

Traffic Management Safety Audit

UNIT V

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Traffic Management Systems for Safety

- The National Highways Authority of India (NHAI) is testing a new system, which will tell authorities if a vehicle has valid registration, pollution certificates and other documents. The new system is called Advanced Traffic Management System (ATMS) and all the expressways in the country will soon be integrated into it.
- The ATMS will be linked to the vehicle database of the transport department (RTOs).

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- In order to achieve a significant improvement in road safety, the Government of India is committed to:
 - Raise Awareness about Road Safety Issues

The Government would increase its efforts to promote awareness about the various aspects of road safety, the social and economic implications of road accidents and what needs to be done to curb the rising menace of road accidents. This would enable and empower the different stakeholders to play a meaningful role in promoting road safety.

- Establish a Road Safety Information Database

The Government will provide assistance to local bodies, Union Territories and States to improve the quality of crash investigation and of data collection, transmission and analysis. A National Road Safety Information System will be established for providing continuity and policy guidelines to this activity.

- Ensure Safer Road Infrastructure
- The Government will take measures to review standards pertaining to safety in the design of rural and urban roads and bring them in consonance with international best practices keeping in view Indian traffic conditions. Continuing application of Intelligent Transport Systems (ITS) under a national framework to establish a safe and efficient transport system will be encouraged.

Safer Vehicles

- The Government will take steps to ensure that safety features are built in at the stage of design, manufacture, usage, operation and maintenance of both motorized and non-motorized vehicles in line with international standards and practices in order to minimize adverse safety and environmental effects of vehicle operation on road users (including pedestrians and bicyclists) and infrastructure.

Safer Drivers

- The Government will strengthen the system of driver licensing and training to improve the competence and capability of drivers.

Ensure Safer Road Infrastructure

- The Government will take measures to review standards pertaining to safety in the design of rural and urban roads and bring them in consonance with international best practices keeping in view Indian traffic conditions. Continuing application of Intelligent Transport Systems (ITS)

Safety of Vulnerable Road Users

The design and construction of all road facilities (rural and urban) will take into account the needs of non-motorized transport and the vulnerable and physically challenged in an appropriate manner. The Government will seek to disseminate 'best practices' in this regard to town planners, architects, and highway and traffic engineers.

National framework to establish a safe and efficient transport system will be encouraged.

- Road Traffic Safety Education and Training

Road safety knowledge and awareness will be created amongst the population through education, training and publicity campaigns. Road safety education will also focus on school children and college going students, while road safety publicity campaigns will be used to propagate good road safety practices among the community. The Government will encourage all professionals associated with road design, road construction, road network management, traffic management and law enforcement to attain adequate knowledge of road safety issues.

- Enforcement of Safety Laws

The Government will take appropriate measures to assist various state and other governments to strengthen and improve the quality of enforcement in order to ensure effective and uniform implementation of safety laws. The Government will actively encourage the establishment and strengthening of highway Patrolling on National and State Highways in cooperation with State Governments and Union Territories as appropriate.

- Emergency Medical Services for Road Accidents

The Government will strive to ensure that all persons involved in road accidents benefit from speedy and effective trauma care and management. The essential functions of such a service would include the provision of rescue operation and administration of first aid at the site of an accident and the transport of the victim from accident site to nearby hospital. Hospitals alongside the National Highways and State Highways would be adequately equipped to provide for trauma care and rehabilitation.

- HRD & Research for Road Safety

The Government will encourage increased activity in programmes of road safety research by identifying priority areas, funding research in those areas adequately and establishing centers of excellence in research and academic institutions. The Government will facilitate dissemination of the result of research and identified examples of good practices through publication, training, conferences, workshops and websites.

- Strengthening Enabling Legal, Institutional and Financial Environment for Road Safety

The Government will take appropriate measures to ensure that the required legal, institutional and financial environment for road safety is further strengthened and a mechanism for effective coordination of various stakeholders is put in place. The reforms in these areas would provide for the active and extensive participation of the community at large, of the private sector, academia and NGOs.

