decision-making, and reduced safety-related risks. The solution aims to reduce the information gap and uncertainty by providing accurate and reliable information about a place. It proposes to enable users to find and locate all the suitable places around them based on their access criterion already input into the application.

The features of the application will include a search engine that recommends suitable places based on user access preferences, a guide of any place in audio-visual and textual format, a community to find people, connect and interact with them, a marketplace for businesses to buy and sell assistive products, and accessibility design consultation to help businesses make their environment and establishments more accessible and inclusive for all. The audio-visual and textual accessibility guide will help users to a step-by-step understanding of the spatial environment of a place including the parking, entrance, interior and available services.

Place of origin:
Indore, Madhya Pradesh, India

Category:
Mobile App - search engine, information provider, a marketplace for businesses to buy and sell assistive technologies

Product Development Stage:
Ideation Stage

Commercial information:
NA

Year of innovation:
2020

Pricing:
NA

Revenue model:

a. **AxcesAble Solutions: Accessibility Design and Architecture Consultation Fees**
b. **AxcesAble Marketplace**
c. **Accessibility Data Aggregator**

With the use of a simple algorithm based on the user journey, the app will customize and make the filtering process of using products easier for every user. This in turn would help in improving the predictability of the app making navigation easier.

The solution will work on two levels: 1) as an interface for users to find information, connect with other people, and form communities, among others; and 2) auditing applications that would make primary auditing very simple by serving as a platform to train people to become on-ground auditors and local accessibility guides.

Benefits and Use case

For users, the application would provide them with knowledge about different places that could be visited, and a better understanding of resources required to visit a place thereby empowering them to make choices accordingly. It would reduce the time and effort required to visit a place, reducing the unwanted costs and would lower the risks related to physical safety and mental health. It will enable them to take informed and independent decisions and participate meaningfully in society. This would increase the customer base for businesses, which, in turn, would increase the customer base, enhance the customer experience, and improve the existing infrastructure making it more diverse and inclusive.

Target Setting

The app is envisioned to be free of cost for all the users but can produce revenue from two major sources - commissions and affiliate links and serves as a data aggregator for businesses. The mobile app can be integrated by city administrations under the various departments, for example, accessible and inclusive tourism in the city can be promoted through this app. Further, the app can support the city officials in accessibility audits including learning and hands-on experience for on-ground personnel. The data collated from the app can also be used by the officials for data-driven planning and development.

For more information contact: info.axcesable@gmail.com

ZonoCiti

By Prakhoj Pvt Ltd

Problem Addressed

Assessment of livability and development status of regions is frequently done nationally at a city scale. Irrespective of the overall ranking of the city, various localities within the cities are still seen to be unplanned, with lower liveability conditions and mismanaged utility and infrastructure systems. There is a growing need to understand a city at the locality level to clearly understand the requirements on a more local scale for better governance, investment decisions and well-integrated, comprehensive development for a Smart city.

Product Description

Zonociti is a pan-city solution envisioned to bridge the information gap by providing local scale ranking of livability based on various parameters using GIS tools and models. The solution also aims to provide data-driven insights to the city administration to help them plan and ensure equal and inclusive development strategies across the cities toward a better urban environment and inclusive management. The ranking is done on a relative basis for localities in the city limits, thus there is no comparison done between cities, which can be economically and ecologically very different from each other. Based on the presence and individual ranks of the listed parameters, the application ranks the relative livability of every neighbourhood zone in the city on a scale of 1 - 10. The parameters included but not limited to are - Green cover, Safety, Accessibility to Transport, Business Centers, Healthcare, General Amenities, Noise and AQI levels and Recreation Amenities. There is a scope for the addition of more parameters such as the local property market trends and demography, infrastructure development trends, utility maintenance, etc. The GIS tools and models will be useful for visualising data clearly under varied parameters and units with location data.

The GIS statistical models and data extracted from satellite images will be used to integrate all parameters for analysis to produce a simple relative ranking of the parameters and the overall area. Property listing websites also can integrate the ZonoCiti information to help their users make better investment decisions.

Benefits and Use Case

With the help of GIS technology, Zonociti saves costs and time to travel and research the locality

Place of origin:
Bengaluru, Karnataka, India

Category:
Web Application - Built Environment Data Ranking Dashboard using spatial data and GIS.

Product Development Stage:
Prototype

Commercial information:
NA

Year of innovation:
2021

Pricing:
NA

Revenue model:
Annual/Monthly Subscription to individual users (City administrations, urban planners, real estate investors); API access to Proptech websites with revenue based on the number of monthly API calls by users.

for the stakeholders. With the integration of the available and public data, one can understand the status of all the different regions within the city with just a click. It gives comparative insights and easy monitoring capabilities to understand the urban development strategies and plans for large-scale governance, which can be easily updated frequently. It provides better insights to make investment decisions and get better returns on property investments and investment satisfaction. Integrating property data can be particularly very useful for women in terms of understanding the safety of the locality around the property and also for persons with disabilities and the elderly to ensure quick and immediate access to health facilities, clean environments, and easy accessibility to general shops and recreation amenities. This will not only help understand the intra-city dynamics but also help assess the environmental status of the different areas to ensure sustainability throughout the city by understanding different shortfalls by all the localities.

Target Setting

As there is no similar data-driven information available at a local scale the application can be used by the city and local administrations to understand the requirements of the localities, whether it is environment rejuvenations or infrastructure development and management. Property data from property listing websites for citizens can also be integrated for making such decisions. The initial aim is to conduct a pilot in integration with various smart city projects and city administrators to properly showcase the benefits and highlight the development shortfalls. This would help in the betterment of the city and in evaluating the usefulness of the information provided to scale up the project ensuring maximum utility and ease of use of the application to the stakeholders.

For more information contact: rakhi.ojha@prakhoj.com

Shaktipath: Mobility for Women

By Abhishek Dey

Problem Addressed

Women's mobility follows a more diverse path due to the wide variety of work consisting of daily care work, social responsibilities and paid work. Many of their requirements such as infant care and hygiene remain invisible to mobility lenses such as infant care and hygiene requirements. To catalyze the efficiency of women's workforce, empowering public transportation requires immediate attention and address.

Product Description

Shaktipath aims to materialize the interface between urban governance and women by categorizing mobility via various persona-based lenses, aiding them in micro-managing daily routes and transport by providing better accessibility than before, and in return gathering deficit information at every step. This includes accessibility to places, modes, schemes and benefits. Here, women play a dual role of being the beneficiary as well as contributors in mapping the major qualitative and quantitative ground realities. The assessment report will be a guide on the way forward and work on various aspects to rectify and improve mobility for women, in various concerned departments. For example, if a user is a daily working woman, the algorithm decodes all routes possible from her initial origin geo-reference point (Latitude, Longitude) to the destination geo-reference (Latitude, Longitude), based on the time taken and types of operational modes of transport connected. These paths are just data-driven routes with respect to time that change at various stages of the journey and as per real-time traffic details.

To calculate the Personal Comfort Value of a route, the data collection parameters would include - women-friendly seat availability, the hygienic value of the transit route with respect to the availability of sanitation, sanitary napkin, child care facility, SHE Zones, breast-feeding rooms en route. In case-specific examples such as for pregnant women, the ancillary comfort services would include parameters like - availability of pregnant seating, air conditioning, number of toilets, or accessible ones in nearby hotels/restaurants, medicine shop, ambulance and hospitals in case of emergency and identification of know localities with prior reports of bad experiences under similar Comfort Value (by

Place of origin:
NA

Category:
Mobile Application

Product Development Stage:
Idea

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

mapping of reported cases of comfort concerns). Adding up the quotient for these parameters adds up to provide us with the Personal Comfort Value. Similarly, different parameter quotient additions can add up to provide us with different outputs.

Benefits and Use Case

The solution will help to derive, sieve and streamline data regarding deficient points and support the government to improve equity of infrastructure services, decision-making and governance. It empowers women to work as surveyors to identify their needs and notify the authority and bring change as torchbearers.

Target Setting

Proposed solutions can be merged with schemes related to women and children such as the Swachh Bharat Mission, Beti Bachao Beti Padhao campaign including other schemes and programmes from various other sectors such as transportation, livelihood, etc. It can be integrated with other women-centric applications for safety such as Safety-pin and Nirbhaya, among others; for providing information about hotel/restaurant and restroom services for women under the Swachh Bharat Mission; and for improving economic and educational opportunities by identifying the target population's needs such as in schools and neighbourhoods, etc.

For more information contact: abhishek6joy@gmail.com

My Right to be Seen

By The Association of People with Disability

Problem Addressed

Despite a significant amount of the population suffering from some form of temporary or permanent disability, most of the public planning and budgeting exercises, and the creation of physical infrastructure still remains devoid of inclusivity. There is a lack of easily accessible, continuously updated information on the degree of accessibility and barrier-free environment in public spaces and mobility infrastructure. Additionally, there is no single repository of resources to understand standards, regulations and resources to create barrier-free spaces.

Product Description

The solution is artificial intelligence (AI) based mobile application that aims to co-opt the majority of the population in auditing the places they visit by using their smartphone camera. On pointing their camera at a room or entrance, the AI-enabled application will assess the presence of accessible elements like a ramp or accessible aids in a toilet and will grade the location. This information will be updated onto a digital map. By crowdsourcing these audits via an easy-to-use app, it will eliminate bias and auditor error, greatly reducing cost and massively increasing coverage. The digital map layer will inform a person with a disability to be aware of the accessibility challenges en route to and at the intended destination i.e. which buses or metro stations or pavements are accessible, and whether their intended destination is accessible, if it is, then to what extent. It is hoped that a facility that is poorly rated for accessibility is audited, the defects remedied and the facility re-rated. Along with the application, a website with a single repository of resources, drawings and other material will be provided so that it can help to retrofit facilities for making them more accessible. A secondary effort aims to create an accessible building rating (like the GREEN building rating) which will create an aspirational pull for companies and builders to create fully accessible buildings and to be recognised for it.

Benefits and Use Case

The solution will provide a low-cost, crowd-sourced and organically improving set of accessibility information for the disabled and the elderly. By co-opting the majority able community, it will create a more empathetic group of citizens who will become co-advocates for change. Local governments and businesses will always be more responsive to the push for change from a majority rather than the disabled minority. A more inclusive India will empower disabled citizens to exercise their Right to be Seen in public, just like their fellow able citizens.

Place of origin:
NA

Category:
Mobile Application to conduct built environment audits; website for information repository and accessible building rating system

Product Development Stage:
Idea

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

Target Setting

The solution can be used by disabled people and the elderly from all walks of life. It will make accessing going to work, travelling, accessing facilities such as healthcare, recreation and public spaces and public services possible.

For more information contact: jacobk@apd-india.org

Kickstart Gati

By Kickstart Services Private Limited

Problem Addressed

India's transport infrastructure is not accommodative to the needs of persons with disabilities and the elderly. It is still not a safe and dignified way of transportation.

Product Description

It is an electric rickshaw where the chassis has been modified to accommodate a wheelchair. The back panel of the vehicle opens up as a ramp through which a ramp can enter and close again to cover the backside. The interiors have belts to secure the wheelchair. This makes the wheelchair usable for both disabled and non-disabled people.

Place of origin:
Banglore, India

Category:
Assistive Transport Technology

Product Development Stage:
Pilot

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

Benefits and Use Case

The vehicle is an inclusive, eco-friendly and easily operable vehicle with minimal licence requirements. It is a low-cost transportation option for people with disability and senior citizens, making it easily scalable. It has provided livelihoods to drivers and also enabled the target population to go to parks, work, places of worship and other places.

Target Setting

The focus is now on creating a robust technology solution to scale product operations.

For more information contact: info@kickstartcabs.com

Effectual Supportive Path

By Gajanan Govindrao Ingle

Problem Addressed

Crossing roads and walking on the street is often difficult, in the case of persons with disabilities this becomes an extremely strenuous task.

Product Description

1. **Specific Pedestrian Pathway For Visually Impaired:** This pedestrian pathway marked in yellow is a slightly raised platform with a unique surface structure placed adjacent to the Zebra Crossing. It is specially designed for people with visual impairments.
2. **Smart Walking Stick:** The proposed walking stick is equipped with a transmitter, a tracker and a vibrating device. Whenever a person with a disability is holding this reaches the yellow pedestrian, the system will transmit a signal marking their presence. Then a timer will start in the countdown display, which can be heard through the loudspeaker, announcing when a person can cross. The vibration device in the stick would also notify of the same. In case, a person moves outside the desired lane, the device will vibrate signalling them to walk on the right track. The tracker in the stick will measure the length of the crossing, whether it is completed or not, if it completes then the traffic signal system will switch to normal working so that other vehicles can move.
3. **Special Yellow Warning Light And Receiver At Traffic Light:** Whenever a person with a disability stands on the yellow pedestrian, the transmission signal is received by the receiver at the traffic signal, and a warning yellow light will glow, informing the vehicles to slow down and stop and clear the route for them.
4. **Specific Sound For The Blind People:** In case a person does not recognize the yellow pedestrian or other discussed signal, there will be a specially designed sound system to guide them.

Benefits and Use Case

The system can be modified as per different sectors, specific solutions can be adopted depending on the location of deployment. The existing approach will be slightly modified to fulfil the demand of a place, such as government buildings, bus stops, etc.

Target Setting

The target is to first test the solution for persons with visual and locomotor disabilities and elderlies. It can be used at road crossings and intersections.

Place of origin:
Indian Institute of Technology, Varanasi

Category:
Built Environment Provisions for Road Crossing

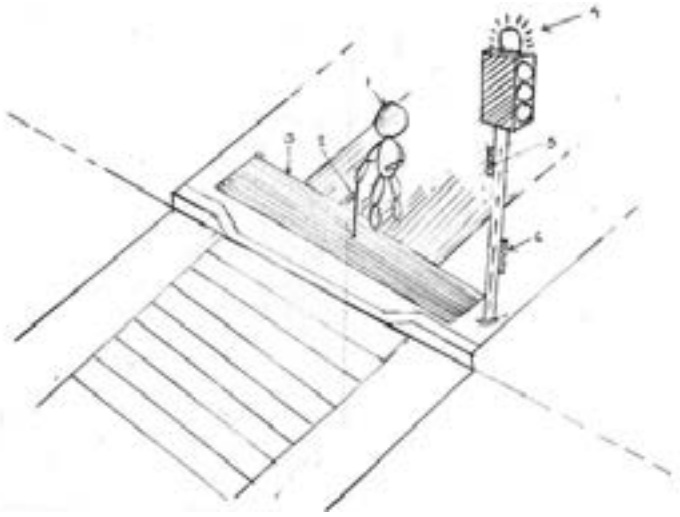
Product Development Stage:
Idea

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA



1. Blind Person
2. Stick
3. Specific pedestrian for blind people
4. Yellow warning light
5. Speaker to guide blind people
6. Emergency path button for everyone

Current traffic signal figure is only consisting information specifically in view of blind people other device such as LED Lights will be as normal.

