# The position of intelligent transportation system in national security

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**Abstract:** Transportation and mobility were one of the factors in human societies from many years ago which turned into intelligent transportation as everything in 21st century has been intelligent. This achievement has caused many changes in countries such as control, assessment and reduction of death toll, reduction of accidents and safety of the countries. Social and individual security can be accomplished with national security. On the other hand, national security is held when all of the social systems work properly. Transportation realm is one of those systems which play an important role in communication with other countries rather than the people of countries. Therefore, advancement in transportation system will lead sustainable development. In this paper, the role of intelligent transportation systems in national security will be studied.

**Key words:** *National security; Intelligent transportation system; Control and assessment*

## 1. Introduction

Security is the issue laid in the history of the human. From the genealogy point of view, the concept of security has a long history rather than society and community. But the first political and philosophical debates can be found in the works of Plato and Aristotle. Aristotle approximately and Plato strictly, introduced Justice as the most fundamental and governmental tool to achieve security. In another words, in their viewpoint security is one of the goals of any government and regime, therefore the life of the governments are depends on security. Later ideologists of the age of enlightenment (Is a period in Europe philosophy, a term used for 19th century or longer period related to rationalism) such as Hobbes, Locke (The philosophy of enlightenment and the father of liberalism), Rousseau (Jean-Jacques Rousseau (1712-1778) from Switzerland lived in the apex period of enlightenment), and Montesquieu (Montesquieu French thinker in the period of enlightenment and the most influential politician in modern days) presented higher value for the security. Hobbes knew "ordinary situation" as unsecured situation and "social situation" as a situation of security. Locke, on the other hand, with an inclusive approach, says: the purpose of the peace and security is not only to survive, but also to reach prosperity, comfort and convenience which are our natural right. Montesquieu believes: because security is a result of peace and peace is the first natural law, so the most important principle in a government is to create security. By security it doesn't mean just to keep alive, but to provide freedom. Rousseau looks at security with an eye on

the role of trust. The concept of security has gradually evolved which can make further dimensions in a case that nowadays we can see security in development not weapons. In another words, more emphasis on the public security rather than internal security of the country, and human development instead of military security. However, two main factors of security include freedom from needs and release from fear.

## 2. Intelligent transportation system

### 2.1. The history of intelligent transportation system

The base of commute control goes back to the history of cars or 1860s in London when a traffic light was set at an intersection around parliament for the security of the members. The first modern-like traffic light in the history was used in Detroit, Michigan in 1920.

There are many definitions and interpretations have been presented for "intelligent transportation system". Intelligent transportation association of the U.S for example, defined it as the use of the people from technology to save time and cost in daily life in 1998. A year later, the department of transportation of the U.S, presented the official definition of the intelligent transportation system as follow: the collecting, maintaining, processing and distributing systems of data related to mobility of goods and passengers. But another definition presented in the ITS strategic plan of the state of Victoria in Australia, interprets engaged definition and more modern one.

"Intended use of Data and communication technology (ICT) in order to create a more efficient and secure transportation system."

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Fig. 1 illustrates the data flow in an intelligent transportation system which starts with data collection and ends at its feedback.
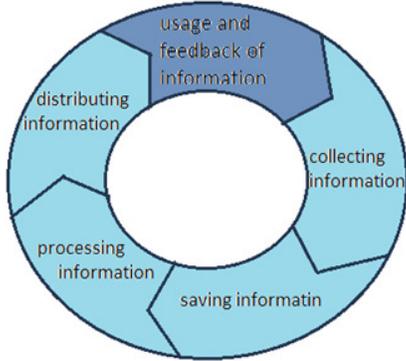


**Fig. 1:** the diagram of data flow in an intelligent transportation system

The main functions of an intelligent transportation system are as following:

• The management and optimize traffic flow and mobility
• The management and control of accidents
• The management and support of emergency vehicles
• The management of electronic pay toll, parking, ticket shopping and booking
• The monitoring and control of heavy vehicles and cars
• The management of advanced transportation
• The management of public transportation
• The management and support of the pedestrians