- Implementation Strategy

Implementation Strategy The Government has decided to establish a dedicated agency viz. a National Road Safety Board to oversee the issues related to road safety and evolve effective strategies for implementation of the Road Safety Policy. The Government has also decided to establish a National Road Safety Fund to finance road activities through the allocation of a certain percentage of the cess on gasoline and diesel.

Road Safety Audit

- Road Safety Audits (RSA) are essential for improvement of road safety and prevention of accidents. Audits are required at all stages, be it feasibility, design, construction or pre-opening. Audits are also to be carried out on existing NHs and for improvement projects.
- A key feature of a road safety audit is the use of a team of professionals with varied expertise. The team should include highway safety engineers, highway design engineers, maintenance personnel, and law enforcement. Additional specialties should be added to the team as needed. The team members must not be involved in the design or maintenance of the facility being examined, so that they can have an objective point of view.

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- The road safety audit may investigate general safety conditions, or it may focus on specific concerns or users. Walkability audits concentrate on pedestrian safety and accommodation, and transit audits focus on safety of bus and train users. The New York State Department of Transportation's Safety Appurtenance Program (SAFETAP) uses audit techniques to make simple but effective safety improvements in conjunction with road resurfacing projects. This helps prevent increases in crashes that sometimes occur due to increased driving speeds after road resurfacing.

Audits attempt to avoid some of the limitations inherent to any crash history scoring system. Some of these limitations are:

- Reactive systems require waiting until crashes have already occurred, possibly with resulting injuries and fatalities.
- Crash frequencies are subject to regression toward the mean. It can be hard to determine whether good or poor short-term safety performance is due to the inherent safety or hazards of the site, or random variation. Sites with high or low crash rates are likely to move towards the mean as a matter of course, even if nothing changes.
- Most existing procedures focus on sites that have experienced the most accidents, which may or may not be the sites that could benefit most from a safety improvement.
- Reactive systems are limited by the quality and timeliness of the data entered into them. Deficiencies in crash reporting limit the effectiveness of these systems.

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- If historical crash data are available, the audit team should make use of them. However, one of the strengths of the audit process is it can find safety concerns before they contribute to crashes. Lack of data is a reason to use the audit process, rather than an excuse not to.

There are three basic forms of road safety audit:

Audit of an existing road or road network

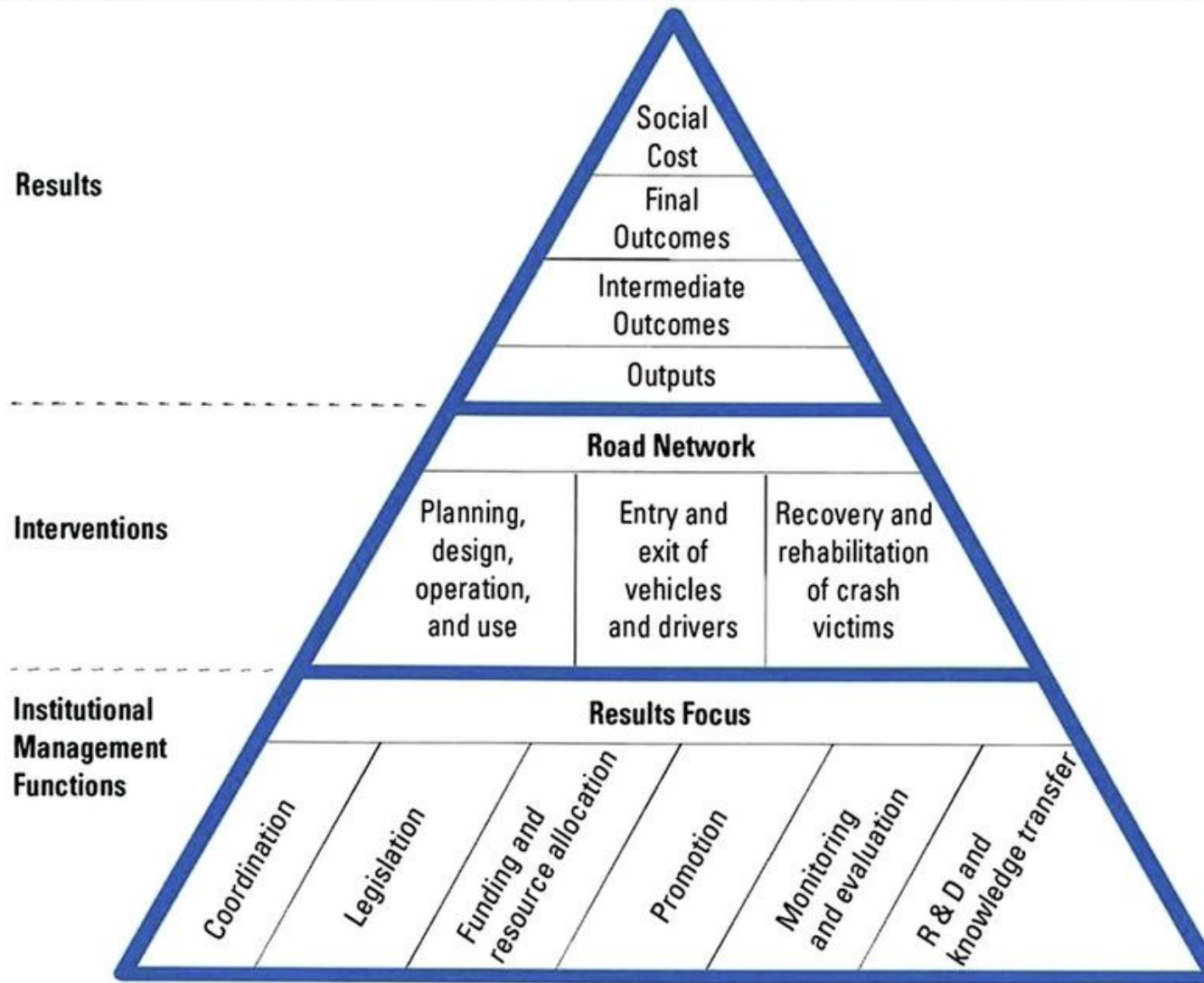
- To check a road or a network for consistency, to make sure that a road user does not encounter unexpected road safety issues
- Audit of a roadworks project at various stages of completion:
- Feasibility stage, or project scoping, when the general nature of the project is determined
- Preliminary design stage, when alternate courses of action for the project are analyzed, and selected or discarded

Detailed design stage

- Construction stage, to make sure work zone traffic controls are protecting road users and construction workers
- Post construction stage, to make sure the completed project is performing as intended

Thematic audit

- Thematic audits focus on particular aspects of a road. They may be used to investigate road safety issues brought up by road user groups, or audits conducted to support a land development application.



Source: Bliss and Breen, building on the frameworks of Land Transport Safety Authority, 2000; Wegman, 2001; Koornstra et al, 2002; Bliss, 2004.

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- Using new technology such as smart traffic light and traffic control systems, artificial intelligence, the use of telematics and automotive technology can contribute to prevent and reduce the number of road related accidents and improve road safety.
 - What are the components of road safety?

The core components of Save LIVES are Speed management, Leadership on road safety, Infrastructure design and improvement, Vehicle safety standards, Enforcement of traffic laws and Survival after a crash.

What are 4 E's in respect of road safety?

- 4 E's Road Safety :- The main thrust of accident prevention and control across the world has been on 4 E's viz (i) Education; (ii) Enforcement; (iii) Engineering; and (iv) Environment and Emergency care of road accident victims.
- Education :- Awareness is generated through various Road Safety Campaigns utilizing audio-visual and other print media and through NGOs. With the view to raise road safety awareness among the general public, the Government have been undertaking various publicity measures through DAVP and professional agencies in the form of telecasting/broadcasting of TV spots/Radio spots, display of cinema slides, distribution of posters, books on road safety signage & signs, organizing Road Safety Week, Seminars, Exhibitions. All India Essay Competition on Road Safety, etc., containing road safety messages for various segments of road users viz. Pedestrians, cyclists, school children, heavy vehicle drivers, etc. painting on road railings on themes of road safety, road safety games, calendars depicting road safety messages, etc
- Enforcement :- The Motor Vehicles Act 1988 and Central Motor Vehicles Rules 1989 contain a number of provisions, which if enforced correctly, would curb traffic violations by drivers. The enforcement of these provisions is primarily the responsibility of the concerned State Government. The States have been advised from time to time to enforce various provisions of the Motor Vehicles Act 1988 in the right earnest to improve road safety scenario in the country.