For more information contact: gajanan.govindraoi.mst19@itbhu.ac.in

Railway Accessibility in Bangalore

By Samarthan Trust for the Disabled

Problem Addressed

Access to the railway transportation system is difficult for persons with disabilities.

Product Description

The solution consists of 100 sign language announcements for the visually and hearing impaired, braille maps, signages, platform indicators, and auditory signals at the entrance and exits of the railway stations. The KSR Bangalore station also consists of a waiting hall for persons with disabilities and the elderly, an installation of an improved braille map in the concourse, and improved LED TV for announcements in sign language.

Benefits and Use Case

This solution will significantly contribute to improving the mobility of persons with disabilities in railway stations. Assistive technology for persons who are blind and partially sighted will help them to move around the railway station independently, enhancing their mobility and safety in movement.

Place of origin:
Bangalore, Karnataka, India

Category:
Accessibility Measures

Product Development Stage:
Ideation Stage

Commercial information:
NA

Year of innovation:
2022

Pricing:
NA

Revenue model:
NA

Target Setting

Visual signages are to be provided for persons with speech and hearing impairment

For more information contact: kumar@samarthanam.org

Urban Mobility Solution for Persons with Disabilities

By Harsh Raj

Problem Addressed

Lack of urban mobility solutions for persons with disabilities (PwDs). Commercial disability-accommodating taxi services are limited in supply and expensive. An overview of existing cab services for the disabled shows that per kilometre rates are much higher (35 INR/km) than regular cab fares (12 INR/km). The cost of the service in question consists of three parts; vehicle cost, driver opportunity cost and adaptation cost i.e. disability modification in a vehicle, e.g. installing ramps). The mode of operation of these services is the extreme problem in all these three cases. The service provision includes - volunteerism where a driver bears the entire cost since the service provided is free and the other where the service available is a normal cab ride, where persons with disabilities bear the entire share of the cost.

Product Description

The solution consists of an online platform to access mobility for persons with disability. The platform will connect persons with disabilities with volunteers or commercial cabs equipped with special accommodations. The person with a disability can register and verify through their Unique Disability ID. The idea implementation requires government support for the verification of drivers and vehicles where each driver and vehicle will be certified and approved by the disability policy department. On the other hand, the disabled who want to sign up for the platform have to submit UDID and disability certificate details. Information, education and communication (IEC) initiatives that incentivize signing up for the mobility service can also be rolled out. Depending on government support, this can advertise financial incentives and benefits of the mobility service. This would also serve to spread awareness about the disability certificate and UDID card, giving those without it a reason to seek it out.

Place of origin:
Bihar, India

Category:
A system to utilise volunteer-based urban mobility for Persons with Disabilities (PwDs)

Product Development Stage:
Idea

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

Benefits and Use Case

Moreover, the signing up process for the service can include an option for at-home checking and issuing of disability documents. This is an especially important policy step; as currently travelling to the government office to make a certificate is the responsibility of persons with disabilities. MoHUA and the Smart Cities Mission have been experimenting with online platforms that enable city residents to sign up and post volunteering opportunities. These can be utilized for this purpose.

For more information contact: harshdse01@gmail.com

Accelerating Service Delivery in Post-Pandemic times

Dr Praful Gharpure

Problem Addressed

The problem at root is the crowding which makes mobility a challenge for not only the people with disabilities but even for common citizen . The idea revolves around the thought as to how do one get a service without visiting the office which solves the challenge for all.

Product Description

The solution is designed with basic theme of information pooling and identity management across service providing departments, which makes the solution scalable across cities / provider departments.

IT implementation in various departments are at different level of maturity. The solution aims to bring the services under one single window for user to avail those. It provides seam less navigation and maintains the linkage of identities created for a user with each provider through creation of "Circle of Trust". Solution proposes 2 instances for an application of service provider. The internet instance gets integrated with city portal making it accessible with single login for end-user. Within provider offices other instance is used and department level updates. As a result of transitions are captured and are proposed to be transferred on city database through batch run at fixed frequency. This also gives facility for department employees to access application by logging remotely

Benefits and Use Case

The proposed solution offers the following benefits - 1) Simplified integration between one department and other department's information; 2)Improved end-user experiences through extended single-sign-on; 3) Expanded business reach for service

Place of origin:
Nagpur – Maharashtra

Category:
Solution Promoting Ease of Doing Business for service Providers and Citizen to avail service from anywhere

Product Development Stage:
Idea to scale up existing solutions in use

Commercial information:
NA

Year of innovation:
2019

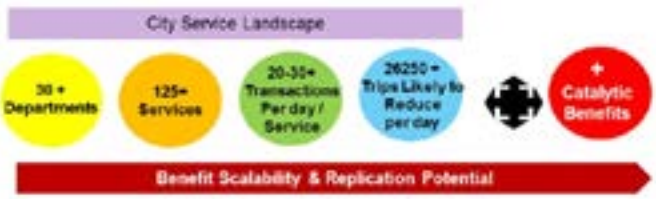
Pricing:
As per service volume

Revenue model:
Transaction-based

providers by creating new revenue-generating opportunities; 4) Reduction in paper document submissions. 5) Expeditious response to customer requests; 6) Virtual "Single Window Service" eliminating the need for users to visit multiple offices; 7) Single channel of information; 8) Transparent transactions; 9) Ease of tracking requests, complaints and SLAs; 10) Online exchange of interdepartmental user-specific data to effectively reduce cycle time for service fulfilment; 11) Ease of reference to similar cases; 12) Initiation of transactions by citizens shall lead to revenue enhancement for service provider department; 13) Employment opportunities through mechanisms like agent login or individuals working at CSCs or from home; 14) Saving in travel time of citizens to offices reducing traffic on roads as an added benefit.

Target Setting

The solution has potential to be implemented on a pay per use model with a per transaction fee. The solution can be extended across service providers in a city or across cities as well. The concept has been in use; this idea proposes to scale it up for the magnitude of service delivery requirement across cities.



For more information contact: praful.gharpure@gmail.com

Garima Grih - All-Inclusive Community Centres

By PVR Nest

Problem Addressed

Upon conducting a dipstick survey in the 1st location of Garima Grih – Jawahar Camp, Kirti Nagar it was observed that the major issues which are hindering the Jawahar Camp community's access to society are poor sanitation facilities, high dropout due to poor proximity of the school and lack of access of capacity building tools for people to attain a better standard of living.

Product Description

Garima Grih will be an all-inclusive community centre consisting of open spaces for community gatherings, and youth-skill development programmes, and will focus on creating awareness of pertinent environmental and health issues affecting the masses such as climate change, mental well-being, safety and hygiene for women and children etc.

Benefits and Use case

The benefits of these centres will be equitable access to quality sanitation services which will reduce open defecation leading to healthier living in the community and capacity-building programmes that will help people from socially disadvantaged backgrounds to gain income-generating opportunities to aid them in leading a dignified and sustainable life.

Target Setting

The Garima Grih can be upscaled in - Health & Sanitation sector for high-quality toilet facilities with essential sanitary consumables, the Education sector for equitable access to rudimentary education for all, Market Sector for co-working space for small businesses in the community, promoting local businesses, and Entrepreneurship sector for Self-Help Groups developing job opportunities.

Place of origin:
NA

Category:
Community Hall

Product Development Stage:
Pilot

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

Remodelling work in progress.
***Phase 1**: Sanitation facility to be opened for public in July*

Remodelling work is almost completed

***Phase 2**: Courtyard development and community gathering spaces are under development in association with MCD and urban planners*

For more information contact: deepa.menon@pvrcinemas.com

A Safe City

By Vacus Tech Private Limited

Problem Addressed

Public safety is a major challenge for any city as it's impractical to keep an eye on every camera all the time. As a result, the majority of incidents go unreported since police cannot be present everywhere, and the public shows a lack of interest in reporting due to the drawn-out and tiresome process.

Product Description

Each light pole in the city will be equipped with a "HELP" button and a tiny IoT Camera. If any passerby witnesses an incident, they can hit the HELP button. As soon as the button is pressed, the camera will begin capturing pictures and the corresponding images will be saved on the cloud. However, in case of an incident, these camera images can be verified and a subsequent plan of action can then be chosen accordingly. Since real-time video streaming is a complicated process that requires a lot of bandwidth as well as resources, our concept is to enable local authorities with real-time information about the incidents without any complexities.

Place of origin:
NA

Category:
NA

Product Development Stage:
Pilot

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

Benefits and Use Case

With enhanced visibility and resource efficiency, Real-Time incident reporting will ensure the safety of all citizens. It will help improve the response times and notify authorities limiting damage to people and property. Similar smart solutions are also being deployed for smarter facilities where user feedback enables rapid action to control incidents.

Target Setting

The solution is suitable for transport facilities to, begin with and can be expanded further throughout the city.

For more information contact: venugopal.k@vacustech.com

WoBus

By Krishna Kant Tiwari & Viraj Joshi

Problem Addressed

Women being invisible in public spaces presents a significant challenge. Following this, WoBus conducted a study to better understand the major issues and challenges women encounter when entering today's public settings. The survey's findings and a desk review revealed that majoritarian norms dominate public areas and that women must have a reason for entering them.

Product Description

'WoBUs' has been created for providing safer, inclusive, comfortable and hygienic public spaces for women. It is a repurposed low-floor bus that is equitable, and economic, and caters to all age groups and disabled women. The buses used are rusted which are recycled to make them usable, which are then installed with sensitive amenities for women of all ages and abilities. To engage them and convey the message that the buses are meant for them, various colours, art and graphics are used to evoke specific emotions and create a brand by promoting the city culture.

Benefits and Use Case

The provision empowers women to use public spaces freely, safely and comfortably in a more accessible and inclusive manner.

Place of origin:
NA

Category:
NA

Product Development Stage:
Ideation

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

For more information contact: krishna.pui21185@cept.ac.in

Mobile Public Toilets

By Odds Studio LLP

Problem Addressed

There is a lack of clean and sustainable toilets that are immediately accessible for both densely and sparsely populated neighbourhoods.

Product Description

Currently, there are two products at a conceptual stage powered by solar energy and zero waste green energy Infrastructure. The toilet space will have unique operational features like gender-sensitive space, self-sustainable, and self-powered.
The first design is a mobile toilet infrastructure on a bicycle which will have the capacity for one person to use at a time. The second design is a mobile toilet infrastructure on a heavy vehicle which will hold the capacity of four persons to use at a time.

Place of origin:
Chennai, Tamil Nadu, India

Category:
Mobile public toilet powered by renewable energy

Product Development Stage:
Ideation

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

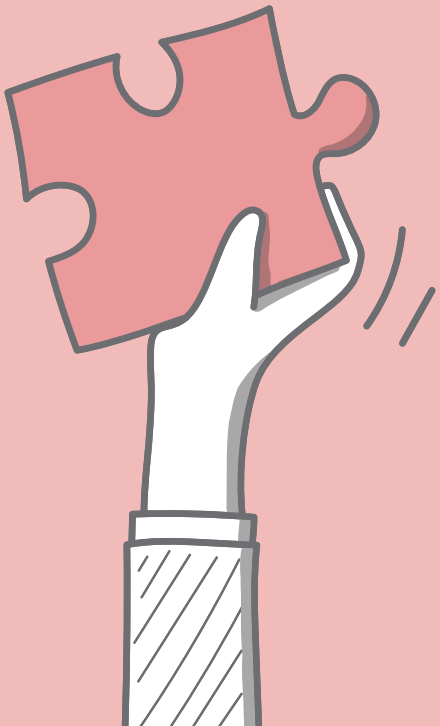
Benefits and Use Case

The solution will create a hassle-free, mentally comforting and safe sanitation public experience. It will be cost-effective in terms of resources for the existing public infrastructure by having a clean, hygienic toilet on wheels. Mobile Public Toilet is a solution to address the gaps in the ongoing Swachh Bharat Mission.

Target Setting

Mobile Public Toilet is a solution to participate in the ongoing Swachh Bharat Mission. The solution aims to provide clean and zero-waste toilets for public use that have operational facilities like gender-sensitive spaces, self-sustaining and self-powered.

For more information contact: oddsstudioinc@gmail.com



Category 2

Market-Ready Solutions

WINNING SOLUTION

Mouseware

By Dextroware Devices Pvt. Ltd

Problem Addressed

As computer-related jobs are growing and are being highly pursued, people with disabilities are often eliminated from being considered for such employment opportunities. Like any other individual, this effects their aspirations to have a career and a better livelihood due to limited job opportunities.

Product Description

Mouseware is created with the aim of making every place that has a smart device accessible for all so that people with disabilities could have access to better employment opportunities. It is a head-wearable device that enables hands-free control of computers and all smart devices such as phones, tablets, and television with simple head movements.

The user is required to wear the headgear and rotate their head in the direction the mouse cursor must be moved, the head movement is synchronous with the cursor on the screen. The tracking sensors track the user's head movements and transcode them into corresponding cursor coordinates on the screen. The user can strap this small sensor box to an elastic band or headphones or caps or even spectacles. Depending on the nature of the disability, mouse clicks can be performed with any one of the following assistive switches: Foot Tap Switch, Finger Switch and Microswitch. Additionally, a software-based Dwell click is also provided for users who cannot use any of their limbs to use the above physical switches to perform mouse clicks. Further, typing is performed with a Speech-to-Text engine that includes an Indian-English accent and most Indian regional languages.

