

DELHI METRO: MOBILITY FOR ALL

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SUMMARY

To provide accessibility in urban transit systems, an invaluable tool is user feedback. While interventions for inclusive design have seen specific changes in existing systems, Delhi Metro Rail Corporation (DMRC) was the first public transportation system in India to be designed with a holistic approach towards universal accessibility. This comprehensive planning approach translated into accessible trains, stations, services and facilities. Buttressed by its educated and enabling support staff, the empowerment it provides not just in terms of access but in attitude, acceptance and understanding highlights the crucial role accessibility can play in society.

It is important, therefore, to emphasize the experiences of diverse users and document their feedback, both positive and negative. This will not only inform better design and implementation, but also, give impetus to more inclusive design. Towards the goal, this paper documents the experience of a first-time wheelchair user of the Delhi Metro.

DMRC during the policy and planning stage itself included the access needs of people with diverse disabilities with the help of Samarthyam, a civil society organization promoting universal access in the Asia Pacific region, who advocates for the needs of the Persons with Disabilities (PwDs). It conducted the first Access Audit during the construction of Seelampur station (renamed Welcome station) in March 2002; Delhi Metro service began in December of that year. Sensitization workshops for policymakers and stakeholders were also conducted during this time. DMRC is committed to making the Metro system accessible in its growth plan and has always been receptive to constructive feedback, regularly conducting access audits at stations opened since, to make them user friendly and safe. In addition, to improve shortfalls in accessibility in future phases of the Delhi Metro, it constantly elicits feedback and studies its successes and deficiencies to create a better system.

The cooperation and coordination between the user groups and the implementing agencies, makes the system accessible, credible and user friendly and, at the same time integrates PwDs into the mainstream society. It has demonstrated how an accessible system creates safe, comfortable and equitable infrastructure, not only for persons with disabilities (PwDs), but also those with reduced mobility, people with health problems, for example, respiratory, cardio-vascular, joint problems or

temporary ailments; senior citizens; pregnant women; families with young children and people with heavy luggage.

Delhi has set the lead in accessible transportation. The developments and the initiatives/policies undertaken here are keenly followed by the rest of the country.

Key Words: Delhi Metro; accessibility; universal design; user experience; feedback

1. INTRODUCTION

Every individual, including Person with Disabilities (PwDs), has the right to travel and to use public transportation with dignity and independence. It is a fundamental right of all citizens regardless of their abilities and disabilities, since travel is usually a daily necessity for education, employment, medical attention, and entertainment.

Obstacles in existing transportation systems i.e. vehicles, terminals, and operations induce fatigue, restrict educational and employment opportunities thus causing frustration. It hinders the right to freedom of movement, equal participation and access to health and other social services.

Delhi, capital city of India has set the lead in accessible transportation. The best example is Delhi Metro Rail Corporation (DMRC), a joint venture of Government of India and Government of National Capital Territory of Delhi serving Delhi, Gurgaon and Noida of India. The developments and the initiatives/policies etc. undertaken are keenly followed by the rest of the country.

2. DELHI METRO RAIL CORPORATION

To its credit, the Delhi Metro from its inception wholeheartedly embraced the need of access for PwDs. Samarthyam, a civil society organization promoting universal access in the Asia Pacific region, began advocating for the access needs of PwDs from the early stages of the project. Samarthyam approached DMRC with the objective of ensuring that the design of all the stations is in consonance with the diverse access needs of PwDs. It conducted the first Access Audit (accessibility check) during the under construction Seelampur station (renamed Welcome station) in March 2002 along with DMRC engineers & architect. The access audit team comprising people with diverse disabilities and a checklist, observed:

- drop off lanes and parking to the station entrance, ticket & automatic fare collection (AFC) counters;
- proposed placement of guiding path & warning strips;
- lifts & stairs;
- approach to the platform and toilets proposed to be built outside the Station; boarding and alighting the coach;
- public announcement system and digital displays on the platform and coach.

It submitted its suggestions and recommendations supplemented with photographs to DMRC for implementation.

Sensitization workshops for policymakers and stakeholders were also conducted during this time.



