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TECHNOLOGY

Enabling



## Shailaja Tripathi

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### A look at some tech and design innovations intended to impact the lives of the differently-abled, to be showcased at Enable Makeathon 2.0

The National Centre for Promotion of Employment for **Disabled** People recently revealed that 32 of India's top universities and institutions of higher learning have managed to fill just 16% of the minimum quota for differently-abled people. Then there's the Supreme Court asking why the UP government couldn't set up separate schools for the differently-abled, as we speak of mainstreaming and inclusion.

In this grim scenario, 'Enable Makeathon 2.0' brings good news. A programme initiated by the International Committee of the Red Cross (ICRC) and its partners, it helps develop prototypes and affordable solutions for challenges faced by differently-abled people, particularly those living in rural areas. Teams of engineers, scientists, designers,

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Day of Persons

A panel of experts will review the entries of 17 teams, where they will interact with

differently-abled people, experts, mentors, designers, and investors. After an intense 15-day programme, 10 teams and their prototypes will advance to the next stage. The products will undergo refinement, and market- and user-testing for the next 6 weeks. On the day of the final competition, February 5, 2018, three winners will be awarded an incubator grant by ICRC to further develop their solutions.

### ***Entry Ticket Redesign***

#### **Team – Welava, Delhi**

Bhawna Welturkar, an architect and Abhishek Srivastava, an industrial designer, focus on accessible tourism. Their design intervention is an entry ticket targeted at the visually impaired to encourage visits to heritage sites. “We hardly see any disabled people at these sites. You don’t even know where and how to find toilets, how to navigate. A ticket like this can help,” says Welturkar.

The ticket provides instructions in Braille, has embossed graphics inspired by the predominant motif on the monument, a cut profile of the monument, a tactile map, a monument-specific aroma, and information on World Heritage Sites of India. There is also a provision of fixing a photograph of the visitor. “As soon as you come out, the ticket usually finds its way to the dustbin. Here, instead of adding to the waste, with a little value addition, it becomes a souvenir which you can take home,” explains Srivastava. A prototype of a Humayun’s Tomb ticket is ready to be tested and gather feedback at the upcoming co-creation camp.



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### ***MIP Sensors***

#### **Team – Autobots, Vellore**

This team of four biotechnology students at VIT University in Vellore, Tamil Nadu, is trying to address a crucial problem faced by visually-impaired pregnant women. The group has come up with a product which can help them perform a home pregnancy test without depending on anyone. The usual pregnancy kit works for people who can confirm their pregnancy by seeing two lines. Visually impaired women are dependent on others to view the test results.

The test kit uses an upcoming technology called 'Molecular Imprinting' that detects the level of hCG in the urine sample and gives a sound signal announcing the test result. Molecular imprinting uses a polymer that is moulded into the shape of an hCG receptor that captures the incoming hCG molecules present in the urine sample. This results in aggregation and an increase in the total mass. The change in mass is immediately detected by a sensor that translates the signal to an amplified sound. "We aim to make it as user

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Shibu Antony,

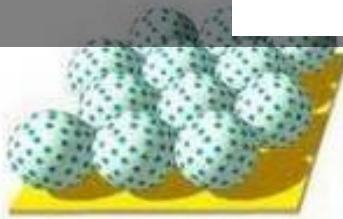


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## **ARICE**

### **Team – Workbench Projects, Bengaluru**

For Assistive Reader for Information Content and Entertainment project, the team had set out to work towards a software that would convert text to speech, but during the course of research, realised it will have to go beyond text and include shapes and symbols. “And it has become paper to speech. Paper, not literally, but anything that is in printed form. For instance, labels, the expiry date on a food product!” says Aditya. The team of designers decided to keep it flexible and understand if they are on track at the co-creation camp. “We realised that we have a lot of assumptions about visually-impaired people. We assume that they want to know about colours, but what if that is not the case?”

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# 8 groups develop innovations for differently abled and get to exhibit them on a Red Cross platform



Team Autobot from Vellore developed a unique pregnancy test for visually impaired people , DNA Photo

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Since 1979, people in more than 48 countries have benefited from physical rehabilitation services, such as physiotherapy, the provision of over 1.4 million assistive devices, their repair and maintenance and social inclusion activities.

In India, the disabled population constitutes 2.21% of the total population, according to the 2011 Population Census, which is approximately 26.5 million people in the country.

However, with this high disability population there is still a lot needed to make places more disabled-friendly. Keeping this in mind, the International Committee of the Red Cross (ICRC) organized an 'Enable Makeathon' where several groups were given chance to design an innovation to aid persons with disabilities. Seven winners were shortlisted and these people were given the opportunity to build and scale their innovations.

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The Enable Makeathon is a programme initiated by the ICRC and its partners, including the Global Disability Innovation (GDI) Hub, to develop prototypes and affordable solutions for challenges faced by PWDs, particularly those living in rural areas. Teams comprising engineers, scientists, designers, innovators, PWDs, humanitarians,

responds to one of the 12 Enable Makeathon challenges, including access to education, access to tourism and access to transport.

Speaking about the Makeathon, Tarun Sarwal, Head of Innovation, ICRC said, "The ICRC has been distributing orthotics and prosthetics to people across 40 countries. However, we believe these challenges can be better addressed by working with those straight out of an environment of physical disability and living in underdeveloped countries without means of inclusion. The finalist teams' innovations truly highlight how the combination of open-source hardware and the rise of Indian talent in ICTs can infuse new ideas and efforts into the assistive technology movement by actually working with persons with disability."

Of 16 teams, six teams were shortlisted. These teams included Team Bleetech (Mumbai), Team Autobots (Vellore), Team Welava (Delhi), Team For Growth (Bangalore), Team Torchit (Ahmedabad), and Team Unicom Solutions (Vellore).

Team Bleetech from Mumbai built a low-cost encyclopedia where users can ask a mobile platform using either sign language or English, and they receive answers in Indian sign language. "Indian Sign Language is not a translation of any spoken language into signs. It is a complete language itself with definite structure and vocabulary of signs. With hand gestures, sign language also requires facial expressions and body language. American Sign Language is one of the most structured and complete sign language," said a spokesperson for Bleetech, adding that while working with the deaf population in India, we realized that we have very less accessible content for the deaf. Linguistic skills of many of the deaf individuals are less developed as compared to the hearing person of same age. "Being hearing impaired, one cannot hear and learn new words like we do, the vocabulary is also limited. We observed that even if we can find an answer using the internet," they added.

Meanwhile team Autobots, which comprises four college students from Vellore, developed a pregnancy diagnosis for the visually impaired with molecular imprinted diagnostics for detecting pregnancy for blind people. "One challenge that immediately jumped out at us was that of how visually-disabled women who are blind might often have to depend upon another to detect their own pregnancies, information which is extremely personal to most. While this might appear as a small issue to many, we strongly feel that women with such disabilities should have the right to this information as freely and easily as women without disabilities. We also did our research about the different methods available right now in order to detect HcG levels in urine and therefore wanted to try out new methods to detect it," they said.