Benefits and Use case

It is the only assistive tech in India for hands-free control of smart devices for amputees, people with neurological disorders, and people with hand fractures. It is the only affordable solution at Rs.15,000 developed in India in comparison to similar products available in foreign markets in the range of Rs. 50,000 to Rs.1.2 Lakhs. In addition to this, some products also use a camera to detect eyeball/head movement to move the mouse cursor, for which a good lighting environment and HD camera are mandatory which is not possible to have for all users. Further, it may not include speech-to-text integration and most of those products can control only computers or laptops and not smartphones. Mouseware will socially and financially empower persons with disabilities in multiple ways as it provides complete access to perform all computer and smartphone operations, thus enabling the user to be independent.

Place of origin:
Chennai, Tamil Nadu, India

Category:
Head-wearable device

Product Development Stage:
Tested & Market Ready

Commercial information:
NA

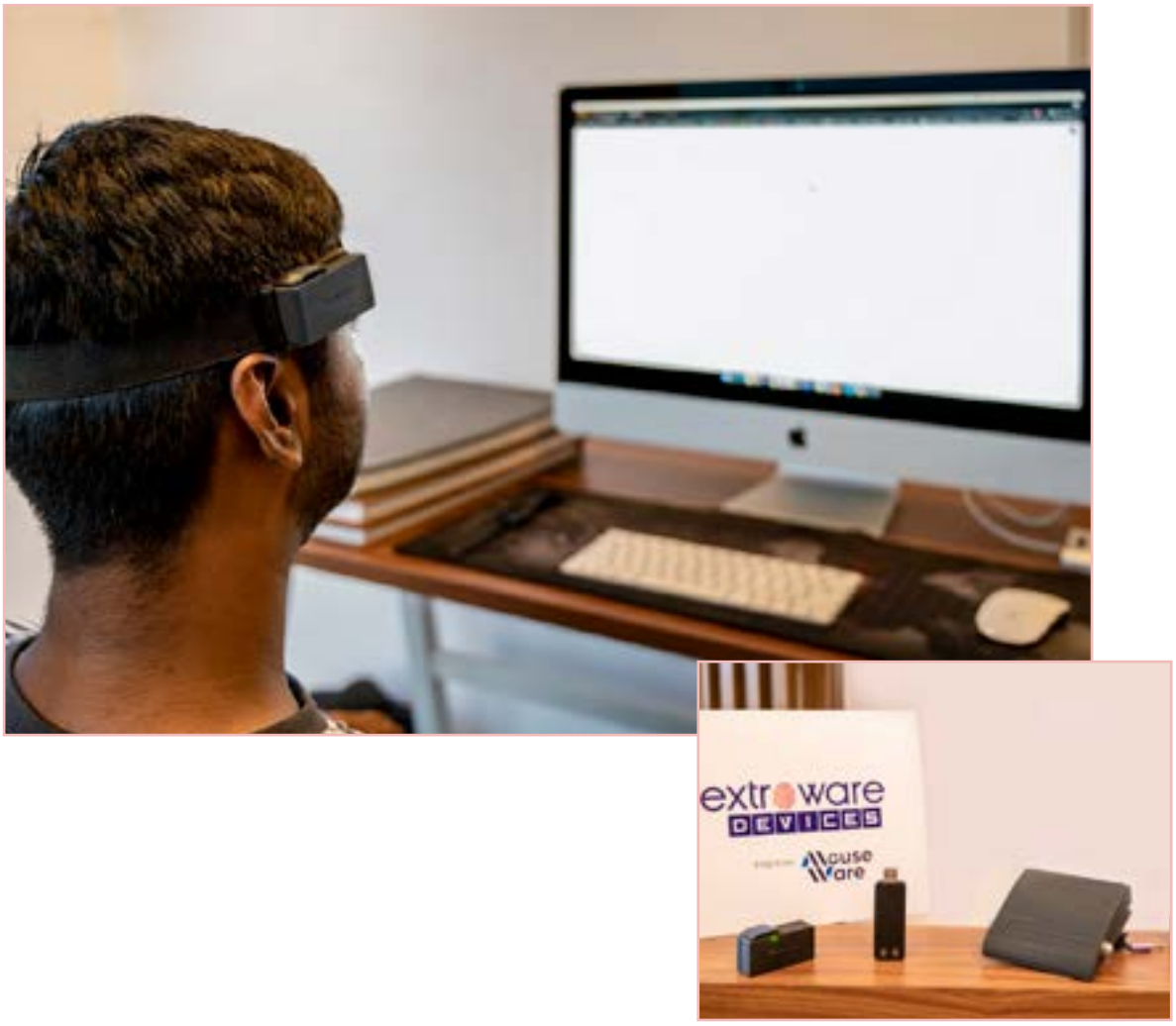
Year of innovation:
2020

Pricing:
₹15,000

Revenue model:
NA

Target Setting

The device can be integrated into every private and government workplace to make computers and other smart devices accessible to encourage employment opportunities for persons with disabilities. Computer labs in schools, colleagues and other educational institutions can also integrate this assistive technology to make the computers accessible for children and youth with disabilities. There is also a need for insurance companies to add such devices under the post-hospitalization facilities as it is also used at orthopaedic hospitals & physiotherapy centres for fractured & chronic hand pain patients.



For more information contact: pravin@dextrowaredevices.com

WINNING SOLUTION

SIGNER A.I.

By Incluistic Private Limited /Friends for Inclusion

Problem Addressed

Across India and the world, people with hearing disabilities find themselves left out of the mainstream development agenda. They find it difficult to access city-level services and facilities including education, employment and other services as no content or information is available in sign-language (mother-tongue of 5+ million deaf people). They get marginalised because of three main reasons: a) we, the public at large cannot communicate in sign-language; b) demand-supply mismatch of certified sign language interpreters; c) lack of effective technology interventions.

Product Description

SIGNER.AI is a digital translation software. It converts all spoken and written content into the Indian Sign-Language (ISL). The aim is to empower and mainstream people with hearing disabilities by providing access to information in sign-language. Built on state of art technologies such as Artificial Intelligence (AI), 3D animations and Natural Language Processing, SIGNER.AI displays the information it receives using a digital human- avatar. The AI-powered algorithm is capable to understand content in seven languages including six major Indian languages and processes any content fed either via speech, typing or API/programs in real-time.

Benefits and Use case

SIGNER.AI democratises sign language and makes it universally available, affordable, and accessible. It enables stakeholders including citizens, government & their local authorities, start-ups & corporates, educational & non-government institutions etc to target, engage and mainstream people with hearing disabilities. As a result, making content and information inclusive in the most diverse context, including but not restricted to governance, banking, healthcare, education, recreation and tourism, employment, disaster management and other citizen-based services.

Target Setting

Incluistic Private Limited will be taking SIGNER.AI to market in B2B, B2G and B2C segments. It will be available for consumers as an application on their favourite operating system and for government and enterprises as a SAAS - Software as A Service –enabling it to be easily integrated in diverse IT environments.

Place of origin:
Bengaluru, Karnataka, India

Category:
AI-Powered Translator Program

Product Development Stage:
Ready for Implementation

Commercial information:
NA

Year of innovation:
2022

Pricing:
Freemium

Revenue model:
Advertising, Subscription, and License

For more information contact: ankit@signer.ai

WINNING SOLUTION

IncluMaps

By Vikas Upadhyay, Research Scholar, Assistive Technology Lab, School of Information Technology, IIT Delhi

Problem Addressed

'Last mile to last meter' wayfinding is challenging for all, creating a barrier to independent mobility. Increasing indoor complexity and services. This is mainly due to a lack of access to the right information at the right place and at the right time. To improve access to these spaces, the associated stakeholders demand seamless access to inclusive information.

Product Description

IncluMaps is an information mapping framework to create inclusive and accessible digital maps of urban public spaces in low-income settings. It helps organisations to set up inclusive and accessible digital maps and services for large indoor spaces and provides seamless access to these mega facilities. It delivers an improved customer experience and helps amplify the visibility, output, and universal accessibility to these indoor spaces. It is an affordable solution which can help in creating a digital twin of urban public spaces and has the potential to integrate IoT services and other metwarsh-like future technologies for smart buildings.

IncluMaps further, offers two sets of services: 1) Baseline service that includes interactive indoor maps with semi-static navigation, and 2) Custom services which are business-specific on-demand service like real-time navigation, signage design and placement recommendation, integrated augmented reality, location data analytics for business decisions/recommendations, digital control, and monitoring services (IOT), occupancy detection, tracking, and digital building management, etc.

A two-tier implementation plan is proposed, one is in service mode and the other is in subscription mode. In service mode, the organization is required to perform the end-to-end implementation of the baseline solution which will include sight survey, data collection, validation, annotations, generating map data APIs and making interactive digital maps live. In subscription mode, the organisation will be provided with a user licence of the mapping tool for some finite number of buildings where interested organizations can register to annotate their venues and buildings to generate accessible digital maps.

Place of origin:
IIT Delhi, Delhi, India

Category:
Information Mapping Framework

Product Development Stage:
Tested & Market Ready

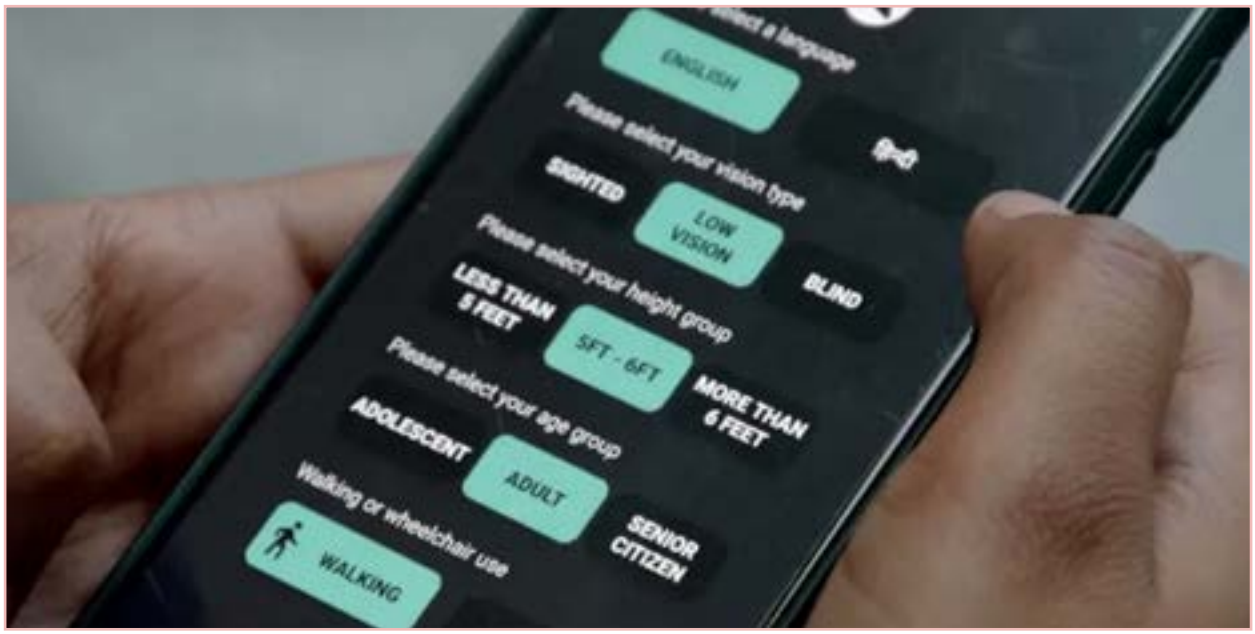
Commercial information:
NA

Year of innovation:
2020

Pricing:

1. Baseline Solution: Depending on the selected services and coverage area
2. Annual Maintenance and Updates: Depending on the selected services and coverage area

Revenue model:
Offers services for large indoor spaces to improve their search, accessibility and visibility for one and all.



Although the tool is very intuitive, the subscription mode will include a brief training on the annotation tool. IncluMaps provides a low-bandwidth editor interface with custom tool options to annotate the map information over a local grid. This annotated information is stored in a graph database which supports computations like route planning, captioning, etc. Globally, this is the only tool that follows the open audio standard for accessibility recommended by the International Telecommunication Union (ITU). It provides a vast set of possible applications using the IncluMaps data APIs. An application called IncluNav has been developed which provides an easy and accessible interface to communicate the annotated information to users for improving their wayfinding and accessibility. To reduce cost, improve reliability and support localisation, an April tag has also been introduced in addition to the Bluetooth beacons. IncluNav also provides a preference on the choice of medium, language, and interface to the users to enhance the usability experience.

Benefits and Use case

IncluMaps has the potential of scaling up due to its inclusive information characteristics. Low resource requirements and no infrastructure required for annotation make IncluMaps highly affordable. It also maintains data consistency and compatibility across mobile platforms and user applications. IncluMaps can create inclusive and accessible digital maps at scale which will be capable of conveying wayfinding, functional and accessibility information to the visitors. City-level incorporation of these maps can improve the universal access to these spaces.

Target Setting

Public buildings like hospitals, airports, metros, shopping malls, university campuses, transport terminals, museums and malls are spaces where access to wayfinding and functional information and services are critical.

For more information contact: vikas.upadhyay@cse.iitd.ac.in

SIGNeY

By Sonant Technologies Pvt Ltd

Problem Addressed

The most common problem faced by people with hearing and speech impairment is the inability to hear public announcements. The current public address systems at places such as railways, airports, etc. use audio announcements and limited visual announcements for notifying important information but are not effective enough for it to be communicated to everyone.

Product Description

SIGNey through its ML-AI system processes real-time audio-based announcements and translates them into Indian sign language, which then automatically gets converted into a video performed by a digital avatar and displayed via kiosks or on large screens. Installation of such screens at all strategic locations will help people with speech and hearing impairments to receive all important information.

Benefits and Use Case

This solution is a one-of-a-kind system that is developed to make public spaces like Railway Stations, Airports, Bus Terminals etc. accessible to all. It will empower hearing and speech impaired people to commute more comfortably with apt information, simplified assisted travel and more inclusive and accessible mobility services.

Target Setting

The solution can be implemented at railways, metro rail services, airports, important bus terminals, government buildings, public places, universities, institutions and colleges. It can be used to achieve the objectives under the Accessible Indian Campaign.

