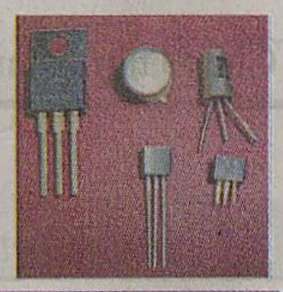
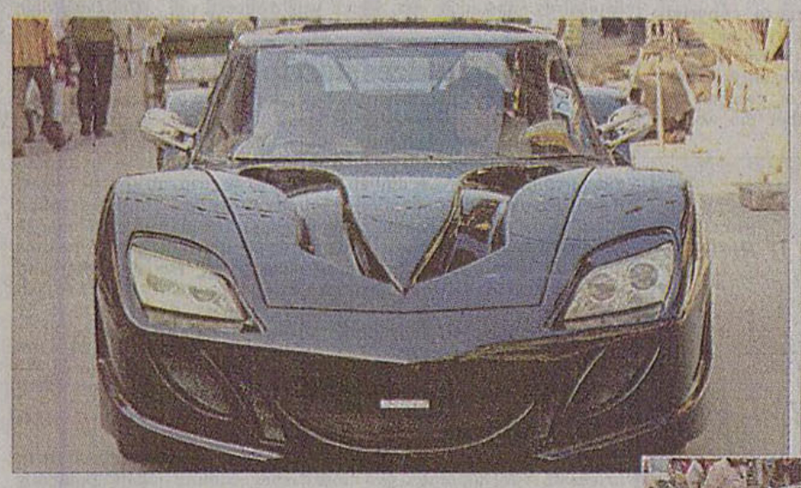
Transistor

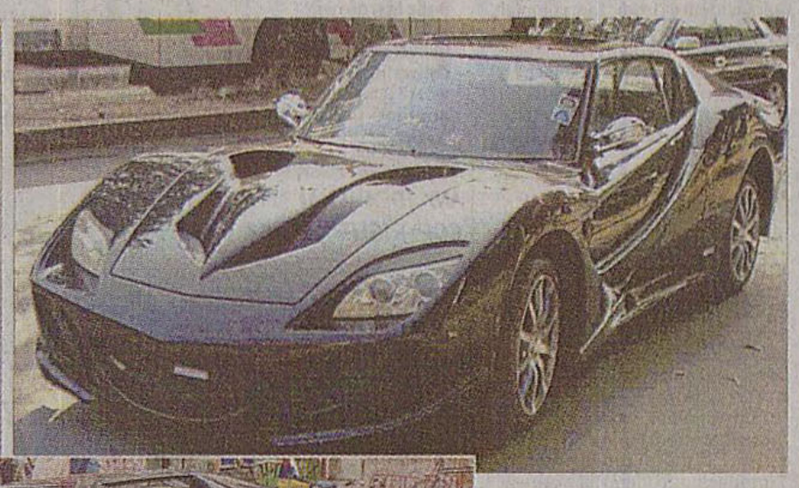
The transistor is a solid state semiconductor device which can be used for amplification, switching, voltage stabilization, signal modulation and many other functions. It acts as a variable valve which, based on its input voltage, controls the current it draws from a connected voltage source. Transistors are made either as separate components or as part of an integrated circuit. The first patents for the transistor-principle were registered in 1928 by Julius Edgar Lilienfeld in Germany. Then in 1934 the German physicist Dr. Oskar Heil patented the field-effect transistor. It is not clear whether either design was ever built, however, and is generally considered unlikely.



TECHSPOTLIGHT

The F-21 analysis





SHAHRIAR ROBIN

LEEPU had almost no resources whatsoever apart from his unparalleled ingenuity to create the F-21. A blow torch, a few tin sheets, a table-fan (to test the car's aerodynamics) and some helping hands in the garage are all that he had to change the 28-year-old Toyota Celica into the news-making super-car.

