NEED FOR INTELLIGENT TRANSPORTATION SYSTEMS IN AMARAVATI

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**ABSTRACT**

Gone are the days when people used to waste their valuable time waiting for various transportation media. A new revolution is going on – a revolution in the transportation industry. Now transportation industry is not limited to just construction and upkeep of roads. Emphasis is given to effective implementation of the various elements of transportation and to make best out of them. All the countries in the world are now inching forward to provide their citizens the best facilities for transportation, as it costs very high for them and is practically invaluable. One such system which many countries are now implementing is the Intelligent Transport Systems (ITS). Applied effectively, Intelligent Transport Systems and Services (ITS) can save lives, time, and money as well as reduce threats to our environment and create new business opportunities. The positive impact of ITS technology on travel efficiency can also bring corresponding benefits for the Earth’s environment. Navigation systems and traffic information services, for instance, inform users of traffic jams and the best route all these systems encourage multimodal transport use and reduce the time spent on the road, thereby reducing traffic congestion and pollution. In addition, mobile ITS services can bring users unprecedented freedom, offering a host of services such as mobile booking and payment, now commonly referred to as e-ticketing.

**Keywords:** ITS, Transportation cost, Travel time, public safety, feasibility, traffic management, Environmental Protection

**Introduction**

The future of Intelligent Transportation System (ITS) is promising. Yet, ITS itself is anything but futuristic. Systems, products and services are already at work. Still, the wide-scale development and deployment of these technologies represents a true revolution in the way we think about transportation.

Intelligent transportation systems, or ITS, encompass a broad range of wireless and wire line communications-based information, control and electronics technologies. When integrated into the transportation system, and in vehicles themselves, these technologies help monitor and manage traffic flow, reduce congestion, provide alternate routes to Travellers, enhance productivity, and save lives, time and money. Combination of latest information & communication technologies in conventional system of transportation, by which:

- Effective road capacity increases up to 20% without new construction,
- Major reduction in road casualties,
- Travel time savings amounting to one year over an average lifetime,
- Significant reductions of vehicle CO₂ emissions,

Intelligent transportation systems provide the tools for skilled transportation professionals to collect, analyze, and archive data about the performance of the system during the hours of peak use. Having these data enhances traffic operators’ ability to respond to incidents, adverse weather or other capacity constricting events.

Traffic accidents and congestion take a heavy toll in lives, lost productivity, and goods to move more safely and efficiently
through a state-of-the-art, intermodal transportation system.

Need

Roadway transportation is congested now days due to high usage of vehicles, lack of knowledge regarding traffic rules, lack of electronic and wireless communication systems for traffic maintenance etc….. So, intelligent transportation system (ITS) is an advanced electronic wireless communication system which obviously solves the traffic congestion problem.

Intelligent transportation systems (ITS)

The application of advanced sensor, computer, electronics and communication technologies and management strategies in an integrated manner providing traveller information to increase the safety and efficiency of surface transportation system. Ensures an open market for services and equipment, because there are “standard” interfaces between components. It also permits economies of scale in production and distribution, because all users will be able to use similar equipment, thus reducing the price of products and services. It not only ensures consistency of information delivered to end-users but also interoperability between components, even when they are produced by different manufacturers. ITS in itself permits an appropriate level of technology independence and allows new technologies to be incorporated easily.

The system provides the basis for a common understanding of the purpose and functions of the ITS, thus avoiding conflicting assumptions. Coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident is encouraged. Traffic surveillance is made easy as it collects, stores, and provides electronic access to related data. The major areas of operation of its are:

- Weather Information Systems
- Commercial Vehicle Electronic Clearance
- Real-Time Traveler Information
- Traffic and Transit Management
- Traffic Signal Systems

Major ITS areas

- Multimodal Travel Management and Traveler Information
- Commercial Vehicle Operations
- Advanced Vehicle Control and Safety Systems
- Multimodal Regional Traveler Information
- Freeway Management
- Traffic Signal Control
- Transit Management
- Electronic Toll Collection
- Electronic Fare Payment
• Incident Management
• Emergency Management
• Highway Rail Intersection Safety

**ITS IN TOWNS AND CITIES**

• Systems giving priority to public transport at junctions with traffic signals, e.g. allowing delayed vehicles to make up lost time.
• Automatic Information and Routing Systems reaching their destination, or parking spaces, without wasting time.
• Electronic Control Systems permit only authorized vehicles to enter.