• The management and control of air and water transportation
• The management and control of border movements
• The management and control of space traffic (out of atmosphere)
• The management and control of rail transportation
• Assistance in disaster management

There are a lot of advantages in intelligent public transportation which are mentioned below:

• Reduction of workforce fault
• Optimum use of workforce in transportation systems
• Avoid wasting time and expense in national scale
• Increase in reliability
• The opportunity of accurate planning
• Increase in secured feeling

The services of intelligent transportation system can be described as following too:

• Management of advanced traffic systems
• Traffic control (land, air, sea, and space)
• Minimize delay time and car lines control
• Trip management for long trips
• Accidents determination and their respond
• Offense registration (air, sea, and land)
• Weather warning systems
• Advanced passengers data systems
• Vehicle navigation
• E-pay systems on the way
• Responding systems in emergencies

**Table 1**: illustrates enabling technologies of intelligent transportation systems in sub-structure facilities and vehicles. Sub-structure improvements leads security and feeling safety.

| Technology of intelligent transportation system | Sub-structure facilities department | Vehicle department |
| --- | --- | --- |
| Data input | Traffic indicators | Automatic vehicle determination |
| | Weather monitors | Vehicle weight during movement |
| Data process | Data blend | GPS |
| | Automatic accident determination | World map |
| Data transfer | Stable linkage | MCI |
| | Optical fibers | Dedicated short communication |
| Data distribution | Various informant signs | Highway radio |
| | internet | Radio of traffic message system |
| | Slope measurement | Data guidance |
| Data Productivity | Urban traffic control | Accident prevention |

## 3. Definition of national security

National security notes all survival factors for the governments from the economic, military and political aspects by the use of diplomacy. National security is a concept that introduced after 1945.

There are several definition presented about national security. Relative freedom from threat, attack and preparation to deal with any threat and attack is called security. In another definition, security is a condition in which controlling forces of current situation, have the ability of protecting against disruptive forces.

In order to increase security, some measurements should be considered such as conservation, protection, management, strengthens, reinforcement, inhibition, and insurance. However when someone or an organization intends to reduce security other processes must be considered such as sanction, weakening, disarming, division projection and threat. The security can be divided into some categories: individual security, social security, national security, international security, economic security, cultural security and mental security.

The most important mission of intelligent transportation system is to improve transportation system, to save time, cause the life and properties of people to survive, to enhance the quality of life, environment and security and to make careers better.

One of the items that can threat individual, social and national security is accidents and events in communication pathways of a country. Individual and social security can be achieved by intelligent transportation systems leading sustainable development and national security.

### 3.1. Classic and tradition definition of national security

This ideology defines national security as study, use and control of the threats by the military and as the way that national governments use military forces to face foreign military threats (Related to the concept of national security, Arnold wolfs says: national security is arose from national benefits which is related to the change from welfare to security. He believes: a country should have much security to avoid war in case of need to preserve its values and if it begins a war and overcome it again can keep its values).

This belief, categorize foreign threats based on the priorities and the level of their importance rather than local threats. Moreover, international system has got higher value than local area. Eventually, with a detailed view, defines security inside of the borders of a country.

### 3.2. Modern definition of national security

This approach was developed defines national security by considering the changes in the international and local environment and challenges posed by globalization, localization, and internationalization issues of some issues like AIDS, drugs, environment, economic recession, advent of atomic bomb, new technologies in societies and etc. consequently, in addition to the study of threat, use and control of the military force such as priority of the environmental, economic, social, political and cultural threats, not only national security shape up in blur and puzzling form, but also it can have universal appearance by global conditions of close relation and their inter-relation.

### 3.3. The main purposes of national security

1. Independence and integrity
2. Welfare of people and the country`s political stability
3. Preserve national and economic values
4. Providing leisurely to the possible threat

Sibel McGee proposed new definition of the national security based on the concept of national security strategy as following figure which is obvious that lots of indicators take part in the modern interpretation of national security. These indicators and communications are shown in Fig. 2.



