

## TECH SPOTLIGHT

# The power of Bangla

CRBLP of BRAC University unveils two revolutionary software

MAHDIN MAHBOOB

**I**MAGINE a blind person being able to use a computer almost as efficiently as someone with eyes! All he does is take the mouse cursor to a certain position in the screen and the computer reads him aloud whatever button there is. That too in Bangla!

This, and a few more marvels would now be available for free to all the people who want to use Bangla for many different reasons in their everyday lives thanks to two newly released products by CRBLP (Center for Research for Bangla Language Processing) of BRAC University.

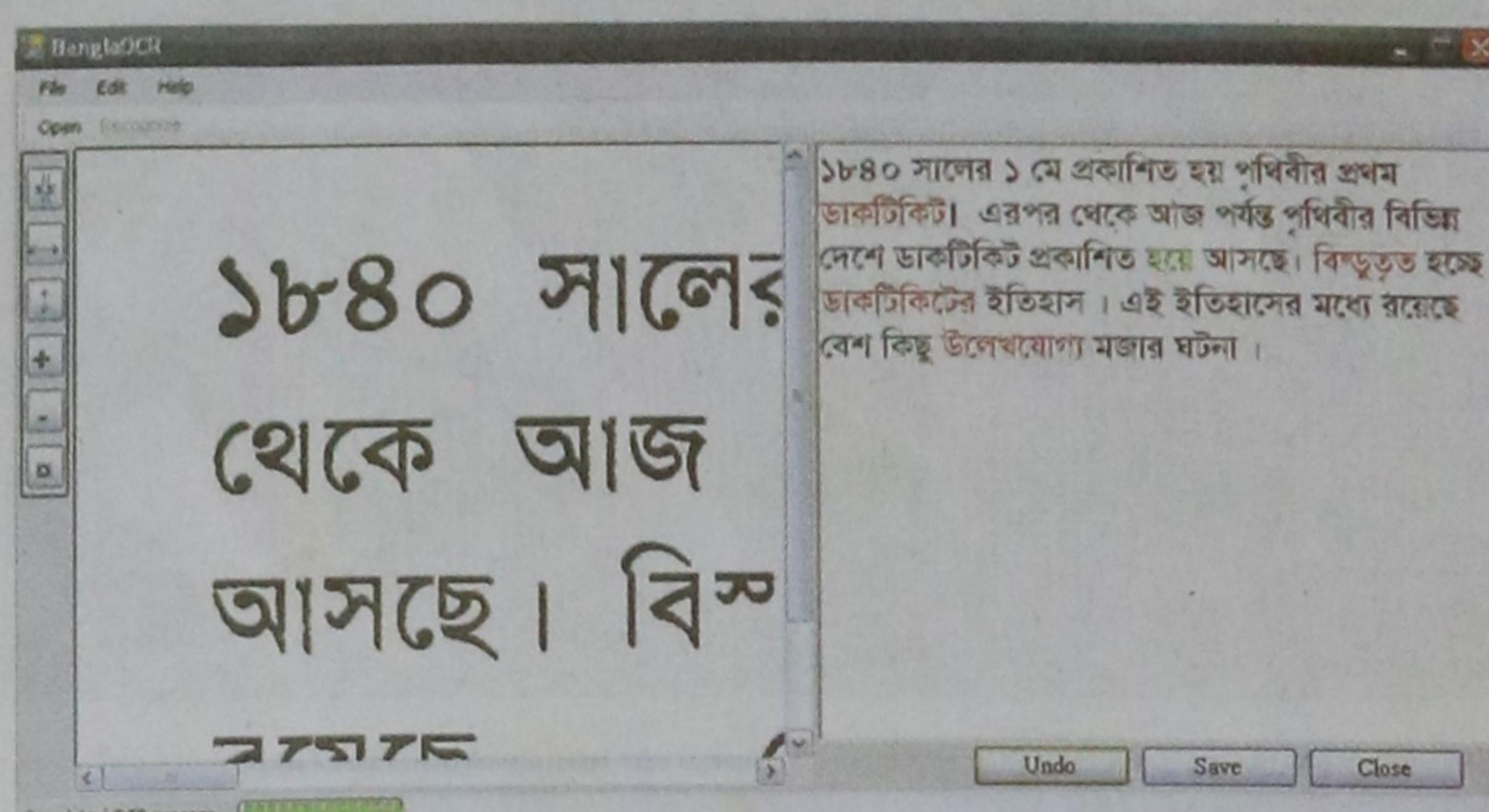
On February 19, CRBLP announced the first official release of its Bangla language processing software packages 'Katha' (text-to-speech) and BanglaOCR (optical character recognition). In the event, the audience (which included experts in the field and several blind people) was shown how the computer could create Bangla unicode text from scanned images and then read out the text.