**ITS in rural areas**

It is difficult to provide public transportation between communities in rural areas due to the limited infrastructure and their backwardness in economic front.

• Intelligent Speed Adaptation (ISA) systems ensure that
• To drivers via overhead message signs or on-board devices.
• Incident detection Speed limits are maintained at all times.
• Traffic information and advice systems that automatically send messages to traffic control centers and provide immediate warnings to drivers.

**Components of ITS Architecture:**

• An Overview or (Conceptual Model)—A top-level diagram, which shows how the various elements of the transportation system gets integrated and explains how the whole system works.
• A Functional (or Logical) Architecture (or Viewpoint) – It consists of logic involved in the integration of various services. If we have to implement something we must first think and plan the series of operations needed to satisfy the various user needs.

• A Physical Architecture (or Viewpoint)—Involves the various physical nodes involved in the system. A system can’t be imagined without proper infrastructure, so the specifications for the physical components and their locations for a particular deployment are required.
• A Communications Architecture (or Viewpoint)—Now in the communication and information services era an analysis of the requirements for the links needed between the locations shown in the Physical Architecture must be dealt very carefully as any lose and weak node can lead to the failure of whole system New applications and technologies are being developed every day. Better-known examples of ITS technologies include;
  • On-board navigation systems,
  • Traffic video/control technologies,
  • Weather information services,
  • Variable message signs,
  • Fleet tracking & weigh in-motion technologies
  • Crash notification systems,
  • Electronic payment systems,
  • Roadbed sensors.

**Points to be considered before designing:**

Before designing any system we must have faith in it that it will not become obsolete and ineffective after a particular period thus the ITS should;

• Be planned in a logical manner,
• Be integrated successfully,
• Have desired behaviour,
• Meet the desired performance levels,
• Be easy to manage & maintain,
• Be easy to extend,
• Satisfy the expectations of the users.

Limitations and difficulties in implementing ITS:

Now in the present scenario we can’t even imagine traffic management without ITS. As it will be impossible to provide the expected services because the components, both publicly and privately owned, are not fully compatible. As we are aware of changes in our day to day needs, it will be difficult to extend or modify the various service requirements without the proper planning which is present in ITS. It will be literally impossible to adopt emerging technologies and this result in.

Difficulties in Implementing ITS:
Any modern infrastructure development activity has some disadvantages which we must study before getting started; otherwise it will lead to huge economical loss. The first and foremost difficulty a country faces to implement the ITS is the economic concerns related to it as it involves huge investment. The other potential setbacks in implementing the system are:

• Scarcity of skilled manpower required for the development and the proper working of the system.
• Any region might not be economically and psychologically prepared to accept the system.
• An ITS might not be applicable for the region in the present scenario.
• Political problems in a region which discourage the effective implementation of the system.
• An ITS applicable to one region may not be applicable to another, because of geography, road and weather conditions etc.
• Because of heterogeneous traffic conditions, the various systems for all types of traffic must be introduced in a single road, which leads to congestion and overlapping of data.
• If the road is prone to frequent accidents at various intersections, the systems must be installed at regular intervals, which increase the cost.
• If in some places, the traffic is very less, the system will be seldom used. Hence it becomes ineffective, again leading to economic losses.

Conclusion

Fulfilling the need for a national system that is both economically sound and environmentally efficient requires a new way of looking at and solving our transportation problems with obvious feasibility. The decades-old panacea of simply pouring more and more concrete neither solves our transportation problems, nor meets government’s broad vision of an efficient transportation system.

ITS and its related technologies have been widely accepted by both the public and private sectors as the way forward to achieving the goal of sustainable mobility - while at the same time improving quality of life. This public-private partnership is the key to successful ITS implementation.

ITS already has a presence in everyone’s day-to-day mobile activities, a part of our daily life. Inside the vehicle, for example, active support systems such as vision enhancement, lane-keeping assistance, collision warning and alertness monitors will have an impact on driver error and fatigue. In addition, systems such as coordinated traffic control, ramp metering, variable message signs, and traffic and incident detection systems are being implemented by infrastructure operators to monitor road conditions and provide smooth and safe journeys.
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