THE INTELLIGENT TRANSPORT SYSTEMS – RISKS AND BENEFITS

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Abstract: *Effective deployment of ITS technologies depends in part on the knowledge of which technologies will most effectively address the issues of congestion and safety. Thus, it is important to understand the benefits or risks of both existing and emerging technologies. Based on documented experience locally and throughout the country, ITS deployments in urban areas have the potential to offer the following benefits:*
• Arterial management systems can potentially reduce delays with the implementation of advanced control systems and traveler information dissemination.
• Freeway management systems can reduce the occurrence of crashes, increase capacity, and decrease overall travel times.
• Freight management systems reduce costs to motor carriers with the implementation of the commercial vehicle information systems and networks.
• Transit management systems may reduce travel times and increased reliability with automatic vehicle location and transit signal priority implementation.
• Incident management systems potentially reduce incident duration and offer numerous other benefits.
There is a wide range of benefits that can be obtained from ITS deployments. For example, fuel consumption, travel time, and delay can be reduced. ITS deployments can also result in higher travel speeds, improved traffic flow, and more satisfied travelers for all modes.

Keywords: ITS, RISKS, BENEFITS, DEPLOYMENTS

1. Introduction

The use of information technology is implemented and expanded in almost all areas and fields of human labor, so any transport not an exception. Intelligent Transport Systems (ITS) is the application of information technology in the transport sector. Intelligent Transportation Systems are defined as:

"Application of advanced sensors, computers, electronics and communication technologies and management strategies - in an integrated manner - to increase the safety and efficiency of surface transportation system"

This system can help transportation planners and operators. Accordingly tackles congestion, pollution, poor accessibility, may also help to reduce travel time, provide reliable, safe and convenient transport while reducing energy consumption and protecting the environment and working environment.

Figure 1*. Intelligent Transport System*

1.1 Intelligent Transport System

Most cases occur is creating problems with crowds and delays in road traffic. Therefore, it is necessary to find ways to manage traffic more efficient ways of existing roads. In all this, ITS can contribute to solving these problems. In the 60s of last century to optimize the traffic in the cities were designed computer control systems. More recently emerging and developed a range of sophisticated products and systems , which appears in a wide range of systems for commercial transport services for freight and public transport , the occurrence of ITS in our vehicles and informing the passengers in them. They extend to all modes of transport such as road, rail, water and air. Of course you need full coordination to exploit the full potential of ITS in the transport network both national and European level.

It must be mentioned that the existence of ITS software and hardware (architecture) allows a systematic basis for expansion of all possible systems and applications to be interoperable.

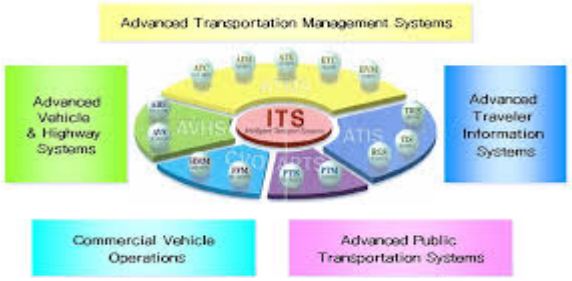

Figure 2. *Application of Intelligent Transport System*

2. Possible long-term problems and risks

The biggest change in the development of road safety is a change of focus and philosophy of integrated traffic system and traffic parameters of the process. Vehicle safety, internal passive occupant safety and road improvements in the existing environment, with specific targets risk groups (young drivers) and risk behaviors (drunk driving, speeding) - and prudent levels sanctions - are activities and synergies in integrated access systems. The development of intelligent transportation systems (ITS) suggests that road transport will become increasingly dependent structured by new and additional requirements for vehicle safety and driver / operator.

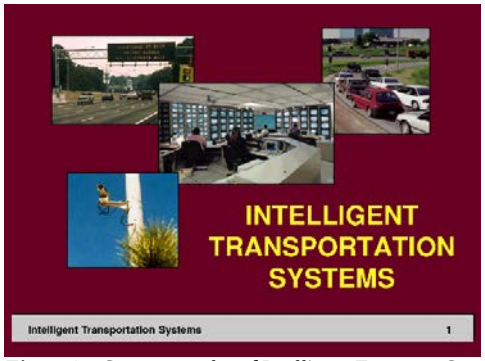

Figure 3a*. Some examples of Intelligent Transport System*

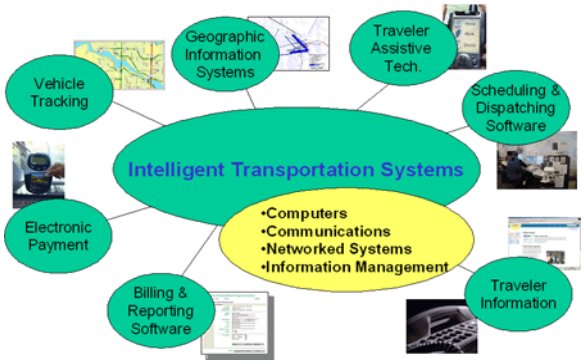

***Figure 3b**. Some examples of Intelligent Transport System*

Intelligent Transport Systems ITS is widely known as Supervisory Control and Data Acquisition (SCADA) systems, which are designed for operations and safety. These systems are now connected to the internet and use available commercial technologies that introduce new security risks and threats.