The TTS and OCR run on Linux, Windows and Mac OSX. There is also a web-enabled front-end for the TTS (and under development for the OCR), making these tools available at anytime and from anywhere. Currently, the group is working on better integration with screen readers in collaboration with the vision impaired community. The Bangla language processing tools developed at CRBLP are free and open source software, released under GNU Public License v2, and supported in part by funding from Canadian IDRC and BRAC University.

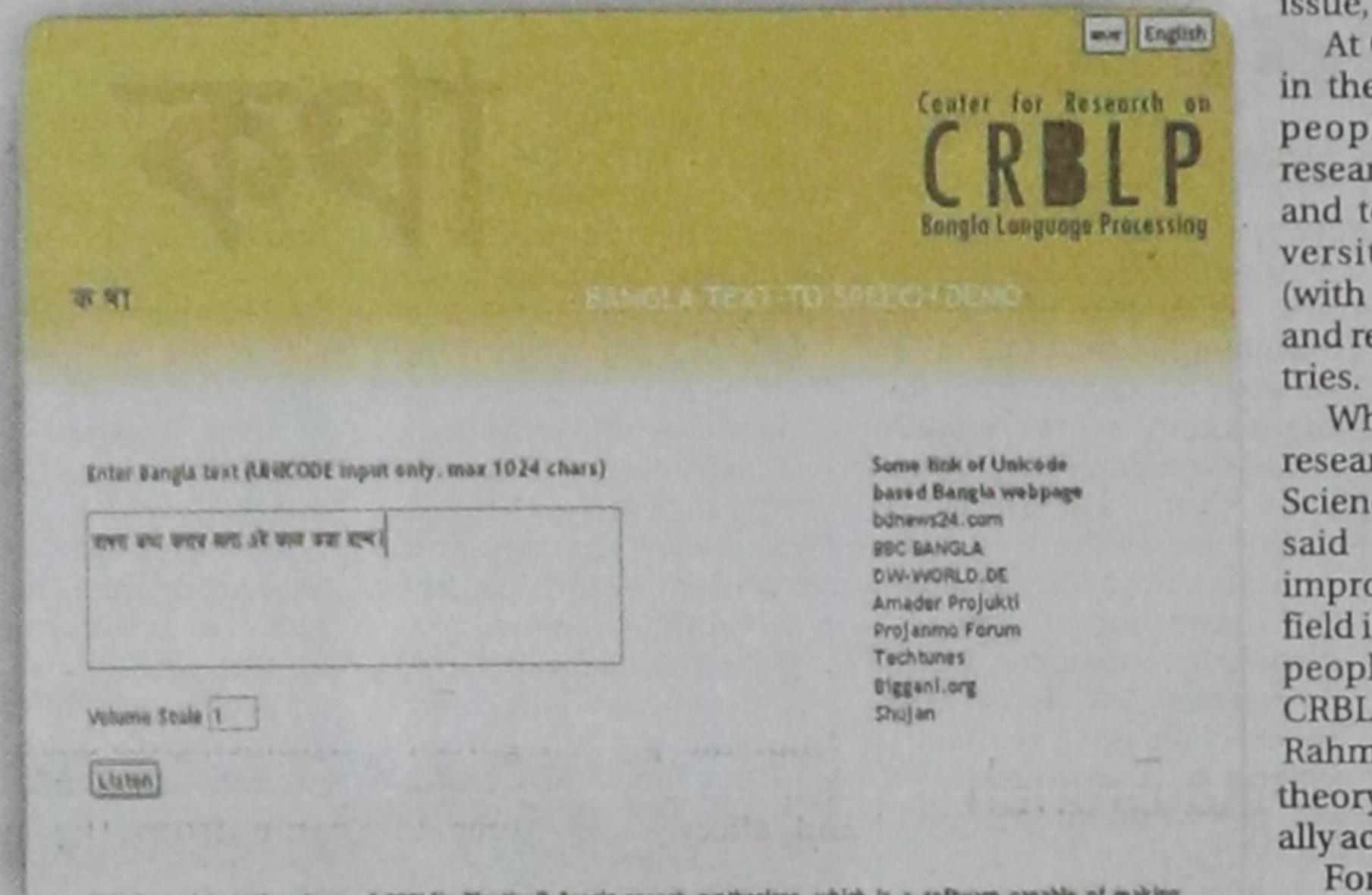
"We have come a long way, but we have even a longer way to go" says Dr. Mumit Khan, professor of Computer Science and Engineering at the university and the head of CRBLP. "We are trying to develop capacity for Bangla Language Processing in Bangladesh. These days we are talking about ICT and Digital Bangladesh. If you talk about ICT for a country, you have to localise. And localisation means not only translation, you also need to incorporate local culture for widespread use."