Place of origin:
Jaipur, Rajasthan, India

Category:
Language Translator Program

Product Development Stage:
Ready for Implementation

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

For more information contact: abhinav.sonant@gmail.com

First Talk

By Ananya Sathyanarayanan

Problem Addressed

Communication plays a key role in facilitating any individual's growth and learning, including persons with disabilities. For persons with hearing and speech impairment, communicating and having regular discussions with persons without disabilities on a daily basis is difficult. This lack of ability to communicate effectively in today's fast-paced world can prove to be a setback in their development and progress resulting in them being left behind.

Product Description

First Talk is a mobile app created with the aim to bridge this communication gap between persons with hearing and speech impairment and persons without disabilities and provide a level-playing field for all. When sign language is being spoken, the live hand gesture detection technology recognises the content and converts it into text, enabling the users to communicate easily. Sign language detection can be performed for American Sign Language (ASL) and Indian Sign Language (ISL), with the latter having the option of Hindi and Gujarati languages. The app also contains a learning section that has free language learning courses.

Benefits and Use Case

The app enables the communication between persons with disabilities and persons without disabilities, including between cross-disabilities. Further, the free language learning courses enable anyone to learn a language from scratch.

Place of origin:
Rajkot, Gujarat, India

Category:
Mobile App - Language Translator Program

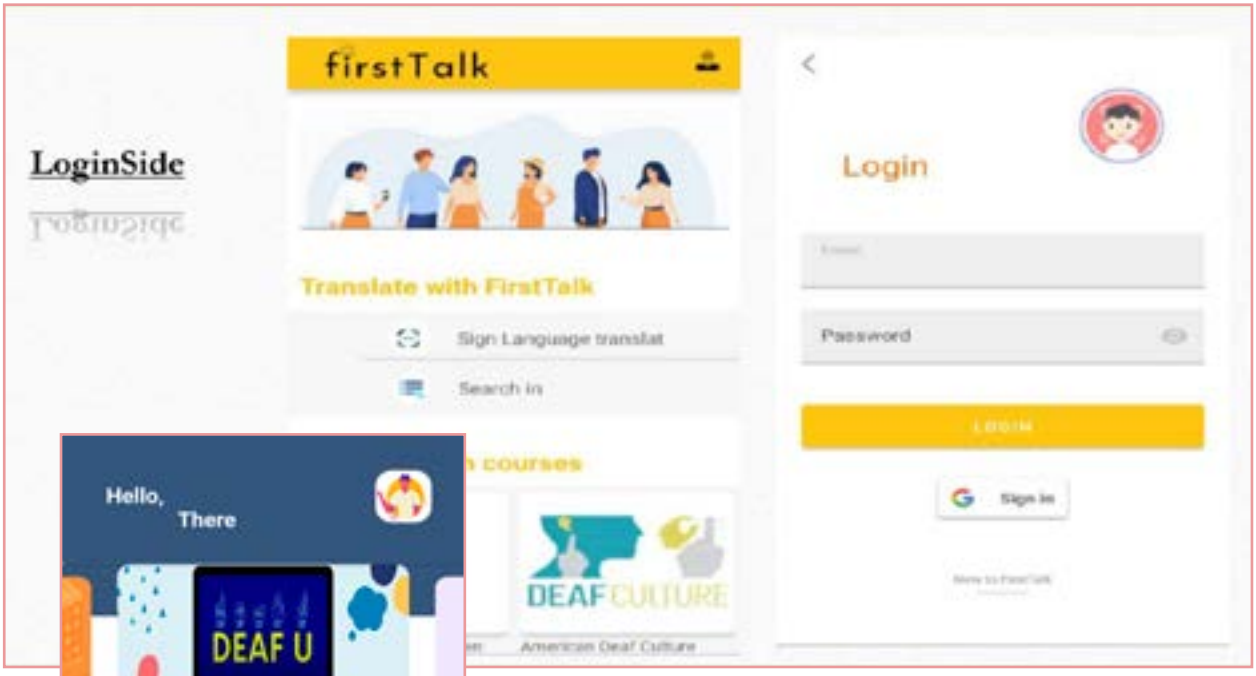
Product Development Stage:
Tested & Market Ready

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA



For more information contact: ananya.s.2906@gmail.com

UMT Hawk4G - Drone Enforced Surveillance

UrbanMatrix Technologies

Problem Addressed

Enforcing city-wide comprehensive security and surveillance to safeguard multiple sections of the society (particularly persons with disabilities, women, children, and the elderly) to make our cities safer to live in is challenging, especially at night.

Product Description

The UMT Hawk4G drone has been specially designed for ensuring city-wide security and surveillance. It comes with a host of features that enables automated city patrolling and facilitates instant decision-making. Foremost among these is the use of 4G technology in the drone, which is a first in India and opens up a trove of opportunities to ease city-wide monitoring. 4G connectivity allows authorized personnel to view the footage captured by the drone from anywhere in the world through a secure, web-based platform called the UMT console. The drone is equipped with high-definition day-night cameras that are mounted on a gimbal, which allows 360-degree view monitoring. This gimbal can be controlled remotely through the console, thus leaving no stones unturned during inspections. Further, the footage received from the drone can be processed using artificial intelligence models and can automatically detect humans, animals and vehicles even in low-light conditions. The same can be viewed in real-time through the UMT console. Hawk4G is easy to use, it can be launched within a few clicks and configured to follow a pre-determined path automatically, while also possessing the capability to grant manual control of the drone.

Benefits and Use case

The deployment of the UMT Hawk4G in surveillance can cut down on resources and personnel spent in patrolling. It can enable the police force to conduct round-the-clock surveillance throughout the city and enable them to constantly stay vigilant. The use of 4G technology facilitates remote surveillance allowing the concerned authorities to monitor real-time footage from anywhere, thus granting them the ability to make prompt and timely decisions, thereby, ensuring the safety of all citizens even at night. Thus, with drone flight and human detection automated, the authorities can focus on decision-making and deployment of forces instantly throughout the city without any lapse in communication. Processing of the footage using artificial intelligence also enables tracking

Place of origin:
NA

Category:
Drone Technology for Surveillance

Product Development Stage:
Tested & Market Ready

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

and identification of humans automatically, thus ensuring a consistent blanket of security. It also ensures wider and more comprehensive searches than those which can be achieved by humans alone. Drones can also ensure the safety of security personnel by forewarning them about imminent threats. They also have a lower impact on the environment compared to patrol vehicles.

Target Setting

The aim is to ensure the safety of all citizens, especially persons with disabilities, women, children, and the elderly throughout the day by providing a blanket of security in a way that allows people to roam freely in their city, without any fear.

For more information contact: rishabh@urbanmatrix.co.in

Disabled Friendly Park

By Mindtree Foundation

Problem Addressed

The iconic Cubbon Park in Bangalore has a children's recreation area called Bal Bhavan spread over 13 acres of land. Though it houses multiple activities for children such as a toy train, aquarium, amphitheatre, auditorium and a science park, the park, unfortunately, is not friendly for children with disabilities.

Product Description

Mindtree Foundation has conceptualized a one-of-its-kind disabled-friendly park to be implemented within Bal Bhavan with inputs and feedback from people from the disability sector. The park is designed in a turtle shape and has the provision of unique equipment such as a Magic Ball and Butterfly. Out of all the equipment used, 80% are made in India while 20% are imported. The play areas in the park are colourful and are laid with EPDM (Ethylene-Propylene-Diene Monomer) and tactile pathways. EPDM, is an eco-friendly, non-toxic, non-slippery rubber that provides a hard surface but minimizes/eliminates the impacts of injuries, making it safe for children. On the other hand, the tactile pathways enable easy access and navigation of the playspace area by children with visual impairment. The play area is further divided into 13 different zones for physical games, a therapeutic area, a leisure area, a sensory area and a panel for mental games.

- Zone 1: Has two kinds of swings - Bucket Swing and Mama & Baby Bucket Swing that enables both the mother and baby to swing together. They have a safety belt which ensures that the child is secured while swinging.
- Zone 2: Has a five-seater seesaw that enables 5 children to play together helping them to develop required social skills.
- Zone 3 & 4: Has a Merry-Go-Round which is accommodative of a wheelchair, enabling children in wheelchairs to play with children without disabilities ensuring inclusivity.
- Zone 5: Has an Interactive Butterfly Panel, a game activity station that enables - sensory, tactile, fun activities and puzzles to keep children entertained and engaged.
- Zone 6: Has a 3-seater Toddler See-Saw and Toddler Slide Attractive set of play equipment for enabling bonding among children.
- Zone 7: Has a Roller Bed, which is an inclusive play equipment that makes rolling exciting and strengthens hand muscles.
- Zone 8: Has a Therapeutic Park and a Unique Magic Ball which has different kinds of play equipment that strengthens muscles, hand and eye coordination and music play to calm the minds of children

Place of origin:
Bangalore, Karnataka, India

Category:
Inclusive Park Design

Product Development Stage:
Tested & Market Ready

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

- Zone 9: Has roller slides, normal slides, climber ropes, rock-climbers, climbing nets, panel games and tunnels. This caters to all the physical activities while creating an adventure experience, giving a sense of an underwater world experience with colourful artwork and lighting arrangements.
- Zone 10: Has a Nest Swing and Wheelchair Self-Swing that enables children to lay down/sit and swing. The latter enables the child to wheel themself into the swing through a ramp and swing on their own.
- Zone 11: Has Sandpit tables that enable a child in a wheelchair to access and play with the sand.
- Zone 12: Has a Leisure Play Area with a zig-zag table with board games embedded in them enabling children-parents and children-children to play together.
- Zone 13: Has a Sensory Area with grass, sand, rough cobblestones and smooth pebbles to enable sensory identification of different textures by touching and feeling.

The park has been audited for its accessibility by the Association for People with Disabilities (APD) with the help of APD disabled children.

Benefits and Use Case

This public park is accessible and inclusive of children with disabilities. It is a safe and secure, aesthetically pleasing and an ergonomically suitable play area that offers recreational and developmental opportunities for the children. All the equipment is suitable for children with disabilities up to 15 years.

For more information contact: lalitha.holla@mindtree.com

Neighbourhood

By Indore Smart City Development Limited

Problem Addressed

Harsiddhi, a locality in Indore is centrally located and falls under the Area-Based Development area. It is one of the most diverse areas with varied built uses and people from diverse socio-economic backgrounds. It also accommodates a maximum number of early-childhood development (ECD) facilities in the city. The locality was viewed from multiple lenses, which resulted in the identification of the biggest challenge faced at the city-level i.e. accessibility to public spaces, and lack of an inclusive design and planning approach.

Product Description

The solution included a neighbourhood revampment where the design adopted ensured inclusion and safe access to open spaces and ECD facilities. The target was to develop an ecosystem for encouraging transformations and behavioural change beyond physical transformation. The solution was tested in the form of five pilots in neighbourhoods that are diverse and challenging with a high concentration of Early Childhood Development (ECD) services like anganwadis and parks.

- Pilot 1: Green, playful & Inclusive open space at Arjun Pura Garden using limited resources
- Pilot 2: Creating safe pedestrian access and developing an ecosystem to cater to ITCs at C P Shekhar Nagar Park.
- Pilot 3: Creating a dedicated nature-based play space and developing an ecosystem to cater to ITCs at South Rajmohalla Garden
- Pilot 4: Creating a neighbourhood public space in a vulnerable area of Sethi Nagar
- Pilot 5: Creating a neighbourhood public space in a vulnerable area of Machhi Bazaar, Kadaav Ghat

To tackle the challenge of inclusion and access to public spaces and ECD facilities for varied users, Indore Smart City held citizen engagement programs, focused group discussions, and capacity-building workshops. This also included the organisation of other activities such as competitions and discussions by individual experts like child psychologists for ensuring a healthier Indore and understanding the vision of children and other citizens about their dream neighbourhood. These citizens' aspirations were incorporated into the planning and designing of these neighbourhoods. The air quality and decibel levels at open spaces and ECD facilities were measured to be PM2.5 at 95CM, 1.2M and 1.8M. Based on these results, to ensure safe air quality, interventions like thick green buffers with specific types of plants were planned. To ensure sustainability, the re-use and recycle process was also adopted as a practice. For providing a

Place of origin:
Indore, Madhya Pradesh, India

Category:
Inclusive Placemaking

Product Development Stage:
Tested & Market Ready

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

natural environment conducive for children to grow, the designs adopted focused on nature-based solutions.

The neighbourhood revampment solutions targeted inducing a sense of ownership through a systematic process which laid the path to a healthier city development process. This included organising awareness campaigns, encouragement to local champions and developing a strong local network comprising citizens, civic groups, RWAs, NGOs, individual experts and government agencies. Financial sustainability was ensured through innovative funding mechanisms.

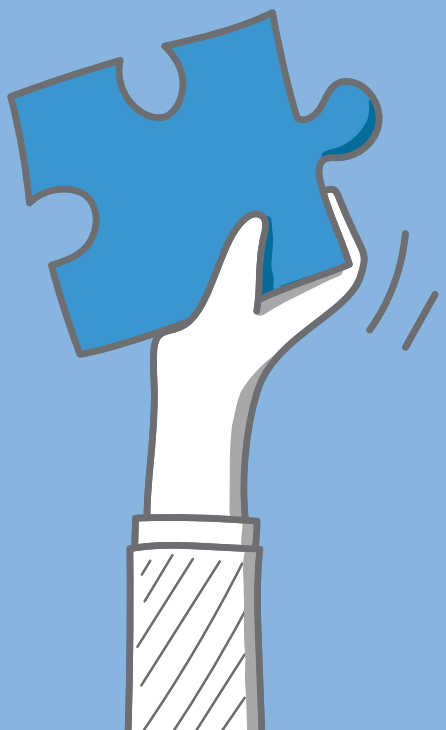
Benefits and Use Case

Under the project, the neglected parts of the city with important facilities such as ECD and public parks are made accessible. The project takes into account marginalised groups such as rag-pickers and slum dwellers as equal citizens and involves them at each and every step of the development process. An eco-friendly approach is followed that uses recycled and green material to create wealth from waste. The spaces designed are both playful and educational representing the motto of 'play, learn & grow. The project has components of - pedestrianization of spaces with a focus on ITCs, achieving targeted behavioural change with the aim of making each project a true transformation. These interventions are expected to act as lighthouse projects to solve certain generic and common case problems that are present in every city.

