Intelligent transport systems (ITS) reshaping the future mobility

Table of Contents

WATCH DIGITAL FUTURES VIDEO

DIGITAL FUTURES

DIGITAL FUTURES is an online content publication platform catering for technology business leaders, decision makers and users, by sourcing and sharing valuable information and best practices in connection to the latest emerging technologies trends and market developments that leverage capabilities and contribute towards enhanced enterprise-wide performance.
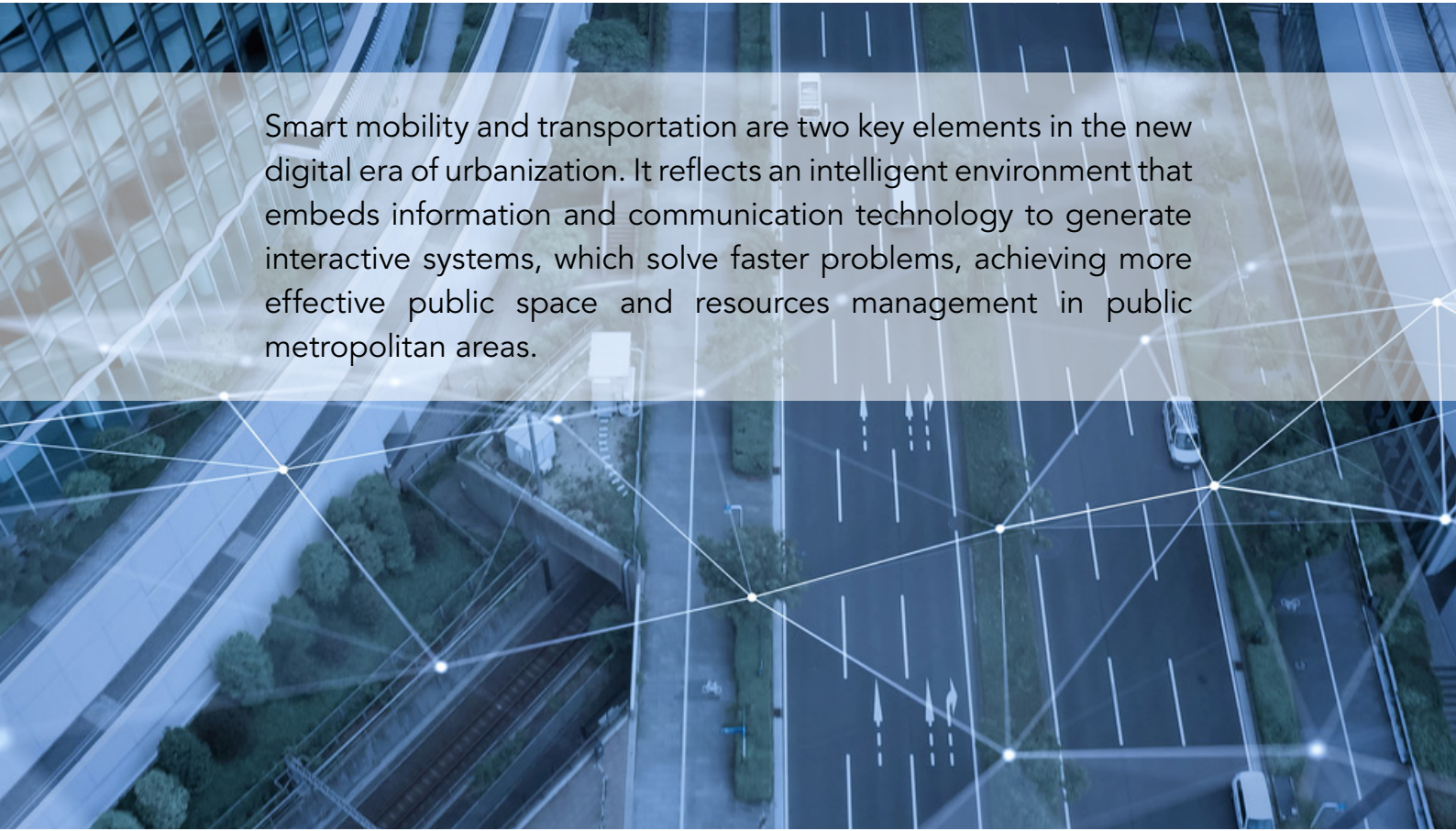
WATCH VIDEO

LEARN MORE

Executive Summary

Transportation systems are an integral component of contemporary life and major urban areas. Because of the enormous expansion of urban centers and the introduction of new services due to technology breakthroughs, the need for intelligent transportation systems (ITS) has grown significantly. ITS is a set of transportation infrastructure and operating systems that sets the groundwork for maximizing the safety, efficiency, and convenience of the road system via sophisticated information technology.