**Fig. 2:** Modern concept of national security

As shown in Fig. 3, main indicators in new definitions of national security are reduce death toll, reduce trip expense, increase credit and social investment.
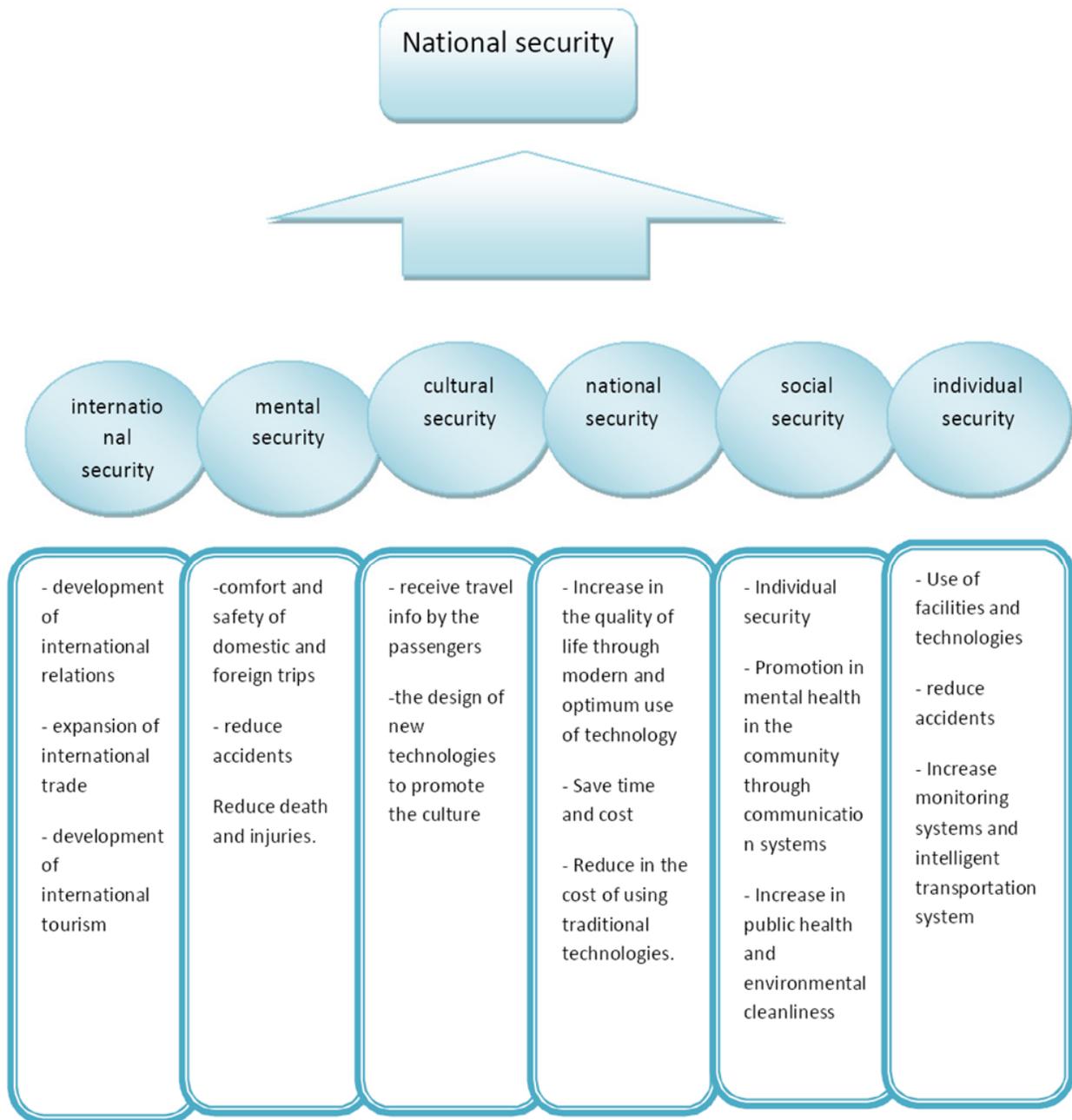


**Fig. 3:** conceptual model of the effect of intelligent transportation systems on national security principles

In Fig. 4, the conceptual model shows the inter-relation of intelligent transportation systems and national security. As it can be seen decrease in accidents, crashes, logistic costs, expense and energy save are achievements of intelligent transportation systems.

sometimes be harmful for the society, but if they can be used properly, the country will be beneficial. Intelligent transportation systems are one of the technologies that can cause national security in case of proper use in order to eliminate threats and attacks.