Target Setting

The achievements and learnings from these pilot projects have led to the preparation of a scalability plan for Indore, with resilience and 'Green Indore' being the main focus. The scalability plan aims to target different sectors and their associated physical infrastructure including education, healthcare, parks and open spaces, green-blue infrastructure, streets and junctions, transit stations and ECD facilities. The aim of the plan is to ensure that all citizens, people from all age groups and socio-economic backgrounds benefit through physical interventions, behavioural change, citizen engagement and social transformations.

For more information contact: ceo@indoresmartcity.org



Category 3
Implemented Solutions

WINNING SOLUTION

Multi-Dimensional Inclusiveness:

Using Advanced Technologies for Education and Literacy

By Belagavi Smart City Limited

Problem Addressed

The solution address three interrelated problems related to a child's growth. A child's growth which can be stunted during the Prenatal and Postnatal periods is difficult to assess. Along with this, detection, and intervention for the treatment of Dyslexia, ADHD, and Autism at early stages of growth can be challenging and expensive. Furthermore, managing education and health for children with and without disabilities is technologically challenging and strenuous.

Product Description

'Multi-dimensional inclusiveness using advanced technologies inEducation and Literacy' is the solution being implemented by Belagavi Smart City as one-of-a-kind comprehensive support system for elderly, women, children, youth and people with disabilities. This includes a) Artificial Intelligence (AI) based literary solutions at public library consisting of Smart e-Books, Active e-Books, Smart e-Newpapers & e-Magazines; b) neuroscience-centric advanced e-flashcards to monitor, measure and manage cognitive skills among children in public kids zone; c) language learning facilities for elderly, women, girls and children with disabilities using Smart e-flashcards; d) Smartness-as-a-Service at the Integrated Command Control Centre (ICCC) to encourage entrepreneurs and innovators to provide social impact solutions; and e) 24/7 App-based engagement to monitor, measure and manage pre-natal and post-natal care with instant help using animations and local language.

Latest technologies like AI, Machine Learning (ML), Deep Learning, and Cognitive Neuroscience are used for the first time in a library and at kids learning centres. Recollection centric neuroscience techniques are used to create cognitive e-flashcards that can help in monitoring,

Place of origin:
Belagavi, Karnataka, India

Category:
Assistive Technology

Product Development Stage:
Commercially Available

Commercial information:
NA

Year of innovation:
2021

Pricing:
Free as Public Utility

Revenue model:
Private Institutions, Universities, Corporates and Private Organization Subscription

measuring, and managing the cognitive skills, language and other learnings in children. The cognitive measurement methods help check the deficiencies and disabilities in children, which are then corrected by using the neuroscience technique. This cognitive measurement is supportive of multiple scales such as the Wechsler, MISIC and Standford-Binet to use neuroscience techniques. To support Anganwadi workers, in rural areas, who do not know how to use technology, the AI/ML system, based on the disability of the student, automatically generates calendars, tasks and lesson plans. Further, for parents who are uneducated and belonging to marginalized communities, the automated lesson plans and calendars help with the students' learning along with provisions for comprehensive reporting and analytics that helps children as well as caregivers learn about the progress being made by the children including children with visual impairment. One of the components at the library is the Smart e-Books, which are co-authored by both humans as well as AI with each e-Book measured for its grading and complexity. Many institutions, students, and pre-primary and primary schools are visiting these libraries on a regular basis including parents of students belonging to marginalised communities who have no understanding about disabilities are now able to access information about the disabilities in children and gain knowledge about cognitive deficiencies to care for their children's needs. All these solutions for all institutions are centrally monitored at the ICCC.

Benefits and Use Cases

The multi-dimensional solution using new and emerging technologies allows accessibility and inclusion to be mainstreamed as the solution that can be used by both children with and without disabilities. Further, using technological systems, the solution is helpful in reducing the impact of late detection of cognitive disabilities in children and adults. The free-to-use cognitive measurement, therapies and learning for children with disabilities are extremely beneficial for people from lower economic backgrounds.

Target Setting

The current business model of Belagavi is that unlimited and uninterrupted service is provided at the offline mode, smart components have a chargeable subscription for the abled, and is free for the disabled. The solutions used are compliant with the National Education Policy (NEP) 2020 for children and adults with disabilities across all educational institutions and organizations campuses. Subscription model allows private institutions and organizations to deploy these state-of-the-art highly affordable and replicable solutions. The subscription fee creates a self sustenance model for the city.

This multi-dimensional solution can be easily replicated in other cities using basic ICT infrastructure and the data being collected by the cities. Social Entrepreneurs in Health, Education, Safety etc. can implement this solution instantaneously using Smartness-as-a-Service.

For more information contact: bscltd16@gmail.com

WINNING SOLUTION

myUDAAN

By Tekra Solutions Pvt. Ltd.

Problem Addressed

Restricted mobility, inaccessibility and proper assistance are the major gaps faced by people with disabilities to an independent living, where they are not dependent on their friends, family and relatives to step out every time.

Product Description

myUDAAN is a single epicentre app (mobile application) that provides accessible transportation, and related services and products for people facing mobility challenges. It has pioneered the wheelchair assistance service in India where it provides wheelchair services at malls for persons with disabilities and senior citizens. It also provides them with accessibility information of the facility making it one of the first online accessibility and mobility assistance services available in the country.

As a one-stop solution for all problems related to mobility, myUDAAN solves all interrelated mobility problems using innovative technology that enables a user to: 1) book on-demand mobility assistance, where persons with disabilities and the elderly can book a mobility assistant through simple steps, similar to the mainstream ride-sharing companies providing on-line booking services, allowing them to move freely in malls, cinema halls, and large open spaces and to also travel independently with dignity and freedom; 2) seek accessibility information, where persons with disabilities and the elderly can check verified accessibility information of the location and the destination point; 3) purchase and sell mobility products, where users can gather information or purchase unique mobility products on the platform with the dual purpose of connecting assistive mobility innovators with beneficiaries. The assistive technology coupled with the in-premise or outdoor assistance by myUDAAN is envisioned to solve the last-mile mobility issues for all.

It also offers flexibility in hiring mobility assistants depending on their need as it allows users to book slots of 4 hours, 8 hours, and 12 hours, with per hour costs at just Rs 100. The specialised assistance service keeps in mind the requirements of language, mobility aids, and sensitivity that are essential components in this service. More importantly, with safety being the prime concern for people with disabilities who are at a higher risk for abuse, myUDAAN offers a comprehensive and vetted care programme as attendants are made to go through an elaborate screening process, including criminal background check and regular sensitisation and training programmes.

Place of origin:
Navi Mumbai, Maharashtra, India

Category:
Mobile Application

Product Development Stage:
Commercially Available

Commercial information:
NA

Year of innovation:
2019

Pricing:
NA

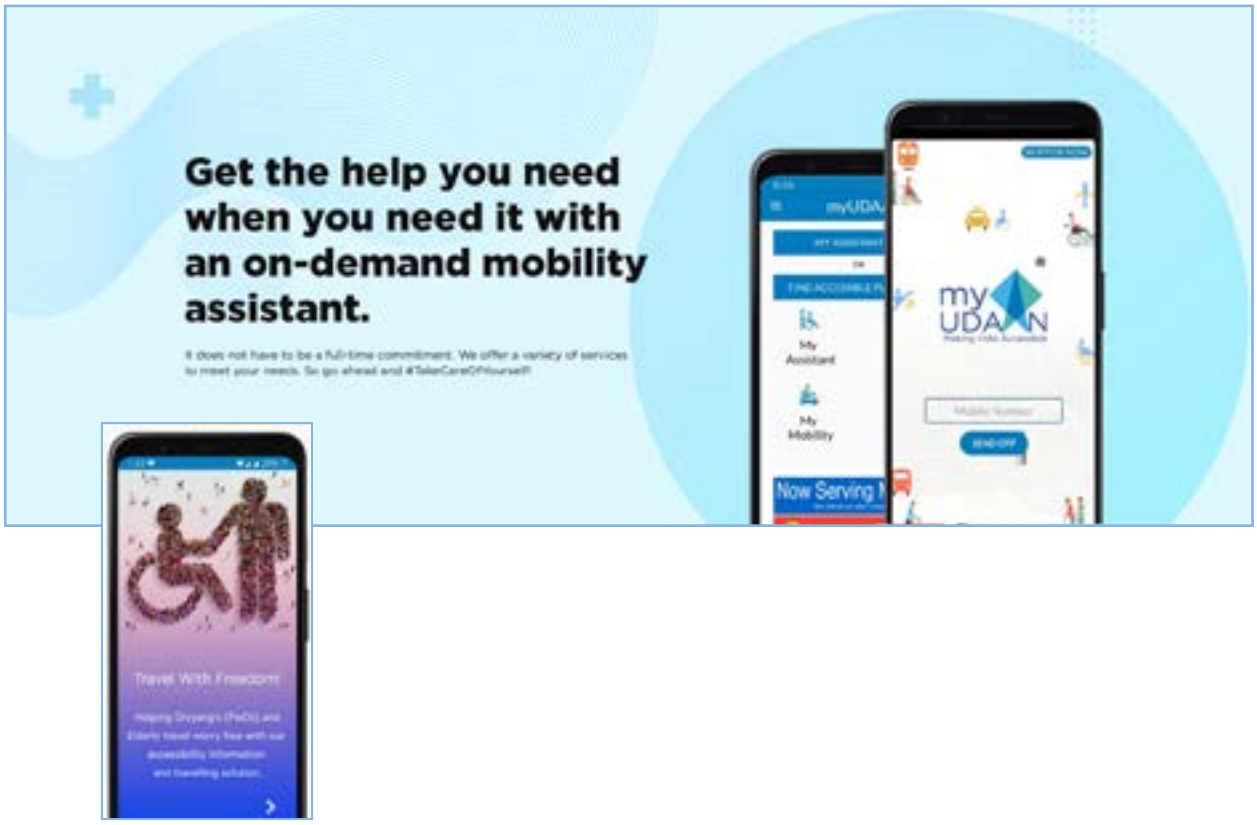
Revenue model:
NA

Benefits and Use Cases

With the provision of outdoor services and end-to-end solutions such as a visit to a doctor's clinic, a bank or a park, a social gathering or a trip to a different city including mobility assistance in buildings without elevators, the solution serves to increase the quality of life and experiences of persons with disabilities and the elderly in the city while providing employment opportunities for many.

Target Setting

myUDAAN is currently being implemented in Mumbai, Maharashtra. Since the model is asset-light and economical, it's easier for the solution to be replicated in other cities for creating a mobility ecosystem that provides users with mobility support and information about accessible areas in the city. The major business strategy is an on-demand service model in which the customers are charged an hourly cost with 20% margins. The mobility goods marketplace is another source of revenue. The assets are kept at minimal and are compensated based on the completed bookings.



For more information contact: ravindra.singh@myudaan.org

WINNING SOLUTION

‘Moving with Pride’ - Mo Bus and Mo E-Ride

By Capital Region Urban Transport (CRUT)

Problem Addressed

‘Moving with Pride’ is a multimodal integration project that focuses on inclusive public transport with an aim to transform the urban mobility experience for all. The two initiatives under the project, Mo Bus (city bus) and the feeder service, Mo E-Ride (E-Rickshaws), through its policies on reservation, infrastructural design, data management and training and capacity building have been able to create a model public transport ecosystem that is inclusive, sustainable, smart, safe, affordable and accessible to all.

Product Description

The initiative has a fleet of 265 buses spread across 35 routes serving more than 1.5 lakh people per day. The success of this initiative lies in its integration of reforms for both its commuters as well as its staff particularly, with policies such as 50% reservation for women as Mo Bus ‘Guides’ (conductors) and 100% reservation for women, transgender and socially disadvantaged people as Mo E-Ride ‘Sarathis’ (drivers), and regular counselling with periodic capacity-building sessions for the crew with special emphasis on ways of providing gender-sensitive public transport service and efficient passenger management. At present, 40% of Mo Bus Guides are women which has made female commuters, senior citizens and children feel safer and more protected. Priority seats are also reserved for senior citizens, women and persons with disabilities, and special discounts for persons with disabilities and a flat 50% discount for senior citizens have been provided. To facilitate comfortable waiting areas for passengers, 200 Bus Queue Shelters (BQS) across Bhubaneswar are located strategically by road at points which serve as a safe waiting area equipped with benches, route map, Public Information System (PIS), adequate lighting and separate dustbins for disposing of biodegradable and non-biodegradable wastes. There are also e-toilets and public bicycle stands located beside the BQS. Live tracking and online services in Mo Bus App, CCTV surveillance and emergency panic

Place of origin:
Bhubaneswar, Odisha, India

Category:
Public Mobility System

Product Development Stage:
Commercially Available

Commercial information:
NA

Year of innovation:
Mo-Bus - 6th November 2018
Mo E-Ride – August 2021

Pricing:
Base Fare for Non-AC Mo Bus Services - ₹ 5.00 for 0-4 km
Base Fare for AC Mo Bus Services - ₹ 5.00 for 0-2 km
Base Fare for E-Ride – Flat fare of ₹10.00

Revenue model:
PPP model based on Gross Cost Contract

button inside the Mo Bus, along with the presence of separate washrooms for male, female and transgender in the depots further, cater to the safety and inclusion of women and transgenders and encourage the use of public transport systems.

The services of CRUT are integrated with Intelligent Transport Management System which includes Automatic Fare collection System (AFCS), Automatic Vehicle Locating System (AVLS), effective incident management through live tracking in dashboards, etc. More importantly, CRUT is the first public transport authority in India to have a disaggregated data collecting ticketing system based on age, gender and disability which further ensures effective managerial decision-making on transportation planning.

Benefits and Use Cases

CRUT's effective integrated planning, design and monitoring systems have been instrumental in strengthening the citizen's confidence in the Mo Bus service for creating a sustainable mobility ecosystem including the first and last-mile connectivity services through Mo E-Ride.

The 'Moving with Pride' initiative follows a public-private partnership (PPP) model with a Gross Cost Contract where the operators are paid by CRUT based on a fixed rate set based on the kilometres driven. CRUT earns through the revenue collected from the bus fare and advertisements in BQS. While CRUT is the regulatory body, the Operators are responsible for procurement and maintenance of buses along with maintenance of depots and recruitment and training of Captains (drivers). The Revenue Collection Agency hired by CRUT is responsible for ensuring accurate collection of revenue and the hiring and training of Guides (conductors). Dedicated teams are deployed to ensure prompt incidence management and grievance redressal.