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- The control of National Highways (Land and Traffic) Act, 2002 provides powers to Highway Administration for control of land within the National highways, Right of Way and traffic moving on the National Highways also for removal of unauthorized occupation of land within the national highways
 - Engineering :- Specification/designs are constantly under review by the Roads Wing of the Ministry. The States are constantly being advised on these issues. The Ministry had issued detailed guidelines regarding engineering measures to be taken by all concerned to ensure road safety vide a circular last year. As per this circular the following engineering measures are considered essential for adoption so as to help in improving road safety leading to reduction of accidents:- Geometry of the road; Separation of local traffic; Pedestrian facility; Bus bays; Illuminations; Development of Junction; Signages; Traffic calming & Safety Management Measures; Bridges/CD Structures: and Road Safety Audit.

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- Environment and Emergency care of road accident victims :-
 - National Highway Accident Relief Service Scheme (NHARSS) :- The Scheme entails providing cranes and ambulances to States/UTs/NGOs for relief and rescue measures in the aftermath of accidents by way of evacuating road accident victims to nearest medical aid centre and for clearing the accident site. So far, 347 Ten ton cranes and 106 small/medium size cranes have been sanctioned under the scheme. 579 ambulances have been sanctioned to States/UTs/ NGOs under the scheme. During 2011-12, 30 cranes, 30 ambulances and 20 small/medium sized cranes are proposed to be provided.
 - Further Ministry of Road Transport & Highways would provide 140 advanced life support ambulances to 140 identified hospitals to be upgraded under the Ministry of Health & Family Welfare's scheme 'Establishment of an integrated network of Trauma Centers' along the Golden Quadrilateral, North-South and East-West Corridors of the National Highways by upgrading the trauma care facilities in 140 identified state Government hospitals. 70 ambulances have already been provided. Another 70 will be provided during the current year.

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- A road safety audit (RSA) is defined as "the formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team. It qualitatively estimates and reports on potential road safety issues and identifies opportunities for improvements in safety for all road users
 - Road safety audits differ from conventional traffic safety studies in two key ways: road safety audits are often pro-active investigations, rather than reactive investigations of sites with histories of complaints or poor safety performance, and the investigation team is independent from the staff that is designing the project or maintains the road.

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- The Safe System approach aims to eliminate fatal & serious injuries for all road users. It does so through a holistic view of the road system that first anticipates human mistakes and second keeps impact energy on the human body at tolerable levels.

The Safe System

- The safe system approach system acknowledges that the human body is vulnerable and needs protecting.
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- The focus is on protecting people so that if they are involved in a crash, they won't be killed or seriously injured, no matter how they travel (walk, drive, ride, cycle).
 - Importantly, the safe system approach changes the focus from blaming those who use the roads to viewing the road transport system as a whole, where the responsibility for reducing risk is shared by road users and those who design, maintain and operate all parts of the road transport system.
 - This approach does not ignore risk taking behaviour, but acknowledges human fallibility and the need for greater allowances for human error.
 - Planning and developing a safe system means looking beyond the standards and towards systematically planning and designing a sustainable and inherently safe road and transport system for all road users.

Local Government and the Safe System

- As system designers within the safe system framework, Local Governments have a strategic and operational road safety role as road managers, planning authorities and fleet managers, in addition to their community development and leadership roles.
- Local Governments are crucial partners in the translation of safe system principles into practice, and WALGA is in a strong position to positively influence and work with the sector to build support and local capacity that contributes to the collective road safety effort.

Safe System Guiding Principles

Creating a safe system depends heavily on understanding and implementing these guiding principles:

- The limits of human performance: we all make mistakes and we all need to acknowledge the limits of our capabilities.
- The physical limits of human tolerance to violent forces: we are physically vulnerable when involved in a traffic crash.
- Shared responsibility: this means all of us take an individual and shared role in road safety.
- A forgiving road system: so that when crashes do happen, deaths can be avoided and injuries minimised.
- Increased use of public transport.