However, there are significant problems associated with ITS adoption, particularly in terms of leveraging big data capabilities. Managing enormous volumes of data, as well as the multi-facet privacy and security challenges, are critical items in the stakeholder's agenda. Cybersecurity threats are expected to cause collateral damage to existing infrastructures or delays in emergency response plans, and if not dealt properly, liable to escalate into a national security crisis, dependent on the risk level.

ITS provides effective traffic management, smoother road flows, and higher levels of safety. Transportation systems contribute to the ease of the road system, addressing many arduous challenges, prevalent in big urban areas. ITS may often handle traffic management, minimize traffic accidents, and alleviate environmental externalities caused by roads. In public transport, it can transform people's mobility by making smart cities a reality. Commuters can make the best use of their time, by leveraging real-time information, empowered by constant application development in transportation solutions. Valuable information to drivers allows the improvement of road flows, minimizing congestion.
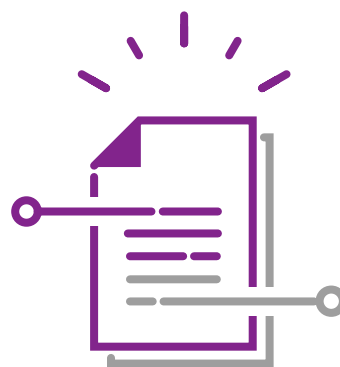
Smart mobility and transportation are two key elements in the new digital era of urbanization. It reflects an intelligent environment that embeds information and communication technology to generate interactive systems, which solve faster problems, achieving more effective public space and resources management in public metropolitan areas.

Key Findings

• The global market for Intelligent Transportation Systems (ITS) is expected to reach USD 50.4 billion by 2025, due to the growing importance of smart technologies in heavy traffic management

• North America is leading the pathway to ITS from 2020, but it is considered to have very expensive implementation costs.

• In terms of applications, the Advanced Traffic Management System (ATMS) holds the largest revenue share on a global level in 2020, more than 31.8 percent.

• Automotive Telematics segment is expected to grow at the fastest rate of nearly 7.3 percent during the forecast period 2021-2030

• There are two primary focus in ITS's stakeholder agenda: keeping up technological disruption and expanding clientele portfolio across the globe.

• According to certain estimates, each car will generate more than 4,000 GB of data daily in the future, making ITS integration with automation more than necessary.

• Government efforts for intensive smart city projects, as well as increased use of smart transportation modes to alleviate traffic congestion have been two key growth drivers in the ITS market.

• ICT capabilities are the driving force behind Intelligent Transport Systems' boost.

• Cybersecurity risks and minimal investment in data privacy protection are the most serious impediments towards ITS efforts.

Study scope

The scope of this e-book is to provide a study framework to get a deeper understanding on intelligent transportation systems. This market encompasses a diversified portfolio of communications-related applications, designed to improve travel safety, reduce environmental impact, streamline traffic control, and optimize the advantages of transportation for both commercial and public users. Due to the accelerated development of associated technologies, ITS has become an impressive means of traffic safety and emergency response. Therefore, the relevance of ITS in the effective deployment and successful operation of future systems should be widely acknowledged around the world.

Structure of the E-book

THE FIRST PART of this paper outlines the definition of intelligent transport systems, including the key elements and ITS categories. It also summarizes an industry outlook with a focus on the commercial opportunities that stand out in the market. In addition, it highlights the evolution steps of intelligent transportation, taking into account the key drivers of this shift and the increasing demand.

SECTION 2 discusses the potential implementation challenge for stakeholders to consider and redesign their priorities. It reviews some existing issues about traffic congestion and provides a critical analysis of their effectiveness. Furthermore, it describes the limitations encountered in handling and managing large amounts of data as well as data privacy and security concerns due to cybersecurity threats. This chapter further highlights some cases regarding excessive cost in infrastructural development per location and project.

SECTION 3 emphasizes the expected benefits in transport management. Intelligent transport system (ITS), due to their potential to enhance road safety and improve traffic management, have attracted attention in recent years. Concepts like, accessibility, real-time passenger information, connected cars and major ITS applications including, Traveler information systems (TIS) and Transit Signal Priority (TSP), are elaborated with their significant impact on traffic management.