Target Setting

Being a public transport service provider, the end users of CRUT comprise a plethora of people. However, inclusivity being one of the core values of CRUT, the system has been designed in a manner where minute details has been taken care of regarding ensuring that the services of CRUT are user-friendly, especially for women, geriatric population, children and people who are differently abled. From the point of view of an organisation, CRUT has been highly gender inclusive as far as its workforce is concerned. In fact, through its uniquely designed recruitment policy, it is not only women but transgender have also been mainstreamed in this profession of public transport which otherwise is a highly male dominated sector.

The social and gender-inclusive approach adopted by CRUT can be further replicated in other cities for effective integrated planning, design and monitoring systems enabled with smart technologies that enable inclusion for all.

For more information contact: crutbbsr@gmail.com

WINNING SOLUTION

Nirbhaya App

By Sagar Smart City Limited

Problem Addressed

During an emergency concerned with the safety and security of women, reaching out and communicating to the police by a victim and vice versa is always difficult. Since the matters are time-sensitive and lack of communication and information affects the decision-making required for taking appropriate actions.

Product Description

Nirbhaya is a mobile-based application developed by Sagar Smart City to push the agenda of women and girl safety forward including people with disabilities. The application has been designed to address the challenges related to instant action during any emergency concerning the safety and security of women and girls such as reaching out to police on time or locating and contacting the victim in time.

The application has integrated essential features such as GPS tracking, emergency contact numbers, and directions to safe locations, among others. It also provides instant redressal of complaints raised and registered on the application. The mobile app has been provided with an SOS button that can be enabled in case of any perceived danger. It allows the user to dial a pre-defined emergency number, in case no emergency number is fed into the application, an email and message are sent to Integrated Command & Control Centre or the Police Department as a system default. The application sends the user's location to the configured group through a GPS tracking system and allows the user to click pictures of the surrounding area from both the front and back camera, including attaching audio and video clips and sharing one's current location with the police and the user's pre-fed emergency contacts.

Benefits and Use Cases

In case the user is being followed, the application allows the user to send an image of the stalker through the application and share the current location. Further, for women's safety, the application allows the police to define safe and unsafe areas in the city and send important notifications to the users regarding the same. Alternatively, the Nirbhaya mobile application enables the users to pin all the safe and unsafe areas to ensure that the ground realities are being captured through the voices and experiences of women and girls in the city. It also assigns value or a score to the various areas in a city which is reflected as a 'safety score' of the respective areas so that it could be referred to in

Place of origin:
Sagar, Madhya Pradesh, India

Category:
Women Safety Mobile Application

Product Development Stage:
Ready for Implementation

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

a problematic situation for safety purposes by the user group. The application can be used on both mobile phones and tablets.

Target Setting

The mobile application is available for the citizens of Sagar Smart City Ltd. for free and has already been downloaded 4,579 times so far. Given the simple and participatory nature of the solution provided by Sagar Smart City for locating 'safe and unsafe' areas in the city, the solution can be easily replicated in other cities and organizations.

For more information contact: smartcitysagarmp@gmail.com

NeoFly & NeoBolt

By NeoMotion Assistive Solutions Pvt Ltd.

Problem Addressed

Finding customized and affordable outdoor mobility solutions that are fit to use as per the local environmental requirements remains a challenge for persons with disabilities in the country. The lack of locally trained human resources and accessible mass rapid transport further alleviates the problem of independent outdoor mobility. Combined, both these challenges severely impact independent self-care, economic independence, self-confidence, community participation and the overall quality of life of wheelchair users leading them to abandon their wheelchairs and get restricted indoors.

Product Description

NeoBolt and NeoFly by NeoMotion Assistive Solutions Pvt. Ltd. address the unavailability of appropriate indoor and outdoor mobility solutions. NeoFly, a user-friendly wheelchair available in 18 customizations that conforms to the user's body and needs, and NeoBolt, a motor-powered clip-on, seek to change the situation for persons with disabilities and enhance their health and lifestyle choices. NeoBolt together with NeoFly transforms the latter into a safe, roadworthy vehicle making it a low-cost outdoor mobility option. It has a maximum speed of 25 kmph and can travel up to 25 km per charge. While Neofly's wheelchair design with a 30% smaller footprint enhances its accessibility to narrow spaces and is efficient to propel, NeoBolt can be safely used on uneven terrains making it a reliable mobility solution. The cushion design and material provide stability, and ease in getting transferred, and are also skin-friendly. More importantly, the wheelchair design makes the user more visible than the wheelchair and the design of the wheelchair also enables the user to independently attach NeoBolt and eliminates the need to get transferred into other vehicles. In addition to this, there are two ancillary services provided by NeoMotion::

- **NeoFit:** It is a remote assessment platform that assesses the kind of wheelchair customisation required by using user measurements and data points on health and lifestyle. It generates a clinical prescription with the required details. Once this prescription has been approved by the user, the order is assembled and door-delivered.
- **NeoCare:** It is an after-sales service platform that provides the support required for making changes in wheelchair configuration, replacing damaged parts or guidance on usage remotely.

Place of origin:
IIT Madras, Chennai, Tamil Nadu, India

Category:
Assistive Transport Technology

Product Development Stage:
Commercially Available (Already Implemented)

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

NeoMotion is making these solutions affordable by providing instalment payment options through local partnerships. These services together contribute to creating a quality and affordable local ecosystem for assistive technology.

Benefits and Use Case

NeoFly and Neobolt have opened livelihood opportunities for people and have enabled people to go to offices independently. Companies such as Zomato are now onboarding people with disabilities for last-mile food deliveries as delivery executives in Chennai, Bangalore, Pune, Mumbai, and Patna, which initially was an opportunity open only to persons without disabilities. It is estimated that these people are now earning Rs. 9,000 - Rs. 10,000 per month. The founders have also reached out to India Post and national newspaper dailies such as the Hindu and the Times of India for seeking the inclusion of persons with disabilities as delivery persons for their services. Along with livelihood opportunities, the products enable students and staff with disabilities to go to college and universities and reduce their dependence on family and relatives for transportation.

Since NeoBolt can also be taken inside the metro, it has increased the use of intra-city metro facilities by persons with disabilities in Delhi, Chennai and Bangalore metro rail, thereby, improving end-to-end mobility for them. The product is cost-effective and can save up to Rs 9,000 in transportation costs.

Target Setting

Corporates have come forward and supported beneficiaries by providing them with NeoFly and NeoBolt at subsidized costs. CSR leadership has also taken into consideration the holistic and cycle-life of the products which has helped NeoMotion to change the lives of 300+ beneficiaries with funds of ₹ 2.5 crores. The product can be used by elderly, people with locomotive and other physical disabilities such as polio, spinal cord injuries, cerebral palsy, muscular dystrophy, and also people who have undergone amputation and were injured in the Army, Air Force and Navy.

For more information contact: sdaga@neomotion.co.in

Sarvekshan

By Institution for Disasters Emergency & Accidents (IDEA)

Problem Addressed

Data collection for evidence-based planning is a critical but difficult and extensive task.

Product Description

Sarvekshan is an evidence collection tool which helps collect primary data and conduct surveys. It is a hybrid product that integrates chatbot and HTML. Its ready-to-use features like the option of using multi-Indian languages, currently available in 11 Indian languages, have made it a ready reckoner for the Indian audience. The Sarvekshan dashboard enables the dissemination of survey links and multimedia (such as text, photos, videos, and GIFs) among target user groups. Once the media gets uploaded, it can be circulated through a link on communication platforms such as WhatsApp, Gmail, messages etc. The dashboard also has data presented as infographics however, the survey cannot be left in between unless the window has been closed completely. Further, to ensure that no data is lost before the survey is completed due to the tab/window being closed, the minimum capturing technology captures whatever data has been filled in the survey form and as it is a real-time data capturing dashboard, the survey implementer can view the data being populated in real-time.

Benefits and Use Case

Sarvekshan can be particularly important during disasters as it enables reaching out to people far and wide and collecting data to combat the disaster. The survey link can be disseminated by the government or any implementing organization for collecting data. The first 24 hours after the dissemination of the survey become crucial as the servers will be gathering data putting an additional load on the servers which can become a challenge in reaching out to the masses during such situations. Thus, Sarvekshan provides a ready solution that could give assured results for data collection from affected communities. The Sarvekshan tool was successfully used for evidence-based data collection for the Social Listening initiative developed by the World Health Organization (WHO) during COVID-19 to listen to and work with communities to understand and respond to concerns and strengthen their response to public health concerns and vaccination. The Sarvekshan tool has also been used across India during the COVID-19 pandemic by various stakeholders to share their perceptions and knowledge about the disease's prevention and control.

Place of origin:
Lucknow

Category:
Digital Data Collection Technology

Product Development Stage:
Commercially Available (Already Implemented)

Commercial information:
NA

Year of innovation:
2020

Pricing:
A monthly subscription of INR 60,000/-

Revenue model:
Subscription-Based

Target Setting

The tool can further be used by cities to collect data from marginalized and vulnerable communities on various health and social aspects to support in planning and implementation of better programmes and policies for these communities. The dashboard at the backend is usable for any department or body and can be accessed by all Indian states and even globally, thus making the tool easy to use. The tool is cost-effective, aesthetically appealing and also effective in data collection. Also, sign language videos can be used on this platform for attracting such evidence collection so that total inclusivity is addressed. The app could be further made usable for people with dyslexia, visual impairment, hearing and speech impairment and for people with no or limited education with the use of varied voice features, sign language videos, icons and photos.

For more information contact: info@innovoidea.in

Sahayatha

By Dhanvantri Biomedical Private Limited

Problem Addressed

According to WHO in India 30.8 million are mobility impaired, out of which 10 million require defecation assistance. About 4% of death results every year during the transfer of patients to the toilet. There is a pressing need for the mobility impaired population to make their Activities of daily living (ADL) easier and independent. Managing bedridden patients is an important issue and many people are involved in it and patients need round the clock assistance. Any reduction in the number of people involved and the amount of effort required is going to benefit a large section of society. A bedridden patient is unable to move or sit, has to take bedpan for normal physiological functions such as defecation & urination. Using a bedpan is cumbersome and uncomfortable.

Product Description

People with restricted mobility often face problems in defecating hygienically, independently and with dignity. They have to make multiple transfers from their place of sitting into a wheelchair and then to the bathroom and vice-versa. They are also highly dependent on their family and caregivers to carry out such basic needs.

Product Description

Sahayatha is a smart defecation cleansing assistive device created for people with restricted mobility. The defecation cleansing unit consists of a wheelchair which has inbuilt defecation and cleansing assembly and assists patients by allowing for a comfortable defecation process. The defecation unit also includes a switch for cleansing and a water jet spray angled at 60 degrees. In addition to this, the solution also reduces the number of transfers made by a person with restricted mobility transfers. It also reduces the number of assistants required to perform the act of defecation and eliminates the negligence that is associated with repeated manual care of patients and people with restricted mobilities such as persons with physical disabilities and the elderly. The solution makes the process of defecation assistance and cleansing hassle-free.

Benefits and Use Case

This solution can be used by patients and people with restricted mobility in hospitals and homes. The solution can be easily integrated with institutions such as hospitals and primary care centres for serving the needs of the patients. The solution also reduces the time and labour involved in assisting the patients particularly, in moving

Place of origin:
Coimbatore, Tamil Nadu, India

Category:
Assistive Defecation Technology

Product Development Stage:
Commercially Available (Already Implemented)

Commercial information:
GEM portal(OEM), Flipkart, Extended stores and on the official website at http://www.dhanvantribiomedical.com/

Year of innovation:
2019

Pricing:
Rs.39,999/- only

Revenue model:
Business to Business and Business to Customers

Revenue model:
NA

and waiting for the patient during their entire defecation process. It also prevents inpatient falls by 90% and reduces the number of caregivers for a single patient from 3 to 1. Improving the quality of mobility of persons with disabilities and patients by upholding their dignity enables their independence and social integration. Sahayatha can easily be used in old-age homes, hospitals, and homes.

Target Setting

Hospitals, retirement homes/villas and insurance companies that cater to the elderly and persons with disabilities can use this solution.

For more information contact: sruthi.b840@gmail.com

Wheelchair Accessible Transport

By Ezy Mov Solutions Private Limited

Problem Addressed

Cities in India are developing at a rapid pace and public transport infrastructure is gaining prominence with the introduction of metro and electric vehicle systems with slick features. All almost all forms of public transport are incorporating inclusive designs and making them wheelchair accessible. They have solved the middle mile problem, but the first mile and the last mile connectivity issue still persists.

The problem of a little is a problem of the plenty, in this case it is the mobility impaired. Wheelchair users have little or no access to benefit from the public transport infrastructure, as the question arises, who will take them from their house to access an accessible bus/metro. Autos/taxis/ ambulances have restricted access and can't accommodate a wheelchair user as they are not wheelchair compatible and hence, they become dependent on family and friends for their movement..

Product Description

Ezy Mov is primarily an essential transport company that provides dignified accessible transport services for people with limited mobility especially wheelchair users and senior citizens.

They have specially designed vehicles with hydraulic wheelchair lifts and restraint systems that enable the wheelchair user to travel while sitting in the comfort of his/her own wheelchair in a safe and convenient manner. The company has also introduced accessible E-rickshaws for the masses powered by lithium-ion batteries making them cheap and environment friendly. The services are affordable, convenient and risk-free and most of all it gives people the power to travel independently at their own will.

Benefits and Use Case

The company is best suited to offer first mile and last mile connectivity, the transport services can be easily plugged into the public transport infrastructure and provide all mile connectivity with ease.

Place of origin:
Mumbai, Maharashtra, India

Category:
Wheelchair Accessible Transport Solution

Product Development Stage:
Commercially Available (Already Implemented)

Commercial information:
NA

Year of innovation:
2015

Pricing:
NA

Revenue model:
NA

During the COVID-19 pandemic, the company was engaged by the Mumbai Municipality to run a campaign in high catchment areas including slums and lower-income housing colonies to transfer people with limited mobility to the nearest medical center. The Election Commission engaged the company to offer accessible transport solutions to voters in Mumbai, Goa and Ranchi and gave the wheelchair users an opportunity to vote.