The media has been quite excited about Leepu's work for a while now but it has always been putting more emphasis on Leepu's flashy car models rather than understanding them. As the hoo-hahs die down, it is time we looked at Leepu's F-21 from a more analytical point of view.

The F-21, it must be said, is unlike any other car that rolled out of Leepu's tiny garage at Jigatola. It is unique and hardly any resemblance to other cars in the world market can be found in it. Of course, the modified headlights come from a Toyota Windom, but everyone expects this sort of things from Leepu anyway.

Few people would understand the thoughts that went on the designer's mind before the car was even drawn. Leepu says he had drawn his first sketch of the car on February 21 last year--hence the name F-21--even though the project had been in his head since December 2004.

The design stresses the reduction of drag rather than good looks which one might not have assumed. All know drag is the killer of speed and the less drag you have the faster you go.

While designing the F-21, Leepu's primary concern was the air that goes through the radiator grills and onto what he calls the "firewall", the wall on which the dashboard is mounted. This air produces a lot more drag than he would like. To go past this unwanted hurdle, Leepu designed the bonnet of the car in a way so that the air goes into the radiator, comes out through the bonnet and goes back into the bonnet through a vent, and finally exits through another vent behind the front fenders.

Leepu knew this would only work if he could somehow make a vacuum in the middle part of the car. And to create that vacuum, he widened the car in the front and rear ends by as much as eight inches. This means air passing through the car's sides will create a low pressure in the middle--next to the door--forcing the air to be sucked out from the duct on the front fenders.

Even after doing all this, however, Leepu was still unconvinced that he had done enough for the car to perform well in the corners.

The air going underneath the car was his next worry. Airflow beneath a car at high speed reduces the downforce (force that the air mounts on the car), compromising the amount of grip on the road available at high-speed corners. To keep the downforce on the rear end of the rear-wheel-drive car--lest it becomes airborne--Leepu drilled two three-inch holes on the sides beneath the doors as the vents for the air entering from the low-ground-clearance front end.

Most super-cars have their engines mounted in the mid-part of the car. It takes away most of the problems the front or rear-engine cars tend to generate. A mid-engine car shows greater balance while cornering and does not have high bonnet at the front. The balance is a lot harder to achieve when you have a huge engine at the front.

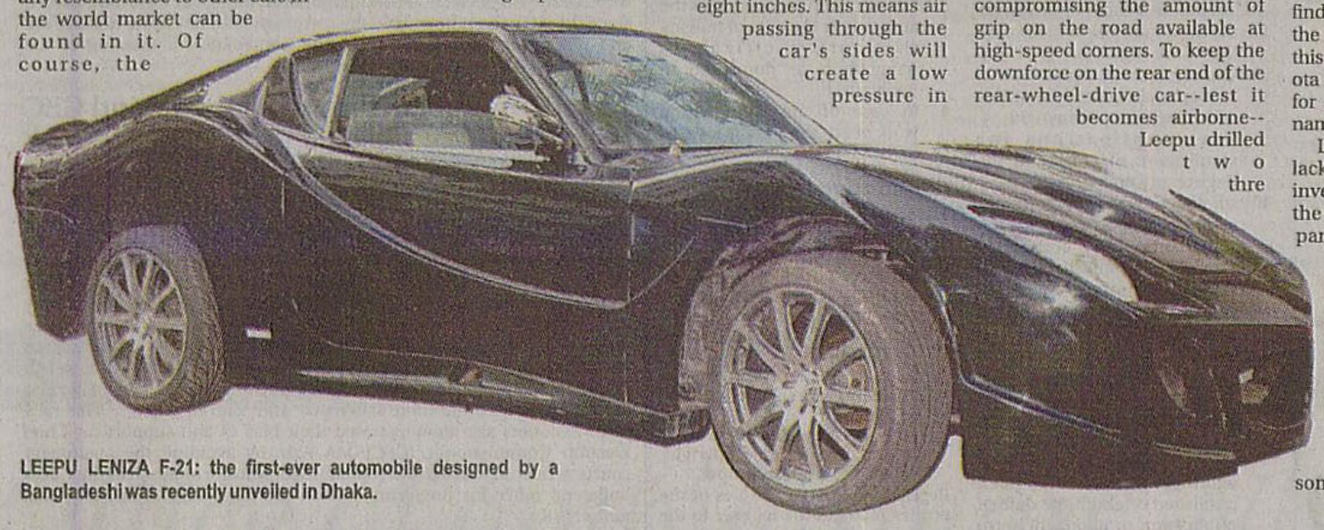
Leepu obviously knew this, and instead of putting the 1.8 litre Toyota Townace engine in the middle and virtually taking away all the room inside, he curved a small mid-spoiler on the roof of the 77 Celica chassis. The spoiler creates the downforce to give the driver the feeling that he is driving a mid-engine car.