SECTION 4 points out creative ways to integrate advanced ICT technologies and smart mobility applications, through IoT and Big Data, both taking the first seat in road safety and efficient commuting. Added to these, Artificial Intelligence and sensors are expected to improve reliability and performance by bringing predictive analytics on the table, which is the successful formula for real-time information. Digital mapping is another feature, that is revolutionizing the way people analyze, understand geographical information.

SECTION 5 illustrates some smart cities, like Barcelona, London and Seoul, that started investing early in ITS, and several case studies have applied state-of-the-art technologies. Some innovations have been limited to a local scale, while others are more likely to be deployed on a global scale.

Seoul's C-ITS project, the country's first 5G-enabled C-ITS, aims to build a safer transportation system by establishing 5G sensors and Internet of Things architectures, bus and taxi terminals for 5G communication, 5G control centers for data collection and information sharing, and a testing ground for self-driving solutions. As part of the plan, SK Telecom would build a smart infrastructure with roadside sensors and V2X communication capabilities. It will also install 2,000 5G terminals in buses, taxis, and traffic signal controllers. Samsung Electronics will work with Qualcomm to create 5G V2X base stations and terminals. [81]

Figure 5.3 I 5G-enabled traffic safety service. Yong-ik, L., Kim, M. (2019, January). SKT, Seoul to build 5G-enabled intelligent transportation system. Pulse by Maeil Business News Korea & mk.co.kr.
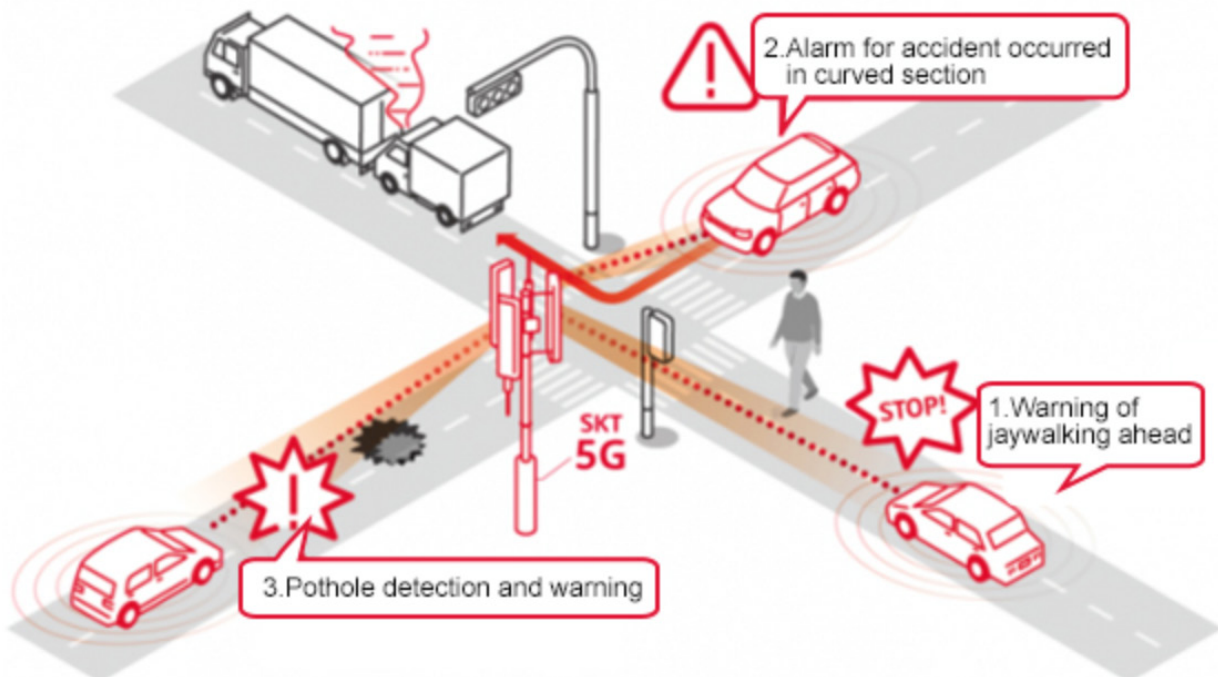
81. Yong-ik, L., Kim, M. (2019, January). SKT, Seoul to build 5G-enabled intelligent transportation system. Pulse by Maeil Business News Korea & mk.co.kr.

APUINSIGHTS
Product of APU Commercial Information Services LLC