"We start from very basic spelling checkers and Optical Character recognition. Speech synthesis would enable us not to type but dictate. That would make not only a recording, but also turn it into editable text, where you can check for spellings and grammatical errors. These things are present for the English Language through various softwares. For all this to happen in Bangla, you need a lot of linguistic research at first. And in Bangla we are a bit behind in all this. So for us, the first step was capacity building. It took us a year and a half to find out what we needed to know. So our target was to do something simple yet concrete - make applications that people can use," he added.

When asked about the inspiration



The image above shows how a scanned image has been converted to editable Bangla unicode text with the OCR application, below, a screen shot of the 'Katha' application that reads aloud any Bangla text when typed.



A Corpus (list of words in usage in Bangla, something not found in the dictionary), efficient spell checkers, OCR, machine translation, syntax checking all these are required to make full-scale Bangla computing possible.

So the purpose of the research is to:

- 1)Build linguistic resource using Corpus
- 2)Create new applications
- 3)Develop capacity

These applications will help in different forms of academic research because there is a huge literacy problem in this country.

The target of TTS includes three kinds of people:

- 1)The illiterate
- 2)The visually impaired
- 3)People who can't read Bangla

OCR has infinite applications including fast digitalising of old and rare Bangla books, which would save a lot of time compared to manually typing all the words in those books.

When asked about the inspira-

tions behind developing these applications, Dr Khan mentioned Sightsavers International and the JIPU (Jatiyo Protobondhhi Unnayon Foundation). Through the usage of these applications, blind people too, can become citizens of the 'net world'. The sponsors for these projects are the IDRC, Canada (International Development Research Corporation) under its PAN Localisation Project and BRAC University itself.

"At this stage, the text to speech software sounds a bit wooden but we hope to improve on it within the next six months or so. For example, Amar Nam Sanjida sounds like Amar Nam Sa-no-ji-da right now. The good news is that this is just the beginning to even better applications. Future developments would include the female voice, which is an even more difficult thing to do, and intonation inclusive of mood variations, whether the person is angry or in a good mood. Right now we are working on the 'Broadcast dialect'. Incorporating dialect is an altogether new

issue," he mentioned. At CRBLP, there are 6 researchers in the core group and many other people are affiliated with the research projects including students and teachers from the Dhaka University Linguistics Department (with whom the centre has a MoU) and researchers from 14 other countries.

When asked about the state of research in the field of computer Science in Bangladesh, Dr. Khan said that their sure is room for improvement but research in his field is not totally nonexistent as many people would think. Other than CRBLP, he mentioned Prof Saidur Rahman's (Buet) research on graph theory which is being internationally acclaimed.

For more information on the research centre and its activities may visit CRBLP's website <http://www.bracu.ac.bd/research/crbp/>.

#### ShortNotes:

1)TTS: The TTS (Text to Speech) application generates speech from Bangla text. This can help tackle illiteracy problem, empower the visually impaired and increase the possibilities of improved machine interaction. This project has developed a TTS system for Bangla using diphone and unit selection concatenation techniques based on the Festival speech synthesis technology. The developers in this project are Firoj Alam, S.M. Murtoza Habib and Kamrul Hayder.

2)OCR: Optical Character Recognition (OCR) is the process of converting printed text images to editable text. This project has developed a Bangla OCR that takes the scanned image of a printed page or document as input and converts it into editable Unicode text. The developers in this project are Md. Abul Hasnat, and Souro Chowdhury.

#### OCR

Optical character recognition, usually abbreviated to OCR, is the mechanical or electronic translation of images of handwritten, typewritten or printed text into machine-editable text. OCR is a field of research in pattern recognition, artificial intelligence and machine vision. Though academic research in the field continues, the focus on OCR has shifted to implementation of proven techniques. Optical character recognition and digital character recognition were originally considered separate fields. Because very few applications survive that use true optical techniques, the OCR term has now been broadened to include digital image processing as well.

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#### TECHNEWS

## CityIT fair ends tomorrow



#### STARTECH DESK

**T**HE 8th annual 'City IT' fair, one of the biggest information technology showcases of the country, is going to come to an end tomorrow.

The fair got off to a smooth beginning on February 26 and drew a massive turnout despite having started amid the bloodshed at the headquarters of Bangladesh Rifles that shook up the nation.

Organisers feared that their efforts might go in vain due to the mutiny, which was proved wrong by the technology lovers of the country.

The fair was scheduled to wrap up today but the huge turnout compelled the organisers to bring down the curtain on the event one day later.

Official sponsors of the fair are Acer, Asus, Brother, Samsung and Transcend.

Commerce Minister Faruk Khan inaugurated the fair. State Minister for

Science and Information and Communication Technology Yafes Osman, Anisul Haque, president of the Federation of Bangladesh Chambers of Commerce and Industry, Mostafa Jabbar, president of Bangladesh Computer Council (BCS), were also present at the inaugural ceremony.