If looked at carefully, one might find the small diffuser at the rear of the car. Leepu, however, claims this is ornamental, as the old Toyota Celica did not leave any room for improvement of the aerodynamics underneath the car.

Leepu suffers heavily due to lack of tools and resources, but investors may take a look at Ariel, the English car-making company.

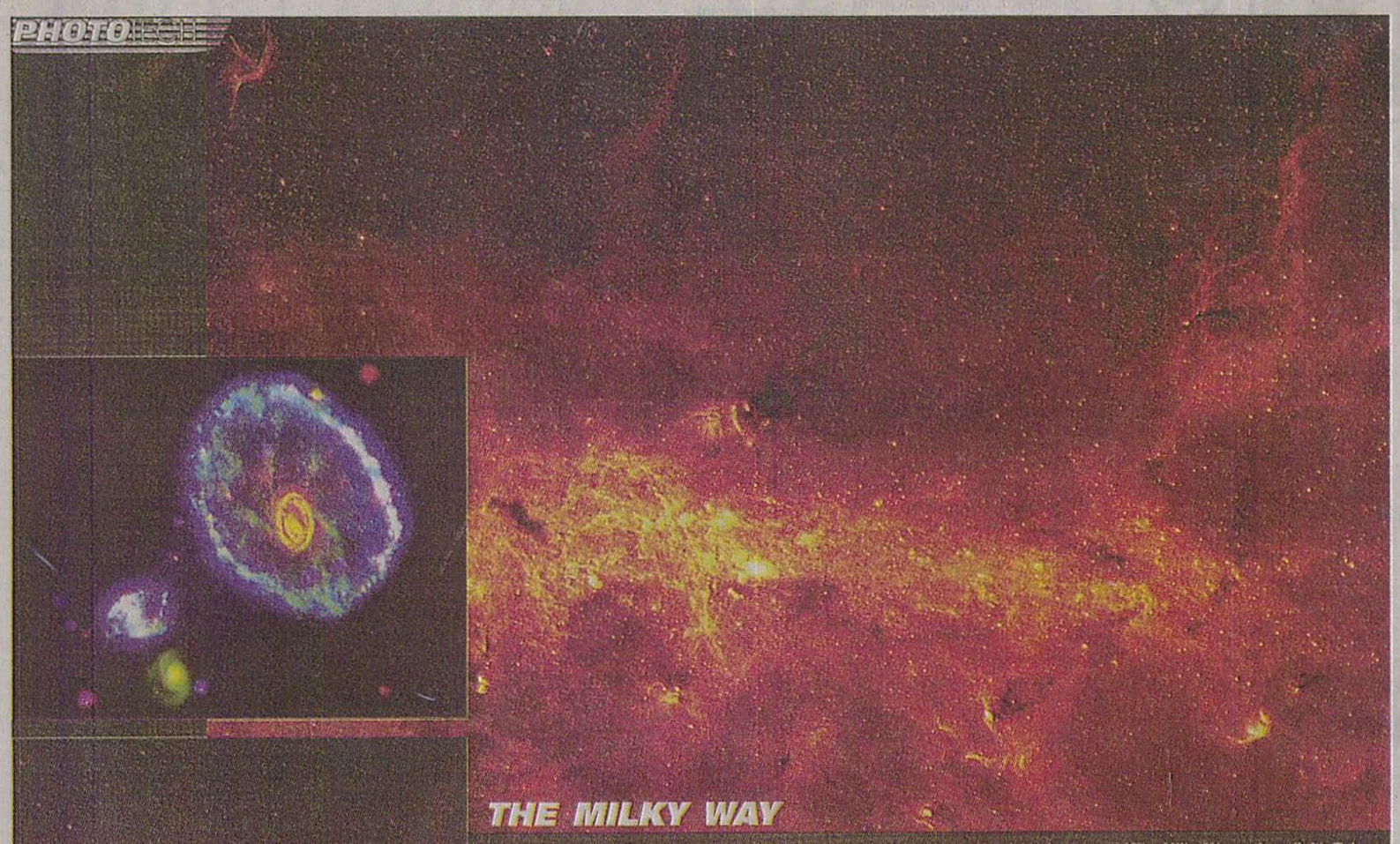
With its nine part-time workers and a production capability of 99 cars a year, Ariel has managed to escape the safety and emission regulations and establish itself as a cottage industry.

