

Smart Cane goes places

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THE Smart Cane, a device to help the visually impaired move around more freely, is catching on in cities across India through word of mouth and low-cost marketing. It is becoming a Make in India success story — invented by IIT Delhi, manufactured by Phoenix Medical Systems in Chennai and marketed by a network of NGOs and welfare organisations.

“The mobility needs of visually impaired persons are well addressed by Smart Cane. It costs just ₹3,000, inclusive of distribution and training,” says Dipendra Manocha, Director, Saksham Trust and President of the National Association of Blind in Delhi.

Prof R. Balasubramaniam of IIT Delhi, under whose supervision the project was started, says: “The device makes use of modern sensor technology to detect obstructions up to a distance of three metres. It is compatible with the standard folding white cane and eliminates the need for physical contact with the cane to detect obstacles in the immediate environment.”

Smart Cane was launched in April 2014. IIT Delhi, the Assistive Technology Group (ASSISTech), Saksham Trust and Phoenix Medical Systems came together to invent a state-of-the-art device. The total cost of inventing it was ₹3 crore, funded by the Wellcome Trust, UK.

Extensive field trials with 150 users took place before the device was launched. “Blind people are surprised by overhanging branches, protruding air-conditioners and parked vehicles while navigating unfamiliar terrain. Smart Cane warns the user of such objects in their path through a unique system of vibratory patterns, designed to detect potential obstacles even at head height,” says Rohan Paul of ASSISTech.

The device uses ultrasonic ranging to detect obtrusions and generates varied vibratory patterns, which tell its users the distance of the impending objects so that they can negotiate the obstacles from a safe distance. Smart Cane is a user-detachable unit and is powered by a rechargeable battery.

The product's low cost remains its USP. “This product is an example of India-centric research because of its affordability and societal needs. It costs one-tenth the price of similar devices available in Western countries,” says R.K. Shevgaonkar, Director, IIT Delhi.

Smart Cane took birth in IIT Delhi as a student project. It was transferred to Phoenix Medical Systems for just ₹1. Phoenix further developed the device and now manufactures it. Saksham Trust in New Delhi trains users.

Several design innovations were done to make Smart Cane fit for Indian consumers. The environment in Indian cities is especially challenging for the visually impaired. Public spaces are full of

barriers. There are no ramps and footboards on buses and trains are high. In buildings, often windows and air-conditioners jut into corridors. Real-life scenarios were studied and the inputs greatly helped design Smart Cane.

The first feature its developers included was its easy grip. They had observed that visually challenged people hold the white cane in a number of ways. Hence, a unique ergonomic grip was evolved so that people could hold it whichever way they found comfortable.

Smart Cane was also designed to enable visually challenged people to tap the cane close to their feet or extend it and tap it farther away when they walk outdoors.

The device is detachable and never breaks even if it gets stuck in a cycle wheel spoke or gets bent if someone walks over it. It can withstand dust and temperature variations. Women



can fold it into their bags.

The device is affordable, with low-cost sensors and electronics and other materials that don't cost much. Yet its quality is of international standards.

The National Institute of the Visually Handicapped in Dehradun provided field trials. A network of over 16 welfare organisations for the visually challenged across 12 states is selling and marketing Smart Cane and training people how to use it. “We conduct free demo classes, giving detailed description about the product, and we do a product demo,” says Mohan Kumar, trainer, Indian Association for the Blind (IAB), Madurai.

Smart Cane is selling in Bengaluru, Ahmedabad, Dehradun, Delhi and also in Kashmir. In Bengaluru, IIT Delhi conducted a training programme with 40 participants like Enable India, Mitra Jyothi and the National Federation for the Blind. ■