The most attractive part of this year's fair is the front compound looking like Labag Fort that keeps the completion of 400 years of Dhaka city in focus.

This year the organisers decided to honour one language movement veteran and one Liberation War sector commander during the fair.

In addition to them, three other distinguished personalities will be awarded 'Lifetime Achievement' honour for their outstanding contribution to the ICT Sector.

There will also be an art competition for children and a knockout debate competition to be participated by 8 university teams.

#### TECHNEWS

## Microsoft eyes e-security in Bangladesh

#### STARTECH DESK

A two-day workshop on Microsoft innovation and security programme concluded recently at the American International University-Bangladesh (AIUB) in Dhaka.

Dr Carmen Z Lamagna, vice chancellor of AIUB, and Feroz Mahmud, country manager of Microsoft Bangladesh, inaugurated the workshop.

Dr Bradley K Jensen

Jensen, academic relationship manager and Jeff Paine, manager for Regional Government Engagement Programme of Microsoft, and Dr ABM Siddique Hossain, dean of the Faculty of Science, AIUB also discussed the importance and the timeliness of such a workshop in the country.

This is the first such joint workshop co-arranged by AIUB and Microsoft under the Microsoft Security Cooperation Programme (SCP).

Dr Jensen moderated the two-day workshop. The workshop included sessions on the

importance of a safe development lifecycle and business intelligence tools. The topics also discussed aspects of threat modelling, code testing and the impacts of data mining.

Through the SCP, Microsoft provides a structured way for governments to engage in cooperative security activities in the areas of computer incident response, attack mitigation and citizen outreach.

The goal of the SCP is to help governments address threats to national security, economic strength, and public safety more efficiently and effectively through cooperative projects and information sharing.

The programme was launched in February 2005 with global participation, and a government entity from Bangladesh signed an agreement with Microsoft in May 2007.

Government officials, academics and IT professionals attended the workshop.

The event concluded with the certificate distribution ceremony for the participants.

## Smart bubbly, corny USB sticks lead fair's gadget parade

#### AFP, Hanover

**I**NTELLIGENT champagne bottles, "green" USB sticks made of corn and an understanding alarm clock led the parade of fun, futuristic gadgets at the world's biggest high-tech fair.

As the high-tech sector tries to buck the global economic slump, inventors from Asia, the United States and Europe vied to capture imaginations at the CeBIT with ideas that could ignite the market in the coming months and years.

Researchers at the German Research Centre for Artificial Intelligence, which works closely with industry, was showing off a range of everyday objects rendered "smart".

Its cutting-edge champagne bottles sound a bell when the bubbly has hit the perfect quaffing temperature, while an intelligent medicine cabinet lets you know when you last took your medication or need to get a prescription filled.

In keeping with a "green" theme at this year's event, USB sticks and photo cards by California-based ITP now come in biodegradable plastics made of corn. And some of the products will go to tree-planting projects.

Meanwhile, people plagued by the question "Did I leave the iron on?" can relax.

Swiss firm digitalSTROM.org has developed a chip that can be installed in ordinary light switches. An "everything off" button switches every device hooked up to the system to "standby", averting fires and cutting energy bills.

The fair is showcasing a range of new ultra-thin, ultra-efficient netbooks that are easier on the wallet, including the first "zero-watt"

laptop from Fujitsu-Siemens that uses no electricity when idle.

Japanese giant Toshiba was showing off televisions that use half the power of normal sets.

A navigator developed by Germany's Garmin can calculate not only the most direct route or the one with the least traffic but also the one that would use the least fuel, and even adds up the money you will save on your journeys.

"If he feels in the mood, the driver can activate the EcoChallenge feature," the company said.

"Based on an analysis of the driver's heavy or light-footed pedal technique and braking as well as the car speed, the display shows how well the driver is doing in the fuel-saving stakes."

A so-called gentle alarm clock from Germany's Simple Feature monitors sleep rhythms via a soft wristband fitted with sensors.

It then chooses a shallow sleep phase within 30 minutes of the desired wake-up time and goes off with a range of alarm tones including bird songs -- encouraging what the firm says is a smoother start to a more productive day.

The CeBIT is spotlighting eHealth this year, featuring products that allow patients to receive better care from home thanks to the Internet.

BodyNet of Germany has developed a blood sugar monitor for diabetics whose results can be beamed straight to the patient's file at his doctor's office via his mobile phone. Innovations in the world of entertainment also drew the crowds.

#### PHOTOTECH



#### CORNY DRIVE

A employee displays US firm ATP's Earthdrive 4 GB USB flashdrive next to an ear of corn at the world's biggest high-tech fair, the CeBIT, in Hanover March 4. The fair is running until March 8.

PHOTO: AFP