Their service has enabled thousands of people to access healthcare, attend educational institutes, given many an opportunity to earn a livelihood and helped families to socialize and travel for holidays with this convenient transport service.

Overall, the service has been a boon to the needy and has improved their quality of life and has helped them come into the mainstream to build a better India.

For more information contact: romeo@ezymov.com

TurnPlus Assistive Technology Solution

By Truce Consulting Services Pvt Ltd

Problem Addressed

Most persons with disability and the geriatric population face the problem of getting in and out of cars. In India, there are very few automobile solutions that are completely engineered and developed to assist persons with disabilities in their day-to-day commute. The available solutions are mainly local modifications which are largely dependent on the local garage which makes them non-scalable and highly inconsistent. Safety and reliability are also important issues that are often left unaddressed. Imported solutions are expensive and have limited dealers in India, besides this, to make the solutions adaptable to the car, subsequent modifications have to be made to the car. In case of any problem with the product, serviceability is another concern. These solutions are also often not - frequently available, cost-effective and affordable.

Product Description

The patented solution TurnPlus is an award-winning independent assistive mechanism that helps people with easy ingress and egress in the car, improving the quality of travel and life easier for people with medical conditions. It is a completely engineered and scalable product, keeping in mind the Indian context of use. TurnPlus does not require any modification to the car and the existing OEM seat is used so the comfort and safety are intact. Installing this mechanism in taxis will encourage many people including persons with disabilities and senior citizens to step out of their houses and make choices they were sceptical to make. Along with this, Truce Consulting Services also have RamPlus, a ramp that is portable and can also be fixed.

Place of origin:
NA

Category:
Assistive Transport Mechanism and Device

Product Development Stage:
NA

Commercial information:
NA

Year of innovation:
2017

Pricing:
NA

Revenue model:
NA

Benefits and Use Case

Using the solution RamPlus as part of the taxi or the car to make places with 1 or 2 steps accessible can make a lot of difference to the life of persons with disabilities and the geriatric population. Together, a kit of TurnPlus and RamPlus in a car can ease the travel experience for people with disabilities. Having solutions like TurnPlus can be cost-effective as multiple people can use it on a daily basis. Thus, making it inclusive for all particularly for persons with disability and senior citizens to help them lead a more independent and fulfilling life.

Target Setting

There are over 250 users of the solution across India and D2C, B2C and B2B customers. The B2B customers include Microsoft, Lithium, Kickstart, Janani, and Titan, while the D2C users pan across India and vary across different age groups and disabilities. The B2C customers are the business partners that help educate and sell their solutions to the end customers.

Truce Consulting Services aims to make automobiles, especially cars and public spaces accessible for people with disabilities and the elderly, thereby improving their emotional quotient. Thus, Truce Consulting Services aims to make 10% of taxis in 10 major cities accessible and 10% of parks and temples accessible in 10 major cities in India in the next 3 years so that senior citizens and persons with disabilities can independently visit these places. Further, a business proposal with taxi owners that would encourage them to adopt TurnPlus and RamPlus solutions is being explored with regard to the same.

For more information contact: naina.padaki@trueassistech.com

Kotturpuram Infinity Playspace

By Cityworks

Problem Addressed

Children with disabilities have very few opportunities to interact and engage with other children in public spaces due to lack of infrastructure that is designed to be inclusive. They tend to be isolated in special needs schools. This lack of common play opportunities also desensitizes children without special needs to be empathetic. In addition to this, high quality public parks are very important for physical, mental and emotional health. Public parks and playgrounds are an environment for leisure activities that can be enjoyed by everyone at no cost. It is crucial for these places to be accessible and usable in terms of their design, environment (natural and built), and safety so that it does not restrict the participation of children and persons with disabilities. Providing an inclusive playing space where children with and without disabilities together can play which contribute to a rich range of physical, sensory, and social experiences for them.

Product Description

Kotturpuram Infinity Playspace addresses the development and growth process of children with and without disabilities. It also acts as a multi-generational gathering space for community activities involving leisure, socialization and imaginative fun. Since city parks have an important place in terms of the participation of individuals with disabilities in social life and physical functions, ensuring physical fitness in urban parks has become a fundamental responsibility. It is also linked to having a fully involved social life. To ensure that even people with disabilities benefit from all possibilities of social life equally as other individuals do, the Kotturpuram Infinity Playspace has a wheelchair-accessible play station with many fun elements such as an infinity walkway, stepping stones and table games. For providing a multi-sensorial experience to all children, safe swings, a play tunnel, and wheelchair merry-go-rounds are installed.

Benefits and Use Case

The design accommodates a wide range of individual preferences and abilities giving users a choice in how they want to engage in each activity. It communicates necessary information effectively to the user regardless of ambient conditions or the user's sensory abilities. Elements such as sensory stimulation, social and imaginative play, safety, comfort, access, etc. have made the space more welcoming to all. The benefits are immense; children with disabilities

Place of origin:
Chennai, Tamil Nadu, India

Category:
Inclusive Park Design

Product Development Stage:
Commercially Available (Already Implemented)

Commercial information:
NA

Year of innovation:
2019

Pricing:
NA

Revenue model:
NA

get an opportunity to socially interact with other children with and without disabilities, and they improve their gross and fine motor skills, which are necessary for development.comfort, access, etc. have made the space more welcoming to all. The benefits are immense; children with disabilities get an opportunity to socially interact with other children with and without disabilities, and they improve their gross and fine motor skills, which are necessary for development.

Target Setting

Overall the park creates an environment which fosters play between all children and highlights the possibility that with sensitive intervention we can universally enhance the experience for the entire community and bring out the child in all of us.

For more information contact: kavitha.selvaraj12@gmail.com

Handicare

By Oneceptual Technologies LLP

Problem Addressed

Persons with locomotor disabilities that use boards with wheels for travelling often face problems related to health and hygiene while pushing these boards with their hands. This includes blisters and cracks that develop on their palms while pushing the board as well as a lack of hygiene that gives rise to various diseases and causes other health problems. Along with this, sometimes while moving the board, the clothes worn get stuck in the wheels and get torn thereby causing a loss of dignity. People with disabilities often have less muscular strength and are prone to experience a lot of pain in their hands, shoulders and spine when they push the board with their hands.

Product Description

Handicare is a simple device created to make transportation easier which does not require any external power source like a battery or fuel. To make it a simple easy-to-use product that is manually operated, the design leverages the natural forces of friction, centrifugal force, inertia and gravity. It has two handlebars for manoeuvring in left and right directions and a set of friction wheels in the front. When the force is applied to the wheels, due to the friction created between the wheels and the ground, the board moves forward. Stronger friction between the ground and the wheels will make the device move more easily. The handlebars need to be moved more frequently to reach higher speeds. It has a carrying capacity of 120 kg and requires nearly zero maintenance. The device is handy and portable enough to be carried anywhere - both indoors and outdoors, without anyone's guidance or assistance, thereby enabling the user to become self-dependent and move with dignity.

Benefits and Use Case

The product design enables the user to use the board without putting their hands on the floor, thereby ensuring their health and hygiene. The product is ergonomically designed in a way that even a person who has lost one of the upper limbs can drive it. The wheels at the front provide high stability to the user and prevent falls even if the surface is uneven, and also prevent tearing of the user's clothes while using it. The vehicle can also be used for indoor purposes where other vehicles like wheelchairs cannot be used. The basic advantage of this device is that it can be used in narrower places like washrooms and bedrooms where other devices cannot reach due to its size. This device can be termed 'Eco-friendly' since it does not require any kind of external power sources like fuel (petrol, diesel, gas) or batteries, etc. The vehicle also does not consist of heavy mechanical components like a gear or a pulley. Thus, making the device safe and convenient to use.

Place of origin:
Ahmedabad, Gujarat, India

Category:
Assistive Mobility Device

Product Development Stage:
Commercially Available (Already Implemented)

Commercial information:
NA

Year of innovation:
2019

Pricing:
NA

Revenue model:
NA

Target Setting

Handicare is available to users directly i.e. direct individual buyers, and also, through government schemes such as Assistance to Disabled Persons for Purchase / Fitting of Aids and Appliances (ADIP), Deendayal Disabled Rehabilitation Scheme (DDRS), Accessible India Campaign (AIC) and CSR orders. The estimated percentage of purchases through the former is 11%-12%, while the latter is 89%. The aim is to also provide a multi-purpose vehicle that can be operated outdoors and indoors and the vehicle will be distributed to users not only as a mobility solution but, also to support the user to earn a livelihood.



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Planet Abled

By Planet Abled Private Limited

Problem Addressed

Travel and leisure experiences for persons with disabilities often remain overlooked by the industry, since they are not considered potential regular paying customers. Though a few solutions exist in some countries, the focus is largely only on a single disability that leads to discrimination against people with other disabilities.

Product Description

Planet Abled aims to make travelling inclusive for everyone - people with disabilities, older people, with friends and/or family where they have the freedom to travel to the desired place, with the choice of the persons during their preferred time. It has designed inclusive trips that allow everyone including all persons with disabilities to travel the way they desire. This includes travelling solo, on a romantic getaway, rafting, skiing, hiking, including joining an inclusive group of strangers to become friends. The group trips are inclusive where any person with a disability and persons without disabilities can travel together and make the most of the trip. The strategy followed by the team includes making the destinations accessible and inclusive, training and sensitising the staff and the whole ecosystem, and making information and communication accessible for everyone including assistive technology solutions across the traveller's journey.

Benefits and Use Cases

The benefits of such trips include disability awareness among people, and learning about cross-disability in various disability groups. For instance, blind people understand the challenges of deaf people and wheelchair users understand the challenges faced by autistic people, among others. Moreover, it also helps persons without disabilities to overcome their apprehensions about persons with disabilities.

Target Setting

NA

Place of origin:
NA

Category:
Inclusive Travel Service

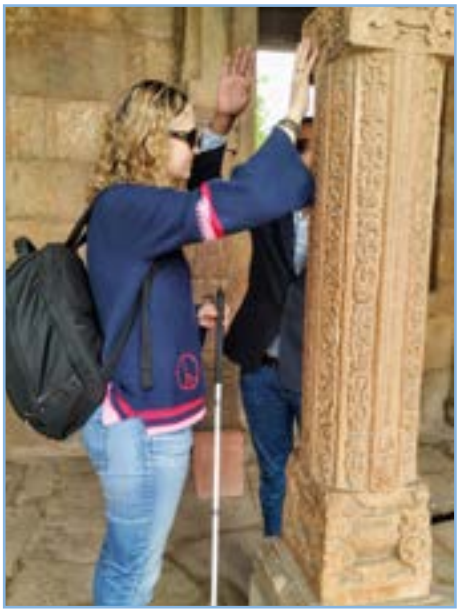
Product Development Stage:
Commercially Available (Already Implemented)

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA



For more information contact: neha@planetabled.com

Sensory Park

By Bhubaneswar Smart City Limited

Problem Addressed

Aspiring to be India's first child-friendly city, Bhubaneswar needed play spaces that would suffice the needs and interests of children, which are accessible and inclusive. In the process, the importance of exclusive places for children with disabilities that caters to multiple experiences and brings about a child's physical, cognitive, and psychological development was realised.

Product Description

The sensory park at Bhubaneswar is designed primarily to focus on the all-around development of children with and without disabilities. It was developed to provide children with disabilities equal opportunities for outdoor play and social interaction with other children and their surroundings. The project development followed a participatory approach.

With a spread of 1500 sq.m., the park is colourful and vibrant. Its design and layout make one undergo a stimulating journey of senses and heighten cognitive awareness that brings positive and safe learning experiences to children with disabilities. It has a variety of elements that stimulate the senses and improve sensory integration for children with physical disabilities. The design of the park, the inclusive play spaces and the pieces of equipment such as the music wall, braille wall, wobble bridge etc. are specifically designed for children in different age groups and for a varied disability. It engages the children in a fun and safe way. The reflexology path with concentric circles has different textures and surfaces, and creates different pressures on the feet that helps in reducing stress and anxiety, and improves immunity. The current park design is guided by old existing trees, such green landscape elements along with the colourful flowers provide visual delight as well as climatic comfort. This is complemented by the vibrant flooring patterns that play a prominent role in heightening the senses and making the park more welcoming.