May be, if the ones with the thick wallets are brave enough, we could have something like that in our land.



LEEPU LENIZA F-21: the first-ever automobile designed by a Bangladeshi was recently unveiled in Dhaka.

PHOTOTECH



THE MILKY WAY

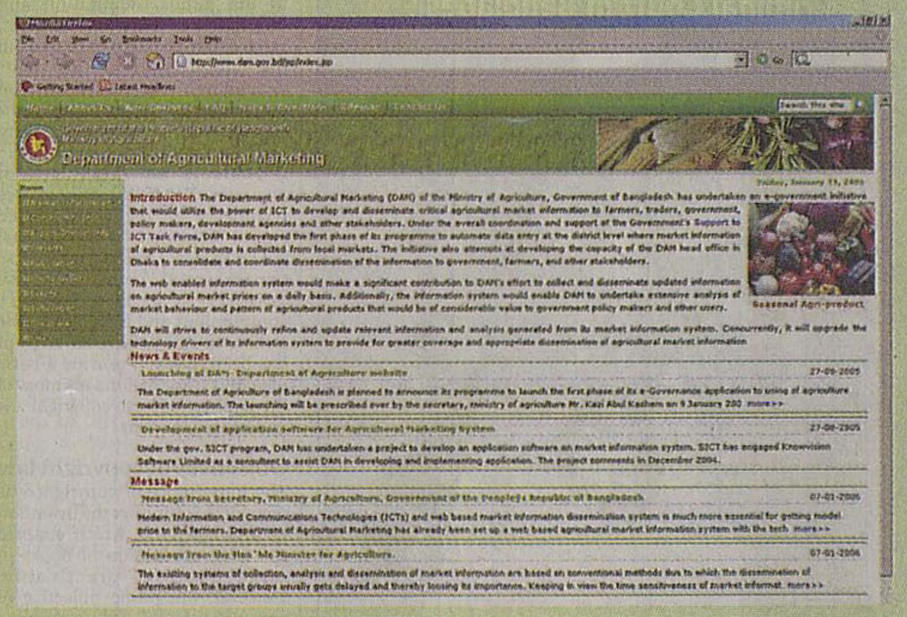
This Spitzer Space Telescope image released on January 10, shows the galactic center of The Milky Way galaxy (left). Taken with just one of Spitzer's cameras, the image highlights the region's exceptionally bright and dusty clouds, lit up by young massive stars. Individual stars can also be seen as tiny dots scattered throughout the dust. The top mosaic shows a portion of the galactic center that stretches across a distance of 760 light-years. A dazzling infrared image (top-right) shows hundreds of thousands of stars crowded into the swirling core of our spiral Milky Way galaxy. This false-color composite image shows the Cartwheel galaxy (bottom-right) as seen by the Galaxy Evolution Explorer's far ultraviolet detector (blue); the Hubble Space Telescope's wide field and planetary camera 2 (green); the Spitzer Space Telescope's infrared array camera (red); and the Chandra X-ray Observatory's advanced CCD imaging spectrometer-S array instrument (purple).

