

OnBoard: Bus Identification Device, Pilot Trials on BEST Mumbai, February – April 2015

Device to help visually impaired persons board buses

OnBoard is globally a first-of-its-kind device developed by ASSISTECH Group, IIT Delhi that facilitates boarding of public buses by visually impaired persons. The device helps users to not only identify the route number but also to locate the door of the bus, thus addressing their needs comprehensively.

Device

The device works on radio frequency and consists of a very affordable, small user module and a bus module with a speaker fitted next to the front door of the bus. The system has a very simple user interface.

Partners

Apart from BEST, both Xavier's Resource Centre for the Visually Challenged (XRCVC), Mumbai and Mumbai First have played a key role, taking the initiative to organize the trials in Mumbai. XRCVC has not only organized the users including their training and feedback but also provided all logistical support to the team from IIT Delhi to conduct the trials. XRCVC has undertaken this initiative as part of Project Access along with Sightsavers. Mumbai First has helped in setting up meetings with key BEST officials to ensure a seamless coordination of the operation.

Background

The device was first tested with a small number of users on cluster buses operated by DIMTS in Delhi. The Mumbai trials was the first instance when a full scale real life unsupervised testing of the system has been undertaken. The trials have been conducted for more than two months starting 31st Jan 2015 and concluding on 8th April 2015. During this period two phases of testing were undertaken. The first phase saw OnBoard units fixed on 16 buses on route numbers 121 and 134 which led to over 100 supervised boardings by visually impaired persons.

The second full scale phase of the trials saw the units fixed on all of the 24 BEST buses covering route numbers 121 and 134 operated from BEST Backbay depot. Nearly 20 visually impaired users conducted nearly 350 unsupervised boardings during this phase, establishing the utility of the device in real settings. The pilot trials of the project were largely funded by Department of Science and Technology (DST) under their TIDE (Technology Interventions for the Disabled and Elderly) scheme. The balance funding was routed through the Project Access – an XRCVC-Sightsavers Initiative. The project now aims at approaching both government as well as corporate houses for funding the next round of trials.

Preliminary Trial Results

The initial trends from the Mumbai trials have reflected the following:

- Users have shown an overall increased independence in boarding public transport buses.
- As a result of independence in travel, users have exhibited great levels of satisfaction about the experience and are looking forward to speedy real time deployment of the system, as there has been a near unanimous agreement on the need and use of such a system for independent travel by the blind and low vision commuters.
- Through the trials, there has been increased awareness and sensitization of the BEST drivers and conductors on the said routes as also the Backbay depot staff, who have also shown great satisfaction with the system and keenness on the BEST being able to take this up to facilitate independence for the blind and low vision commuters.
- The trials have reflected very good quality feedback both in terms of the users as also BEST staff on real life modifications necessary in the device that will go a long way in improving the system for the next phase.
- Along with testing for this system which helps in independent boarding, two clear needs have been highlighted in a lot of user feedback to make the entire travel experience holistically independent and accessible.
 - i. The user's ability to independently identify the bus stop on the ground when reaching the stop for boarding and access to data of which routes come on the bus stop, and
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- ii. The need to make the deboarding experience accessible (in terms of the user being able to identify the approaching bus stops).

Follow Up on Trials

The report based on the analysis of the trial data would be ready by July 2015. This period would also be used to improve the design by incorporating the feedback obtained in these trials. The logical next step would be to scale up the trials with a larger number of buses as well as users.

Quotes from developers and partners

Prof. M. Balakrishnan, Principal Investigator and Mentor, ASSISTECH, IIT Delhi: It was due to the initiative of Mumbai First, efforts of XRCVC in user engagement, the facilitation provided by BEST and sponsorship provided by DST under their TIDE program, that has made this pilot trial possible. Nearly 350 unsupervised boardings by around 20 users over the last two months have given us immense confidence as well as feedback to take the project forward. We do hope this partnership would continue till we are able to successfully meet this key mobility challenge of visually impaired.

Dr. Sam Taraporevala, Director, XRCVC: The XRCVC is committed to promoting independent living for the visually challenged. This collaborative report we hope will actively contribute towards ensuring that the commuting experience will soon become pleasanter for the visually challenged.

Dr. JagdishPatil, General Manager, BEST: The BEST is committed for safe and comfortable travel experience to all our commuters. We are very happy to collaborate with ASSISTECH Group (IIT Delhi), Xavier's Resource Centre for the Visually Challenged (XRCVC) and Mumbai First to promote 'On board', a first-of-its kind device that facilitates boarding of public buses by Visually Impaired persons.

Shishir Joshi, CEO, Mumbai First: Convenience of travel, or the lack of it, is arguably the single largest contributor to the stress levels of the Mumbai commuter. It is important that every segment should deservedly have ease of commute. At Mumbai First, we are glad we are contributing in our way to make Mumbai a better place for its citizens to live and travel better.

Ketan Kothari, Manager (Advocacy) Sightsavers India: This trial will go a long way in ensuring accessibility of the most trusted road public transport system in the city of Mumbai.

User testimonials

VivekanandManthalkar, 42, an aviation sector employee from Navi Mumbai, said, "Hats off to everybody involved. This would make life much easier while commuting."

TruptiVazirani, 44 a banking professional from Kandivali said, "This device has added advantages. Conductors hear the device and come right to the front of the bus to make sure we have bought our tickets. The driver too waits for us to board the buses."

Deepak Kumar Jaiswal, 21, a student of St Xavier's College, said, "It is a wonderful initiative and will definitely bring a great change in our lives."

EkinathKhedekar, 30, a management professional, said, "I felt the sense of independence and enjoyed waiting at the bus stop for a change."

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