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- Essentially, the principles provide direction and context with which to formulate strategies, plans and activities to improve road safety outcomes consistent with international best practice. The principles build on past experience, work to add value to future activities and offer guidance to Local Governments in pursuit of innovation and effectiveness in the way they manage road safety.





ESTABLISHMENT OF SEPARATE BOARD

- Road related measures
- Vehicle related measures
- Road safety research
- Traffic laws, operations and management
- Capacity building
- Road user behaviour strategies, public awareness and education
- Medical care and rehabilitation
- Other functions

Safety Concerns & Audit Findings on Existing Roads

- Sight Distances
- Intersections & Interchanges
- Geometric Issues: Cross Sections
- Roadside Hazards
- Drainage
- Signs, Pavement Markings & Delineation
- Vulnerable Road Users (Pedestrians, Bicyclists, two & three wheelers and animal drawn carts)
- Access to property and developments
- Lighting and Night time issues
- Bus stop & Bus bays
- General road safety considerations

What strategies can you use to stay safe on the road?

20 tips for staying safe on the road

- Buckle-up

There are absolutely no exceptions when it comes to wearing a seat belt, regardless of where you happen to be sitting in the car. Plus, if you're caught, you'll be hit with a hefty fine.

- Get plenty of sleep before long drives

If you've a long drive ahead, make sure you get plenty of sleep the night before and have a big, hearty breakfast.

- Stay alert

Your actions behind the wheel can have serious consequences if you let your concentration slip. Proactive pay attention to what you – and those around you – are doing.

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- Always indicate

How often do you see people exiting roundabouts without indicating? Irritating isn't it? It's unsafe, too; don't be that person.

- Pay attention to traffic signals

We're met with so many signs, lights and instructions on modern roads, but they're all intended to keep us safe. Don't dismiss them.

- Don't ignore the yellow light

How much do you think about the yellow signal at traffic lights? It's there to remind us that we need to start slowing down – it's not a prompt to step on the accelerator to make the lights in

Use your brakes – properly

- When you have to stop at the lights or in traffic, come to a complete stop – don't edge needlessly forwards or creep backwards.

Never text and drive

- In fact, never use your phone while driving – full stop. Those notifications, emails and messages from friends can all wait until you're either out of the car or pulled up somewhere safe with the engine turned off.

Stick to speed limits

- Speed limits aren't an estimation of how fast you should be driving, nor are they a target. Obey the limits at all times and reduce your speed when driving through built-up areas.

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- Drive to the tune of the weather

If it's foggy, raining cats and dogs or beginning to snow, adjust your driving for the conditions. Mother Nature is a cruel beast, but if you're willing to be guided by her on the road, you'll stay safe.

Be patient

- By smashing your fists on the steering wheel or gesturing unkindly at other road users, you'll do nothing more than raise your blood pressure and increase the likelihood of an accident taking place. Exercise patience on the road, no matter how hard it might be.

Don't tailgate

- An easy one, this – don't drive too close to people. Stick two car lengths behind. Tailgating is extremely dangerous, intimidating and pointless.

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- Don't be unpredictable

Unpredictable driving has caused many an accident. Be predictable on the road; indicate when you should, turn when expected and ensure other road users are able to anticipate your next move.

Never drive under the influence

- Don't drink and drive. There are few things in this world more irresponsible than driving under the influence of drink or drugs.

Yield to rights of way

- If another driver has the right of way, make sure you yield to them. However, don't assume everyone will do this for you; stay alert when it's your turn in case the other driver forgets how to follow the rules.

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- Suss out your route

Without a solid route plan, you'll spend more time on the road trying to work out where you're going than staying alert.

Turn those headlights on

- Unless your car has automatic headlights, you need to remember to turn them on when required. That means at dusk and – a pet hate of many a road user – when it's foggy.

Remember you're sharing the road

- No single driver owns the road, no matter the size or value of their vehicle. We're all in this together, so let's share the driving experience, rather than treat it as a battle of wills.

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- Take care of your car
 - Tyre pressures should be regularly topped up along with the all-important fluids (oil, screen wash, coolant, etc). The more care you show your car, the safer you'll be on the road – it's that simple.
 - 20. Say “thanks”
 - While this tip may not appear directly linked to road safety, by saying “thanks” when people let you go at junctions, you'll contribute to a far more harmonious road network, and that will go an awfully long way.
 - If you've been driving for a long time, it's easy to dismiss the above tips as patronising, but we all need a reminder once in awhile, and the longer you've been behind the wheel, the more likely you are to become complacent.

