FOR IMMEDIATE RELEASE

TRANSPORT SOLUTIONS

Polytechnic Students Take Up Land Transport Challenges As Final Year Projects

Singapore, 10 January 2007 – Students from the 5 Polytechnics have submitted a total of 35 projects for this year’s Land Transport Authority (LTA)-Polytechnics Collaboration 2007. Well into its 9th year, this project was first launched in 1999 by the then Senior Minister of State for Education, Mr Peter Chen. The project aims to provide valuable learning opportunities for students by getting them to tackle real-life land transport engineering challenges as part of their final-year curriculum work.

Five winning projects, one from each polytechnic, are selected based on technical merit, originality, and completeness of the project by a panel of LTA engineers. The victorious teams will present and exhibit their winning entries on 10 January 2007. Please refer to Annex A for a more detailed write-up on the winning entries.

The participating projects include the development of various user-friendly applications which address a broad spectrum of transport-related issues, such as:

- the efficient monitoring of temperature conditions in tunnels
- the development of a Wifi-enabled RFID system to monitor the safety of physically handicapped people at MRT stations
- the implementation of an innovative traffic light system
- improvement of the functionality and graphical user interface of the existing computerized deep excavation monitoring system at worksites, and
- the development of an automated ramp which enables wheel-chair bound passengers to board MRT trains smoothly.

Mr Fong Yew Chan, Director-in-Charge of the Working Committee said, “Under the supervision of LTA staff and polytechnic lecturers, students are encouraged to think out-of-the-box for ideas and apply what they have learnt in schools. Such active participation in this real-life industry allows students to work with the latest technology while engaging them in teamwork. In this way, students gain first-hand experience in practical project management even before they graduate.

With a cash prize of S$500 awarded to each winning team, the LTA-Polytechnics Collaboration is one of LTA’s efforts to plan, develop and manage Singapore’s land transport system. The end goal is to create a quality transport environment by making optimal use of new and existing transport measures, and in turn safeguarding the well-being of the commuters and public.

This year, Republic Polytechnic plays host to the LTA-Polytechnics Collaboration 2007 at its new Woodlands campus.

For media enquiries, please contact:

Land Transport Authority

ANNEX A

COLLABORATION BETWEEN
LAND TRANSPORT AUTHORITY AND THE POLYTECHNICS
10 JANUARY 2007

ABSTRACTS OF THE WINNING PROJECTS

NANYANG POLYTECHNIC
Development of a Temperature Profile Analyser for the Subway Environmental Simulation (SES) Programme

The objective of this project is to develop an application to assist LTA engineers in analysing the average air temperature profile of a tunnel.

The SES output data is currently presented in a text file format and the user would have to manually plot the temperature profile of the tunnel. Data for the y-axis is based on calculation of the average temperatures of the
tunnel from the text file generated by the SES programme. As for the x-axis, corresponding location distances are obtained from another file created by the LTA engineers. The process of extracting the data and plotting of the temperature profile is laborious and time consuming.

The system developed by NYP reduces the effort required to extract and plot the temperature profile of a tunnel for a specific route, by automatically computing the average temperatures and the corresponding location distances, and plotting the graph for visual analysis.

This enables LTA engineers to monitor the temperature conditions more efficiently, and take necessary actions quickly should the temperature profile display abnormalities.

**NGEE ANN POLYTECHNIC**  
**Hazard Notification System with Real-Time Location System (RTLS)**

The objective of this project is to develop and pilot-test a wifi-enabled RFID system to track and monitor the safety of the physically handicapped people while they move around the different parts of MRT stations.

In this project, each individual person or user will be provided with an active RFID tag for identification cum tracking purposes and the MRT stations are being equipped with wifi-enabled RFID readers. The outcome of the project should help MRT personnel at the Station Controls to monitor the movement of people with physical disabilities on a computer screen and if necessary, provide immediate assistance in emergency situations.

The advantage of using this RFID system is that the system can automatically track the movement of these people/users within the vicinity of the MRT stations and physically alert them if they are coming into close proximity with any obstacles or potential hazards. The wifi-enabled RFID tags also contain emergency buttons that allow the people/users to press and alert the Station Control personnel if any of the people/users require urgent assistance.

**REPUBLIC POLYTECHNIC**  
**Innovative FPGA Tri-LED Based Traffic Light System**

To implement a traffic light system based on specifications given by project supervisors. The platform for this implementation is the Xilinx Spartan3 FPGA board and the language used is VHDL, a widely used HDL in the industry.

Today's industry has a well defined design methodology for programmable logic devices using hardware description language (HDL). Together with the use of design tools and HDL, the digital design world is seeing a convergence in design methodology for application specific integrated circuit (ASIC) and programmable logics. This project will provide an initial exposure to students in the implementation of logic design using HDL with familiarization of design methodology usable in both ASIC and programmable logics.

**SINGAPORE POLYTECHNIC**  
**Deep Excavation Monitoring System**

The main objective of this project is to improve the functionality and graphical user interface (GUI) of the computerised Deep Excavation Monitoring System called Kaleo. The improvements to the monitoring system will help to lower possible accidents at deep excavation sites.

This program enables user to monitor the instruments and supporting systems in a site. It can plot a site layout showing the locations of different instruments, supporting systems and surrounding buildings. It can also provide the plan and section views of the supporting systems.

When Kaleo was handed over by the previous project group, the program was not fully functional and some
program bugs existed. The project group had rectified the bugs in the program. Kaleo can now provide the full intended functionality of the program.

The project group had also provide the following enhancements to the program:

- Streamline input files
- Provide more user-friendly GUI
- More precise plotting of site layout with unlimited number of coordinates
- Enable exporting of data to LTA GDB format
- More precise zooming

Real data obtained from LTA was used to validate the program.

**TEMASEK POLYTECHNIC**

Automated Ramp for Disabled Passengers

This project involves the development of an automated ramp that enables wheel-chaired passengers to enter the train smoothly.

A gap that does not trouble an able bodied person might pose a danger to wheelchair bound passengers. The front wheel of the wheelchair may be caught in the gap. This will endanger the wheelchair user as he/she may not have enough time nor strength to pull himself/herself out of the gap before the door closes.

The ramp developed will automatically cover up the gap between the train and the platform when the door is opened. Likewise, the ramp will be folded away when the train doors close. The ramp will be pneumatically driven and will tap upon the train’s air reservoir. It will be operated by the programmable logic controller signal used to control the train doors.

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