In June 2010, anti-virus Security Company announced the first detection of the virus (malware) that attacks SCADA systems. The virus called Stuxnet was discovered and initially 14 systems internationally.

Brisbane City Council and Department of Transport and Main Roads stressed the need for implementation of secure information technology with full protection against malicious attacks on the system. According to the Brisbane City Council and Department of Transport and Main Roads was established high susceptibility of attacks on road systems in Brisbane,Australia. "The systems for traffic management of critical infrastructure in Brisbane were obviously not as secure as they should, and they were vulnerable to targeted attacks." The report presented by the Brisbane City Council and Department of Transport and Main Roads showed that the sensitivity of the system lies largely in the use of common information technology and internet connectivity .

Just like Australia in Brisbane and Israel learned this lesson the cruel way when virus was used to access and closing the network of cameras on a major arterial tunnels in Haifa. Consequently it was disabled and paralyzed highway in periods of two hours.

Also in Germany there are doubts about the abuse with changes in light of lights so drivers can create confusion, delays, congestion or causing accidents and incidents. With the introduction of ITS vehicle is expected to have a very positive safety improvements, which may contribute drivers to change their ways of taking along not intended for system engineers and implementers design. Identified downsides and unintended effects of ITS include:

• *Risk and taking along satisfactorily*. ITS can change the perception and the perception of risk drivers from driving , bringing up taking along risky driving , if their level of risk sensitivity is lower than their preferred level of risk. Drivers can also engage in the risky driving desire for compensation of reduced mobility (at low speed driving). According to US Federal Highway Administration Speed Management Information, accelerating too fast and driving under the circumstances given the speed limits are a factor of nearly a third of all fatal accidents. In 2011 there were 32,367 deaths on the roads, of which 9944 were associated with accelerated drive, which means a decrease of 5 % from the previous year. Driving too fast is a problem with the safety of all roads. Although much of the public concern and is associated with premature focused driving, almost half of the fatal cases are due to this.

• *Excessive confidence*. Drivers can take much greater responsibility for driving certain of the existing system and can leave you indifferent to accountability system without it being designed for such an undertaking. Excessive trust in ITS can create problems when the system is active while, so when driving a vehicle without ITS staffed, or if the system gives up and the driver should re-gain control.

• *Subtract attention*. ITS can overwhelm the driver to drivers if they wish to pursue more information in long periods of time. The National Highway Traffic Safety Administration reported that in 2010 drivers were the cause of 18 % of the total fatal accidents, killing 3092 people and themselves accidents resulted in 416 000 people injured . Forty percent of American teens say most were in cars or vehicles when the driver used a cell phone, GPS and other devices, putting people in danger. According to research at Virginia Tech Transportation Institute6, shown that text messages generate 23 times more likely to crash than driving without such activities. Eleven percent of drivers aged 18 to 20 years who participated in a car accident and survived, admitted that the accident had been accepted or sent emails or texts, monitoring, commands etc.

In [9] and [10] is presented experiment of observation and analysis of the movement of means of transport in real time through the application of GPRS. A method for controlling the movement of a road train with minimum fuel consumption is experimented with optimization of technical and operational parameters.

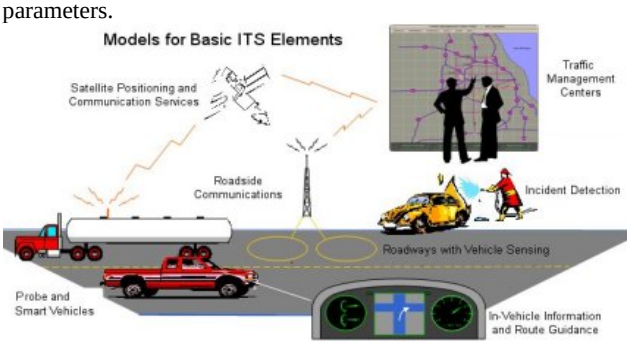

Figure 4.Models for Basic *Intelligent Transport System* Elements

The biggest risk serious deficiency can be detected in the overall application failed because ITDZ assessment of the full implications of its integration into existing or additional components. At the same time it is possible to ascertain that no valid technical application which is effectively impossible to apply due to organizational reasons. And to work for government, public administration or provider of ITS, ITS architecture helps in the long run to get the best value for the investment and effort invested in this whole effort. Risk and lack of ITS architecture that can create" islands of technology". However, the time when their boundaries will merge as a result of the need for expansion or connection will appear incompatibility.

Conclusion

The goal of intelligent transportation systems (ITS) is to improve the efficiency and safety of the transportation system. Effective scheduling of ITS technologies depends in part on the knowledge that the technologies most effectively answering questions about congestion and safety. In addition, it is important to understand the benefits from both, existing and emerging technologies.

The problems and risks must be disclosed by users of intelligent transportation systems (ITS), in order to make a real assessment of their resolve and overcome. After the assessment, you will surely get the desired result, i.e. the correct technical solution for removing them.

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