INTELLIGENT TRANSPORT SYSTEM AND ROAD SAFETY

Today, road transport is by far the most prevalent mode of transport, but serious accidents occurring on roads are a matter of great concern for all of us. As per traffic surveys, the number of deaths per year, per 10,000 motor vehicles in India is 10 to 15 times more than that in developed countries. The number of motor vehicles in the country are increasing day by day. Though this is a sign of growing economy of the country, it is also a harsh truth that this might also add to more accidents on roads, if some corrective steps are not taken in time. Broadly, the causative factors of road accidents are, increasing speed limits, lack of driver training, a rather slack system of issuing driving licenses, impractical working hours imposed by greedy transporters resulting in driver fatigue, drunken driving, indisciplined driving etc. One can go on and on listing reasons of accidents due to drivers' faults. In order to minimize or overcome these lapses mostly on the part of the drivers, new systems like Intelligent Transport System (ITS) can be implemented.

In some of the developed countries modern information and communication technology or ITS is already being used extensively. The ITS technology makes traffic flexible and dynamic, adjustable to prevailing circumstances. The various ITS applications available now are mainly aimed at driving comfort and accessibility. However for a long time now, all sorts of ITS systems have been developed with road safety as their primary purpose. Such systems are mainly aimed at supporting the driver in the task of driving, to minimize errors unsafe behavioral aspects.

ITS technology helps to detect hazards and provide, in real time, warning and traffic control actions for motorists to negotiate roadway natural hazards. These warnings include on-site traffic control signages, road closure gates, in-vehicle audio alarms for patrol vehicles and notifications to highway maintenance agencies. ITS also offers sensing and communicating systems which improve the effectiveness of protective devices such as seat belts and air bags, thereby contributing to the reduction of crash consequences. At the present level of development, the largest safety potential exists in increasing seat belt wearing rates by means of seat belt warning, interlock systems and by means of emergency notification systems. Because some 70-75 percent of accidents are caused by human error, these in-vehicle applications will assist the driver through issuing a spoken message or actually intervene to avoid the danger.

Literature surveys have revealed that there are basically, two ways of improving road safety by means of ITS - Systems that influence safety in a direct way and systems that influence safety in an indirect way. Examples of promising direct systems are incident detection and warning systems using Variable Message Signs, violation detection methods, electronic licenses, crash recorders, intelligent speed adaptation devices etc. Indirect systems are those that change the exposure or mode of traffic, debiting systems, systems giving priority to public transport. Generally systems which actively intervene, appear to be more effective than systems which warn and only inform. However, the effect that ultimately will be produced in practice will depend on the precise operation of

the systems, their degree of adaptability and the possible unintended side effects.

ITS is based on intelligence systems placed both along the roadside and in the vehicle. In-vehicle safety technologies primarily include on-board sensors that collect data and On-board Units (OBUs) that issue warnings or take partial control of the vehicle. Infrastructure based safety systems primarily comprise of roadside sensors that collect information and roadside equipment that issue warnings and advisories. By means of communication between these systems and road users, various road safety problems can be addressed easily. It is imperative to mention that such a positive impact does not come by itself but needs careful analysis, planning and monitoring. ITS can radically modify transport systems, particularly the extent to which they may change the role and the behaviour of drivers, it can also contribute to reducing the high human and economic losses as result of road accidents. ITS applications are, therefore, designed for road safety purposes, increasing driving comfort and improving traffic management.

Studies conducted in USA, Germany and Japan have brought out the facts that, if effectively implemented, ITS will contribute significantly to a 50 percent reduction in road fatalities, survival rates of crash victims will increase by 15 percent as a result of in-vehicle automatic emergency call systems, travel time will be reduced by 25 percent, it will lead to 50 percent less pollution in city centres due to enhanced urban traffic management, automatic debiting and tolling systems based on ITS will save travellers over 40 hours per year and freight and vehicular operations will become more efficient cutting costs by 25 percent.

Considering the advantages of implementing ITS both on the roads and in the vehicles, it is high time that the implementing agencies exchange information about and experience with the technical performances, economic feasibility and the road safety and other effects of ITS systems, promote the development of ITS to improve the safety of vulnerable road users also, as the vehicle based systems aim to improve the safety of the car drivers and occupants, monitor the quality of the systems and services, develop together with operators a vision and strategy for the deployment and operation of services in co-operation with the vehicle manufacturers and take care that sufficient research is carried out with regard to the road safety aspects of ITS.

New technologies may compensate for drivers' errors, but is important that drivers be aware of the capabilities and limitations of the systems. To fully realize the benefits and new technologies drivers need to learn to use them and gain experience. Proper design is important to ensure that drivers are not overwhelmed. Training cannot compensate for badly designed technologies.

The introduction of new technologies should have to be managed by ensuring they are part of national safety plans and strategies. Such an approach assures a high level of Government commitment to the safety focus and stresses the importance of the technologies in question. Basic infrastructure needs to be provided by Government to ensure the most rapid and successful deployment of ITS safety technologies. Government should be involved to ensure new products have real safety benefits and are not unsafe. Whether such involvement comes in the form of setting standards, product testing, research or otherwise is less important at this stage, then the acknowledgement of the role and a commitment to fulfill that role. Government should set priorities for the deployment of infrastructure related technologies that will facilitate more rapid technological development and deployment by the private sector and other independent sources.

R.P. Indoria

(R.P. Indoria)
Secretary General