

Smart metrobus stops

[Transportation](#), [Public Transport](#)



Reduce the traffic The metrobus system, which IETT has effectuated in order to reduce the traffic density at the main arteries of traffic in Istanbul and to provide quick and comfortable transportation, primarily started to serve at Topkapi-Avcilar route. * To encourage more use of public transport The metrobus system, which reduced the Access time of Topkapi-Avcilar to 22 minutes, it was 67 minutes previously, will be extended to Beylikduzu at the European side of Istanbul and to Kozyatagi the Anatolian side of Istanbul.

One bus can carry 600.000/day. The number of people that typically travel in a car - making bus travel greener and reducing congestion on our roads. Metrobus improves reliability and more people will be encouraged to leave the car at home and use the bus more often. The metrobus system, which displays further development potential than other express lines; whose investment and operation costs are absolutely lower than other railways; whose establishment is completed in a shorter time relatively, has primarily reduced the traveling period, providing time saving.

Since the vehicles move on their specific road, the accident rate and risk reduces. High-tech devices within the system provide a safer and more comfortable travel. By means of its environment-friendly engines, the emission rates reduce drastically and the hybrid engine provides approximately 40% fuel savings Its drawing near alongside the stop facilitates the disabled travelers to get on the metrobus. Operational Capabilities * Intelligent Metrobus Signs provide; * Real time travel information at high-use bus stops Timetables, route maps and local area maps * Need minimum maintenance and have a long service life * No need excavation, easy fitting * Promoting more people to use public transit *

Audible signange fort he visually impaired * Save %75 energy more than traditional stops * Solar-powered system, friendly to environment * Can be used as a lighting and 220 Volt AC power supply in case of emergency or natural disaster * Can call emergency with the emergency/panic button Intelligent metrobus sign system should be designed to withstand malicious use (A push button also triggers an audible message of the same information to help passengers with a visual impairment) . User Classes * Public: people who are using metrobuses searching which line they will use, arrival time of the metrobus or looking at the city map. * Maintenance personnel: people who service, adjust, maintain and repair equipment

STAGE 2: OPERATIONAL CONCEPT FORMULATION * Existing metrobus stops are being upgraded and some new metrobus stops built along for future metobus routes.

This ensures that passengers have reduced waiting times and easier access to buses. * LCD displays on metrobus stops show arrival, departure and estimated time of arrival calculation information based on the vehicle tracking data. This tracking information is provided using satellite signals from the Global Positioning System (GPS) . The data is transferred to the control centre by GPRScommunication. * Positions of all metrobuses are tracked so that predictions of arrival times on information displays at metrobus stops are continually updated. The metrobus stop acts as an active environmental sensing node, powering itself through sunlight and collecting real-time information about the surrounding environment

STAGE 3: OPERATIONAL CONCEPT FORMULATION * Main task The system would provide real-time information on LCD display screens at these stops. The information indicate the fixed route of the metrobuses on graphic maps, the

number of stops and the estimated time before arrival. * Human Task The user will be able to check his current location, closest metrobus stop's location and name and all metrobus lines and their routes.

And there will be a panic button to be used just in case of an emergency (will be located to a certain level of height in order to be kept away children' reach). Different views of system * Physical view * The size of the Metrobus Stop is modular and adjustable depending on the number of people using the bus stop at the specific site. * Schedules and timetables for each route are visible on LCD screens and there will be 2 LCD screens located the midpoint of the distance between 3 doors. The navigation positioning device (GPS) retrieving current vehicle geographic longitude and latitude coordinates from the received satellite signal * The position data transfers to Metrobus Stop Control Center * Compute a distance from the current position to a next target position value and the current geographic longitude and latitude coordinates * Analyzes the current vehicle speed based on a basic vehicle speed, and sends the analyzed speed data and the computed distance data to ETA (estimated time of arrival) unit. Compute parameters for adjusting a remaining distance and the remaining distance based on the received data * And determine the remaining time to the next stop according to the remaining distance to the next target position value and vehicle speed. * The data is transferred to the Metrobus Stop by GPRS communication Using the Metrobus stop, public transit operators can provide passengers reliable estimated time of arrival predictions, achieving greater passenger satisfaction and significantly improving their public image.

A Global Positioning System unit would be installed on every metrobus to send real time information to the metrobus stop display via satellite.

STAGE 4: CONCEPT DEMONSTRATION AND VALIDATION * The concept of design which is chosen during concept exploration is now modeled, simulated and model tests are performed. * Making sure that the proposed design encourages more people to use public transport is the major phase of this stage. Questions should be answered are; * Does the design concept meet requirements for operating, maintaining and supporting the system? * Does it meet safety and personal training requirements?

Personnel Requirements The staff who are responsible with servicing and maintaining are required to have necessary technical knowledge and go through training programmes that may be necessary to bring their skills up to required levels

STAGE 5: FULL-SCALE ENGINEERING DEVELOPMENT

Products are not only tested by consumers, but also will be tested during the process of design and manufacture. Usability Testing and Reference of Testing Results * Intelligent metrobus stop provides timely passenger information based on fast and effective communications. In average, the connection is established in less than 0. seconds, instantly providing accurate information on metrobus status. * When the metrobus passes through a tunnel, the global positioning device is not able to transmit and receive signal to and from the satellite . and therefore, could not retrieve the current vehicle geographic longitude and latitude coordinates and the current vehicle speed to result in incorrect announcement of arrival at a next stop by the metrobus stop announcing system * Pressure and strength test are applied on the intelligent metrobus stops. * The metrobus stop shelter

material is made from 99.9% UV protection polycarbonate. Laserlite Polycarbonate Selter prevents the transmission of more than 99.9% of harmful UV radiation, measured to standard ISO 9050: 2003. Its co-extruded UV barrier protects the sheet from UV degradation and discolouration. It remains stable under extreme climatic conditions (-20° to +120°C). Shelters also stop the rain. * Laserlite Polycarbonate Roofing is self extinguishing, stops the spread of flame and also has excellent fire resistant properties. Therefore, this product complies with many fire related tests, including Heat and Smoke Release Rates (AS/NZS 3837: 1998)

STAGE 6: PRODUCTION AND DEPLOYMENT

Users don't need any training period. Training is only for technical service and operator workers. A timetable is available for convenience, and there is a slot for advertisement in order to create a surplus in cash flow, allowing more metrobus stops to be built. The technology would enable people to leave their cars and encourage more people to use public transport. Changes that should be made for later versions will allow you to check your e-mail, share community information on a digital message board or monitor the local air quality.

STAGE 7 : OPERATION AND MAINTENANCE The system require minimum maintenance and have a long service life.