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| GSM/SATELLITE HYBRID GPS  AUTOMATIC VEHICLE LOCATER (HAVL) |
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| Dr. Islam Eshrah |

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GSM/SATELLITE HYBRID GPS AUTOMATIC VEHICLE LOCATER (HAVL)

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**Abstract:**

Objective: The objective of this graduation project was to create a vehicle tracking system that could provide global pole to pole coverage at an affordable running cost and acceptable over all ownership cost.

Materials and methods: Extensive research has been conducted to identify a suitable communication medium(s). Iridium was identified to have the best coverage, a suitable Iridium plan and transmission technology was research and SBD was chosen. Satellite communication was deemed unnecessarily expensive when operating in urban areas and areas where there is GSM coverage. A hybrid device was built; the device is equipped with an Iridium 9602 SBD modem and a SIM340 GSM/GPRS modem. A preparatory communication protocol was developed to relay the data and commands, back and forth between the AVL and the TS.

Preparatory web based tracking server software was developed. The tracking software is capable of handling thousands of AVLs simultaneously. The modular multitier software is capable of handling multiple AVLs with different protocols. No GIS engine was specified for the TSS, for the proof of concept phase Google maps API has been used.

**CONCLUSION:**

SBD provides global data coverage that is ideal for AVLs that normally transmit bursts of data around 100 bytes. SBD will cost 9-10% of earlier data call technology in AVL applications. The 9602 modem retailing at 499 $US costs less than a third of an Iridium modem phone would cost. GPRS whenever available give a flat rate for data transmission for less than 3.5 $US per month driving operational cost to be next to nothing when operating in urban environment while the presence of the SBD insures global coverage when needed at cost of 12 cents per position update.

AVLs could operate while having more than one modem using simple and cheap microcontrollers. The hybrid device developed provides global coverage, minimum satellite communication use to cut operational cost, and should cost less than 500$ to purchase when produced.