Benefits and Use Cases

This solution provides a way forward featuring inclusive governance and recreational infrastructure for the citizens of Bhubaneswar, the sensory park excels with the state-of-the-art design. The 'play together' scenario drives the kids to participate, interact with other children, thereby improving their behaviour, mood, self-esteem, and confidence, and helping them overcome their fears while becoming compassionate and empathetic towards other children. The park empowers the children to be a part of a larger environment by providing them easy, safer access to all the built and non-built public spaces. It not only ensures barrier-free access to all but also provides a platform for

Place of origin:
Bhubaneswar, Odisha, India

Category:
Inclusive Park Design

Product Development Stage:
Commercially Available (Already Implemented)

Commercial information:
NA

Year of innovation:
2017

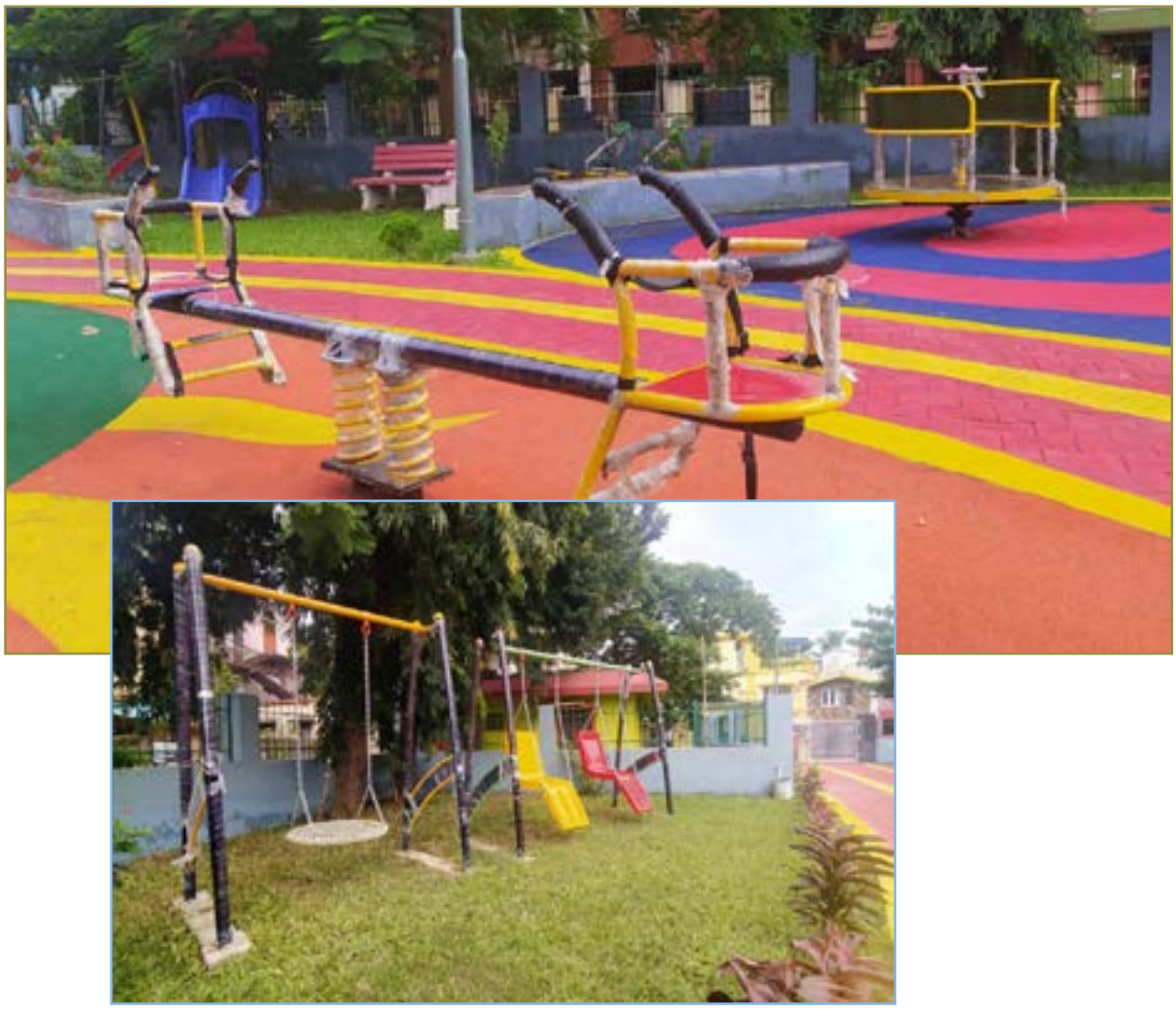
Pricing:
NA

Revenue model:
NA

the diverse socio-cultural and physical backgrounds of the city to intermingle and embrace Inclusiveness in its truest sense.

Target Setting

This idea is being widely accepted and a similar model can be replicated at other locations in the city. It could also be adopted as a public component for places such as hotels, libraries, stadiums, auditoriums, airports, etc. A dedicated space provided by the solution, would certainly be an added advantage to all people and across all strata.



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Pink Centres - Safe Centres

By PVR NEST

Problem Addressed

The research by PVR NEST found that women's toilet facilities were operated and maintained by men, the infrastructure of public toilets was dilapidated, open defecation was a concern, the absence of well-lit premises was a threat to women's safety and there was a lack of employment opportunities for undereducated women.

Product Description

Pink Centres is a free-to-use, women-exclusive sanitation facility equipped with WASH Champions i.e. women staff trained in best practices related to water, sanitation and hygiene. The initiative is led by PVR NEST, it operates in a public-private model of partnership in the development of safe and inclusive initiatives. The idea emerged when the National Commission for Protection of Child Rights (NCPCR) and Municipal Corporation of Delhi brought PVR NEST on board for building safer toilets in 2017.

Pink Centres are considered to be unique among their contemporaries because these sanitation facilities are "Beyond-Toilets". The centres have various hygiene amenities such as vending machines with subsidized Menstrual Health Management (MHM) consumables, a breastfeeding area, resting space, a bathing facility (at limited locations), 12X7 water-electricity connection and well-lit premises for safety purposes. The centres cater to the all-around grooming needs of women and young girls through provisions of bathing space, reading space, resting space etc. and their essential sanitation needs through subsidized menstrual hygiene consumables. Apart from providing safe sanitation facilities, the focus also lies in employing women from socially disadvantaged backgrounds by upskilling them through a myriad of workshops so that they can use the skills and knowledge in their future ventures. At the Pink Centres, 50+ women workers are provided essential vocational skills through workshops on WASH practices, including plumbing, CPR, self-defence, financial literacy, etc.

Place of origin:
NA

Category:
Accessible and Inclusive Toilet Design

Product Development Stage:
Commercially Available (Already Implemented)

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

Benefits and Use Cases

The influence of WASH Champions and Pink Centres has fostered a positive behavioural change among women towards public-private sanitation. These trainings have been influential in providing community facilities for women empowerment, shifting the societal narrative around women sanitation workers, and building a well-rounded, sustainable, dignity-rich living for our WASH Champions. They have garnered a consistent rise in users' participation at the Centres which was 427,669 in 2021 and 76,320 as of April 2022. It is a rare and impactful initiative for women, children, persons with disabilities, older people and transgender persons, one that provides high-quality, essential and consumable sanitation, and also aims to upskill the workers.

Target Setting

The centres can also set a precedent for the government to replicate similar centres in future that would promote women empowerment and make sanitation equitable for all. Pink Centres can be upscaled in - a) the Health & Sanitation sector with the provision of high-quality toilet facilities and essential sanitary consumables; b) the Market Sector with the provision of co-working space for small businesses in the community, promoting local businesses; and c) the Education Sector with space for local teachers to impart their basic education and skills to the WASH Champions.

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Sarathi

By Guruprasad Tumkur

Problem Addressed

As the number of senior citizens and persons with temporary and permanent disabilities is increasing, it is essential to make provisions so that they can travel comfortably and independently. According to the survey conducted, the current travel ecosystem does not allow easy travel for such people with disabilities and the elderly, often leading them to travel stressfully or avoid it completely.

Product Description

Sarathi is Coimbatore's first wheelchair-accessible transportation service that provides a safe, convenient and reliable commute for senior citizens and individuals with mobility impairment to any location inside and outside the city. It is a readily available and affordable service created to ensure comfortable travel. Currently, Sarathi fleet comprises of a van that has been redesigned to accommodate one wheelchair, two independent seats, a 6"x2" long sofa bed and a chemical toilet with a swivel seat. The driver has been trained and sensitized to assist wheelchair users. The wheelchair is pushed up a foldable ramp placed in the rear of the vehicle. Currently, Sarathi has one van in service and is available 7 days a week.

Place of origin:
Coimbatore, Tamil Nadu, India

Category:
Accessible Van Design

Product Development Stage:
Commercially Available (Already Implemented)

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

Benefits and Use Cases

The service ensures hassle-free travel for people with disabilities, senior citizens and ladies with urinary incontinence, thereby improving their standard of living. The service creates an opportunity for people interested in doing socially relevant work that can also sustain them economically. The drivers and attendants associated with the service get a decent take-home earning.

Target Setting

The service has been running for five years now, the plan is to increase the fleet, and extend the service to other Tier-II cities and then to the bigger cities.

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Independent and Proud Living for Deaf

By Dr. Srinivas Puppala

Problem Addressed

Owing to their disability, persons with hearing and speech impairment were earlier denied driving licences. Though they can now avail a driving licence, it is important to provide them with proper driving training. Lack of proper training deprives them of owning a car which will give them the opportunity to lead independent lives as well as take up livelihood opportunities. A study was conducted to understand the problems faced by people with hearing and speech impairment and the major issue from the study was the inability to hear the sounds related to approaching vehicles.

Product Description

The study observed that this problem can be overcome by paying attention to the traffic around in the side-view and rear-view mirrors. Hence, under the initiative of Dr. Srinivas Puppala, 40 persons with hearing and speech impairment were trained at the RTA office auditorium in Karimnagar District of Telangana. Persons with hearing and speech impairment were trained on road regulations, passing the theory and practical test, and were taught important road safety tips and defensive techniques, etc. to help them during driving. The training was conducted with the help of sign language interpreters Additionally, as a safety measure to alert other drivers on the road about a car being driven by a disabled person (Deaf), a sticker was given to the trainees to be pasted on the front and rear sides of the vehicle. The sticker had a logo in red colour with the words "Driver is Deaf - Please Pay Attention". This initiative was first tested with one person in Ranga Reddy District, whose success led to the organisation of the training with 40 Deaf people in Karimnagar District.

Place of origin:
Karimnagar and Ranga Reddy, Telangana, India

Category:
Driving Training Program

Product Development Stage:
Commercially Available (Already Implemented)

Commercial information:
NA

Year of innovation:
NA

Pricing:
NA

Revenue model:
NA

Benefits and Use Case

The initiative aims to build confidence and empower the hearing and speech impaired people so that they are not dependent on others for their transportation needs, and can attend to their daily needs such as commuting to work, to market and other places. Therefore, the same training and capacity-building solutions can be replicated throughout the country.

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Real-Time Passenger Information Display System (RPIDS)

By New Town Kolkata Green Smart City Corporation Limited (NKGSCCL)

Problem Addressed

To access and improve the efficacy of any public transport, it is important to have access to the real-time schedule of the transport vehicles. Not having real-time information creates hurdles and delays in planning daily commutes. Knowing this information in an accessible format especially becomes important for persons with disabilities.

Product Description

The RPIDS is an automated system that provides real-time information and updates about the nature of public transport service through visual, voice or other media to the passengers, especially for passengers with visual and hearing impairments. The solution is installed across the city where the data is being captured for 29 bus stops and approximately 441 buses, currently covering the bus routes plying through the New Town. Installation of this system to bring more bus stops and buses under data capturing is in progress. The system combines data from automatic vehicle location systems such as GPS, real-time traffic data and RFID tags on buses. Taking into account that public transport services do not always operate as per the prescribed timetable, hence, to assist passengers in planning their journey better, static information about the bus schedule is combined with real-time information. The information is then disseminated via LED displays and automated public address systems. The existing features of data collection, data availability, monitoring and maintenance of the system, and accessibility and inclusion initiatives add significant value to the solution.

Place of origin:
Kolkata, West Bengal, India

Category:
Real-time Transport Information Display System

Product Development Stage:
Already Implemented

Commercial information:
NA

Year of innovation:
2022

Pricing:
Free Public Utilty

Revenue model:
NA

1. Multi-Source Data Collection: The system collects data from multiple sources including government bus depot managers, West Bengal Transport Corporation's (WBTC) Pathadisha App, Google Traffic Data, RFID readers at bus stops and GPS.
2. Data Availability: The RPIDS display and computing devices installed at each bus stop are network independent and use real-time RFID data to detect bus locations which can display accurate information even when the connection with the servers is temporarily lost.

3. Monitoring and Maintenance: To prevent unwanted downtime and shutdown of the RPIDS, there is the provision of automated health monitoring and maintenance-based analytical reports of the system. To ensure the highest level of uptime and the lowest disruption of citizens' benefits, the Smart Connected Health Monitoring feature enables real-time monitoring of RPIDS so that problems in the system can be rectified at the earliest through the following four components;
   - » Automated Vandalism Detection System enables logging of any unwanted breakage
   - » Automated LED Display Performance Check and Analysis provides real-time analysis of any malfunction in the display
   - » Auto-Detection of Power Outage and Reporting
   - » Battery backup for the Health Monitoring System enables the solution to produce data points about its health, location, power connectivity and other parameters without any dependencies.
4. Accessibility and Inclusion: The RPIDS system ensures accessibility to all by using a combination of visual, voice and auditory alerts. The visuals are displayed in high resolution with black backgrounds and large amber colour fonts for long-distance viewing, making the display both aesthetic and functional as per international standards. To enable people with visual impairment who are unable to read English to get access to the bus information data, all bus arrivals and departures are announced in English and Bengali languages by an automated public address system. Alarms and audio tones are played to alert passengers who might be unable to read the LED screen information. The RPIDS bus stops are brightly lit and under CCTV surveillance to ensure the safety and security of all.

Benefits and Use Case

For transport personnel, automated data collection from Google Traffic data, RFID, GPS, and Bus Depots reduces manual data collection, thereby facilitating their time for other value-added tasks. Passengers can use real-time information to assess delays in services and plan their journeys accordingly, leading to an increased usage of public transport. The availability of real-time information also increases the participation of economically disadvantaged sections of society in the economy, who due to lack of access to smartphones cannot view bus schedules. It facilitates women's inclusion and empowerment too since they can plan their travel better and participate in the workforce.

Target Setting

This system is useful for all citizens including persons with disabilities, women, and elderly It can be used to innovate, monitor and improve transportation systems, vehicle tracking systems, smart logistics, tourism etc.

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Car Transfer Seat

By Acc-Red

Problem Addressed

Old people, and people with temporary and permanent disabilities, all face mobility and accessibility issues which make them dependent on others for their most minor needs, affecting them emotionally and compromising their confidence. Thus having a solution that makes their life easier and simpler is necessary.

Product Description

A car transfer seat solution that uses plug and play model has been created that can be used to transfer people with disabilities from bed to car securely and without much effort.

Benefits and Use case

The seat transfer car makes the lives of caregivers, family members and wheelchair users easier. Installing the seat is easier without the need to modify the vehicle. Enables people with limited mobility to travel with ease at any time. Enables persons with limited mobility to easily access healthcare, education and employment and live independently.

Target Setting

Currently, the developer has applied for ARAI certification. Once the approval is received, the next step will be to partner with banks for easy instalment and insist the taxi aggregator install the seat in their vehicle. Since the product does not temper with the warranty and guarantee of the vehicle, is easy to install, hence scaling up the model on the pan-India level will be taken up. Approaching the car manufacturers to list our product as an approved accessory product so the solution can be used to provide first and last-mile connectivity making wheelchair users independent.

Place Of Origin:
Mumbai

Category:
Solution for people with locomotor disabilities to travel with dignity

Product Development Stage:
Commercially Available

Commercial Information:
NA

Year Of Innovation:
2022

Pricing:
NA

Revenue Model:
NA

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#Innovate4Inclusion

BASIIC Page

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