Fig 1: Access Audit of Metro



Fig 2: Workshop for Stakeholders

DMRC welcomes the user group perspective and invited Samarthyam for access audits and inputs on other metro stations/services from time to time. The media highlighted the cooperation and coordination between Samarthyam and DMRC for barrier free Delhi Metro, playing a role in promoting its accessibility. The first stretch of 8.3km with four Coaches and six Stations were inaugurated on 24th December 2002.



Fig 3: Inaugural Delhi Metro ride on 25th December 2002

The DMRC has set an example for Universal and Inclusive Design in India. The built Stations provide features such as designated parking for PwDs; ramps with hand rails; guiding paths and warning strips for vision impaired persons; bright colour contrast for low vision persons; large lettering and information displays and signage; lifts with lowered control panel with Braille and raised control buttons and auditory signals, wide doors and grip rails on the sidewalls of the elevator car; resting areas for senior citizens and disabled persons; well lit corridors; and, widened ticket gate to accommodate wheelchair users. Inside the coaches, there are designated spaces for wheelchair users, audio announcement with dynamic display and sensory door closing mechanisms.



Fig 4: Ramp Access to Station



Fig 5: Colour contrast Signage Overhead



Fig 6: Way finding Overhead Signage



Fig 7: Directional Signage

Also Metro Sahayaks (or Metro Helpers) are present at stations to provide assistance at all times. They are invaluable not only for PwDs, but also for senior citizens, new users and others unfamiliar with the system.

DMRC was committed to making the Metro system accessible in its growth plan and was always receptive to constructive feedback, regularly conducting access audits at most stations opened since to make them user-friendly and safe. Samarthyam later provided inputs for further improvements which included the following: lowering the ticket counter height/single window facility; distinct sound beeper for orienting vision impaired persons; and transit ramp to bridge horizontal and vertical gap between the coach and platform. The toilets constructed by a private agency for PwDs required modifications in its design. Samarthyam forwarded the design of an accessible toilet to DMRC and the private agency. The Chief Architect, DMRC is following up on all suggestions.

3. LEGISLATIVE IMPETUS

The Persons with Disability (Equal Opportunities, Protection of Rights And Full Participation) Act 1995, requires non-discrimination in built environment and transportation. Provisions of the minimum standards of accessibility for the Delhi Metro are based on the PWD Act 1995 and its standard requirements and guidelines. In consonance with the UNCRPD, signed and ratified by the Government of India (GOI) in 2008, accessibility in the Delhi Metro was promoted to 'eliminate barriers that people with disabilities face in transit systems.

4. CURRENT SCENARIO

Currently, the Ministry of Social Justice & Empowerment, GOI is working with Disabled Peoples Organizations (DPOs) & Civil Societies on the legislative changes required in harmonizing the PWD Act with UNCRPD. The new Bill on Rights of Persons with Disabilities, 2012 to fulfill its commitment as a signatory to the convention is in the works. In the new Bill the paradigm of accessibility changed more and more towards Universal Design i.e. design for all and universal accessibility, which brought about a necessity of change in the current legal framework. In short, the basic principles of the new Bill are universal accessibility, non-discrimination, independent living, design for all, civil dialog and measures of positive action. Its goal is to meet these principles by replacing the old conceptual framework focused only on barriers removal, encouraging new points of view which are considered more appropriate to achieve seamless journey and inclusive infrastructure.

5. IMPACT OF DELHI METRO

Examples from the Delhi Metro validate this paradigm shift, represented by the diversity of users of this public transportation system. It has demonstrated how an accessible system creates safe, comfortable and equitable infrastructure, not only for PwDs, but also those with reduced mobility, people with health problems for example respiratory, cardio-vascular, joint problems or temporary ailments; senior citizens; pregnant women; families with young children and people with heavy luggage etc.

The daily ridership of the Delhi Metro has reached 22 lakh (2.2 million) people in August 2012. It covers a length of over 189km with 142 stations, underground and elevated, and 6 lines, across the National Capital Region (NCR) (Delhi Metro, 2012). It serves a population of 1.68 crores (16.8 million) across Delhi, Gurgaon, Noida and Ghaziabad (Census, 2011). By 2021, it aims to comprehensively serve the entire region. Phase 3 and 4 of the system are currently under construction.