PHOTO: AFP

TECHNEWS

A new era dawns

Department of Agricultural Marketing inaugurates e-governance project



SYED TASHFIN CHOWDHURY

BANGLADESH is finally on the threshold of living 'the e-governance dream' as an increasing number of government departments and ministries are initiating e-governance based websites and application software.

The latest department to follow this trend and introduce their own e-governance application project was the Department of Agricultural Marketing under the Ministry of Agriculture.

The web site for the application project, www.dam.gov.bd, was officially launched at the DAE auditorium on January 9.

The project was technically and financially assisted by the Support to ICT Task Force Programme (SICT) of the planning ministry while Knowvision was the consultant.

Kazi Abul Kashem, secretary, Ministry of Agriculture launched the site as the chief guest at the event. Sirajul Islam, director, Department of Agricultural Marketing (Dam) was the chairperson at the event while Sheikh Enayetullah, additional secretary, Ministry of Agriculture was also present as the special guest.

Md. Abdur Rouf, deputy project director, SICT, Planning Commission, Shafiqur Rahman, managing director, Knowvision, and Nasar Uddin, deputy director and focal point officer of the project under the Ministry of Agriculture spoke at the occasion.

"Farmers, producers, traders, exporters, importers and consumers can benefit through this site with updated market information about various goods in the agricultural market throughout 20 districts," said Nasar Uddin at the event.

He pointed out that in order to ensure fair return to the farmer, timely and reliable market information is necessary. Access to up-to-date market information on 260 different products of the 20 districts will assist farmers to take appropriate strategies to sell their products within a feasible price range.

"We have provided offices in these 20 districts with the necessary hardware, manpower and technical skills through which they can upload information on specific products to the site daily," Nasar Uddin told StarTech.

This governance will ensure coordinated and timely information exchange between the district offices and Dam.

As for browsers, important data can be easily downloaded from the site according to specific commodity, market and the date range. Besides this, users can obtain historical data of agricultural products in tabular data, graphical price trends and other forms.

"The site will prove extremely vital for researchers and policy-makers through the updated resources," he said.

Policy-makers can be more informed about price trends, variations, demand and supply of agricultural products in specific areas of the country and take appropriate measures during moments of crisis.

The concept of the site began with Dsm's automation and dissemination of collated information from 10 important districts, through a static website in 1991.

"We were financially and technically assisted by the Food and Agricultural Organization (Fao) back then. Through that site, users could obtain only those reports published by Dam," he said.

Later, Dam availed the assistance from SICT Task Force Program project of the planning commission to cover 20 more field offices. The program also facilitated them to develop an application and this interactive website under the title 'e-governance application at the Department of Agricultural Marketing under the Ministry of Agriculture'.

"Under the North-West Crop Diversification Project (NCDP), we have covered 14 more districts. These districts are waiting to be accommodated under our new information system," he said.

With this, Dam would cover a total of 44 districts through out Bangladesh.

Fortunately, the site is not just the end of the e-governance project for Dam under the Agricultural Ministry.

"The up-to-date prices and the current number of districts are just a beginning," assured Nasar Uddin.

He informed that the SICT Task force program project has already been proposed to initiate internal office automation software.

"This will increase the organisation's efficiency, transparency and accountability," he explained.

Furthermore, Dam has long term plans to enable the district offices into resource centres in the near future.

"We plan to have an effective e-governance system through which we can cover the entire nation," he concluded.