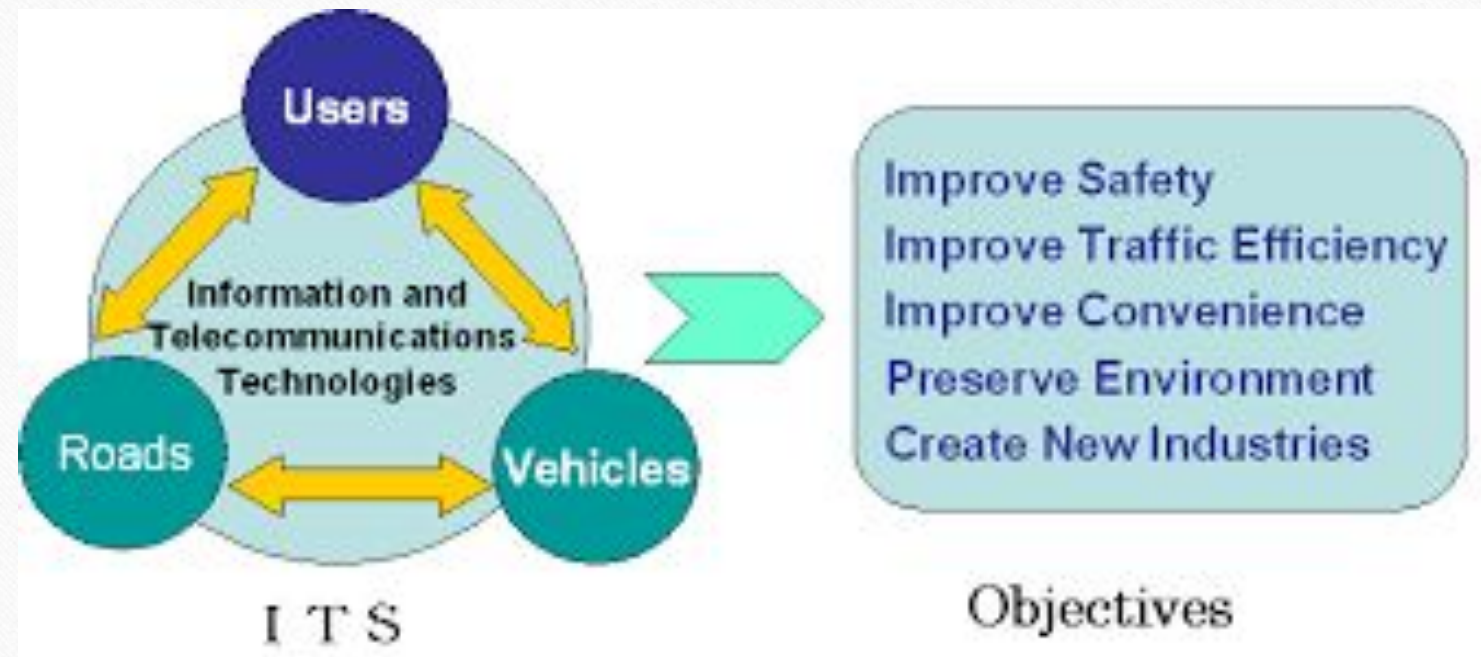
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- Intelligent transportation systems (ITS) improve transportation safety and mobility and enhance American productivity through the integration of advanced communications technologies into the transportation infrastructure and within vehicles.²

What are the benefits of intelligent transportation systems?

Image result for Intelligent transportation system and safety

- Advantages of Intelligent Transportation System
- Reduction in stops and delays at intersections.
- Speed control & improvement.
- Travel time improvement.
- Capacity management.
- Incident management.

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- What are the challenges of intelligent transportation systems?
 - Many challenges were identified to achieve a fully functional, practical, and integratable ITS network. Some of these challenges include coordination with different stakeholders, adopting different countries' ITS systems, keeping up with the technology, integration with existing systems, and budget constraints.



References

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