## 4. Conclusion

The threat of foreign enemy has been changed from verbal to practical either inside the border or outside of it. Although new technologies can
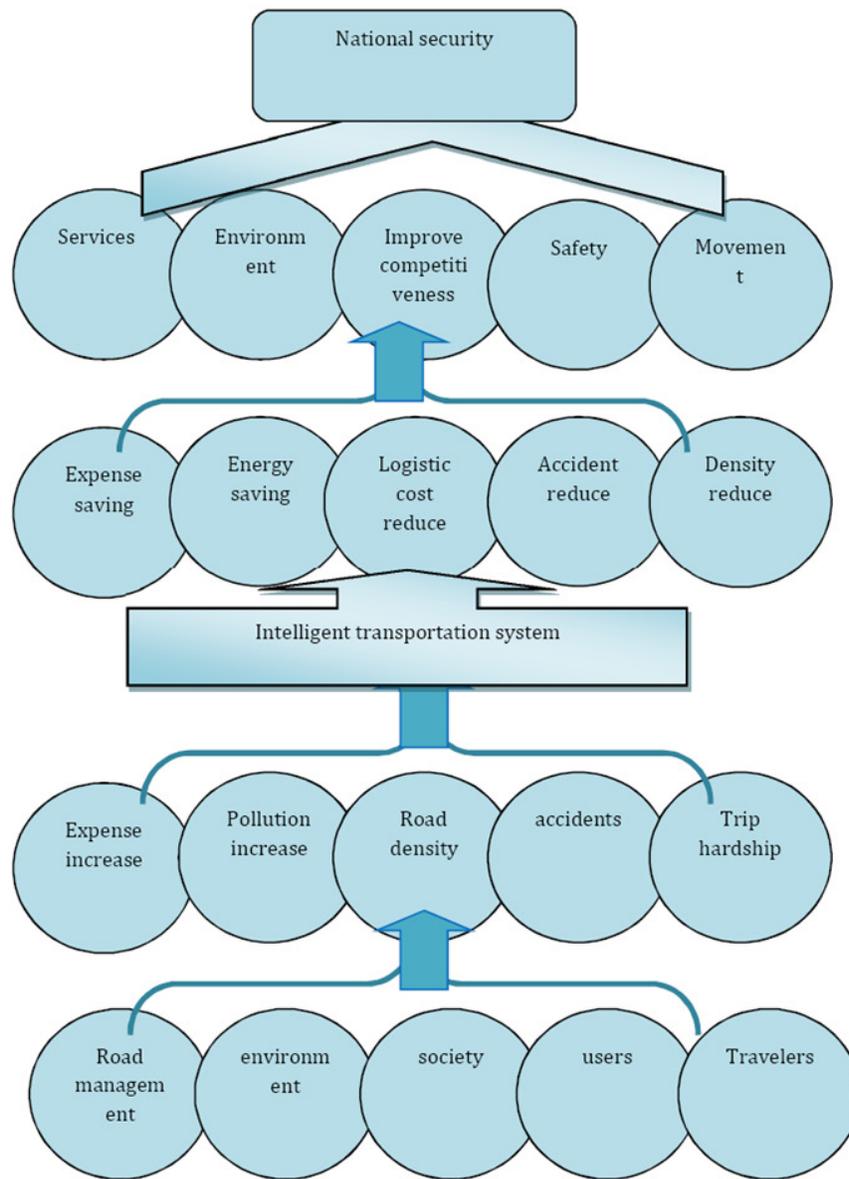
**Fig. 4:** conceptual model of intelligent transportation system connection to national security

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