Daily trips account for 49% of the all trips on this mass rapid transit system, while 34% use it occasionally. Work trips cover 59% of total trips made. Research shows that 82% of the commuters have shifted from public modes which include, bus, chartered bus, Rural Transport Vehicles (RTVs), minibuses, taxis and auto. It constitutes a sizeable number of the population. Since majority of this segment belong to lower and middle-income group, it is beyond their economic capacity to use private

taxis/three wheeled auto rickshaws or purchase their own vehicle and are therefore dependent on public transport. The remaining 18% shifted from private vehicle owners, which includes two wheelers (scooters and motorcycles) and cars, rickshaw (Bhandari, K et al, 2009).

Accessibility, comfort, safety and time-saving were ranked the main reasons for this shift.

6. PURPOSE

To provide and promote accessibility in urban transit systems, an invaluable tool is user feedback. While interventions for inclusive design have seen specific changes in existing systems, DMRC was the first system in India to be designed with a holistic approach towards universal accessibility. This comprehensive planning approach translated into the accessible trains, stations, services and facilities. Buttressed by its educated and enabling support staff, the empowerment it provides not just in terms of access but in attitude, acceptance and understanding highlights the crucial role accessibility can play in society.

It is important, therefore, to emphasize the experiences of diverse users and document their feedback, both positive and negative. This will not only inform better design and implementation, but also, give impetus to more inclusive design. Towards the goal, this paper documents the experience of a first-time wheelchair user of the Delhi Metro.

7. USER EXPERIENCE

Born with Arthrogyrosis (a rare congenital disorder which leads to a lack of muscles in arms and legs), Nipun Malhotra a wheelchair user found travelling in Delhi was a challenge as public transport wasn't fully accessible. As experienced in Europe and Singapore he wondered – why couldn't India have accessible public transit?

This changed with the Delhi Metro in 2002. Although he had heard of its accessibility, apprehensions kept him away till 2009.

“As I entered the City Centre station and saw a lift next to the stairs my heart beat quickened with excitement and all doubts disappeared. I had finally been liberated! This was just the start. As I entered I realized that here it wasn't only the physical infrastructure that was extremely enabling but also the attitude of the staff. A person from DMRC immediately came up to me and gave me instructions on how to proceed. I didn't have to wait in long queues, and quickly got the token for my journey.

As I headed to the lift, someone from housekeeping came and escorted me to the platform. There was passion in his eyes as he told me “I've been working at the Metro for two years, and it is our duty to serve you”. As I entered the train, I was assured that there would be a lift at the destination. And with this thought I got onto the train and embarked on my first metro journey!

I realized on subsequent trips that the entire Metro system was accessible. The stations have designated parking for persons with disabilities; ramps with hand rails; tactile paving and bright color contrast for persons with vision impairment; large lettering and information displays and signage; lifts with lowered control panel, Braille, raised buttons and auditory signals; resting areas for senior citizens and disabled persons. Inside the coaches are designated spaces for wheelchair users, audio announcement with dynamic display and sensory door closing mechanisms”.



Fig 8: Widened Ticket Gate



Fig 9: Designated Space for Wheelchair

Nipun’s experience is reflective of the diverse Indian population’s apprehensions with regard to transit infrastructure. The accommodating and respectful staff, support systems and accessibility of the Delhi Metro provide an enabling environment that encourages and empowers its users, reducing these apprehensions.

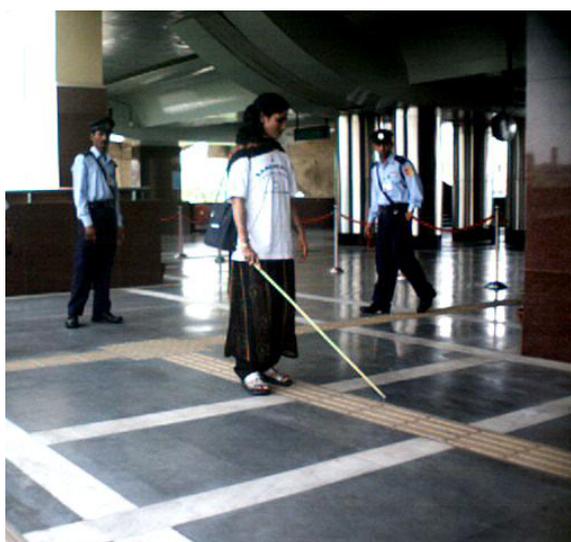


Fig 10: Tactile Guiding Tiles for Wayfinding

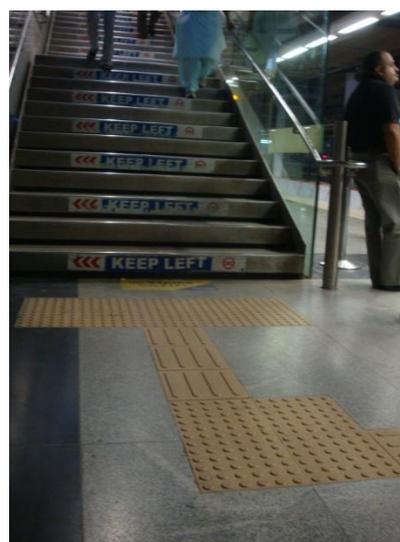


Fig 11: Tactile Warning Tiles

For another user, a visually impaired user directed to the ticket counter following tactile tiles, cordial staff helps with directions. Announcements of train arrival and

departure provide information, as do bright, colour contrasting, large signage boards overhead that help those with low vision. Warning tiles along the tracks inform of the platform edge. Train carriages are well lit, with constant announcements about door closures, station arrival information and departure. All elevators have Braille and tactile buttons for ease of use.

Accessible elements, not only aid the diverse user groups individually navigate this system, but also with its standardized nature, create awareness for others unfamiliar with their purpose. They inculcate in all users the efficacy of these elements, sensitivity and familiarity which will serve to enlighten the vast audience the Delhi Metro serves.



Fig 12: Signage in Coach to encourage Sensitivity

8. RESULTS OR EXPECTED RESULTS

The right of access, a key determinant of freedom of movement, of access to education, employment and entertainment is important for the development of any society. For PwDs, the lack thereof is exacerbated by inaccessible public transportation.

On a recent visit to Mumbai the benefits of an accessible metro were brought home to Nipun, benefits which are now taken for granted in Delhi's metro.

“In a city defined by the commuter experience, with BEST buses and the local trains ferrying lakhs of people every day, the absence of low floor buses, inaccessible trains and no customized disabled-friendly cars made for a frustrating experience. What promised to be an exciting holiday restricted me to the hotel for the duration of the trip”.

Despite Nipun's recent experience, accessible and equitable connectivity that the Delhi Metro provides has shifted the design paradigm of public transportation infrastructure towards creating accessible systems and services. As a model system it is being studied for replication in other cities across India including Chennai, Hyderabad, Bangalore and Kochi, among others. As a working system, its

challenges and success are being highlighted, the drawbacks and limitations worked upon for better accessibility. The biggest success is that the rationale for access is no longer required for public agencies, it is now a given. It is no longer a question of why or how much, but how do we do it best. This is a measure of the success of the Metro, the impact of advocacy and awareness and also the promotion and implementation of the UNCRPD.

The DMRC too has been consequently looking to improve shortfalls in accessibility in future phases of the Delhi Metro, studying the deficiencies and user experiences to create a better system.

9. CONCLUSION

Today, there is an increased sensitivity and enhanced understanding amongst Government agencies, private sector, NGOs and other stakeholders of the need for accessible transportation. Inclusive and Universal Design would result in more passenger inflow, less travel time and added revenue generation for the service providers. Its reliability, affordability and comfort would attract people using private modes of transportation. It would also result in increased education and employment opportunities and the integration of PwDs into mainstream society.

Samarthyam on the basis of its experience believes that it is an equal responsibility of PwDs (user group) to advocate/articulate the need for accessible public transportation, to the concerned departments/stakeholders. Cooperation, coordination and constructive approach between the user groups and the implementing agencies during the policy formulation and execution, is the best approach in achieving the desired objective of "Mobility for All".

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