# EDITORIAL: SMART CITIES RESEARCH HIGHLIGHTS AND FUTURE TECHNOLOGY TRENDS

**Lectori benevolo salutem,**

In 2020 we organised the fifth Smart Sustainable and Safe Cities Conference. In recent years this event has become a tradition in Óbuda University and a Safety and Security doctoral school. This conference is an overview of the technology trends driving Smart Cities related to infrastructure such as energy, water, transportation system, etc.

To solve these problems, new and emerging technologies are created. Internet of Things, big data, blockchain, artificial intelligence, data analytics, and machine and cognitive learning are just a few examples. They generate changes in key sectors such as health, energy, transportation, education, public safety, etc.

The present thematic issue of INDECS examines the design and research philosophy of complex systems such as smart cities and the developments related to these technologies.

The urban structures and technological advances presented in this thematic issue support the goals of sustainable development in communities, where these intelligent and smart systems will cover all aspects of life.

Some of the topics discussed include, for example, smart city application development, WI-FI 6, smart city solutions, information security management, wireless networks, smart transport, smart healthcare, smart cars, critical infrastructures, smart mobile device, and systems. The relationship between various research topics and some emerging, sustainable and safe city implementations will also be presented.

Twenty-one manuscript submissions for a thematic issue of INDECS were received. The scientific articles in this issue were accepted after a review by the guest editors and a double-blind review process.

The selected manuscripts will publish two thematic issues of INDECS. In this issue:

**Borsos** and **Berek** in their article name *Challenges of LoRaWAN technology in smart city solutions* approach present how their own surveys show that the vast majority of these devices are related to smart city applications.

According to research Internet of Things (IoT), low power and long-range wireless technologies play a key role as an enabling technology for the development of the communication backbone for future smart cities, which will be increasingly based on multi-sensor intelligent data analytics.

In the next article: *Smart cars as a solution for overpopulation* by **Pisarov**, analyses the impact of Self-driving cars would be the solution for overpopulated cities, where citizens will have fast, comfortable, economical, safe, and secure vehicles at their disposal, which allow them to effortlessly reach their destinations on time.

Self-driving cars are definitely part of the intelligent transport system of smart cities.

**Lusková** and **Leitner** in their article named *Societal vulnerability to electricity supply failure* examine the possibility of providing a coherent way to clarify the primary causes of disruption of large-scale electricity supply and their impact on the functioning of society, focusing on the vulnerability of urbanized large settlements - urban agglomerations - in the event of long-lasting blackout disturbances.

The energy sector is considered to be one of the most important critical infrastructure networks significantly entering into ensuring the functional continuity of the smart city.

**Bálint**'s article presents the *Composition of an automated attendance register of students by security cameras, as part of the smart city* presents a solution to how security cameras should be upgraded by expanded intelligence to greatly facilitate the administration in schools and to have a positive influence on safety.

To guarantee safety represents a serious issue in smart cities what's more one of the pillars of a smart city.

The article by **Mester** *Smart mobility solutions in smart cities* brings a new twist on the way we think about intelligent transport.

**Albininé Budavári** and **Rajnai** in their article named *The energy importance of additional information* explore benefits through the example of an online game, that a considerable amount of extra data can be transferred due to the possible negligence from the part of the tax side of the data transfer.

*Exploratory factor analysis for identifying CIEDs patients' concerns during the COVID-19 pandemic in Europe* the article by **Dobai, Iantovics, Paiu** and **Dobreanu** articles aims to investigate a solution based on the use of autonomous social agents to optimize the complex manufacturing processes in the framework of Industry 4.0.

*How safe is your smart city?* the article by **Papp** describes how we can manage public safety by transforming the city environment in a proprietary way.

There are many problems in cities from virtual threats, crimes to the epidemic, but in smart cities, we can find good solutions to these problems.

The aim of the present thematic issue is to offer researchers an opportunity to extend their existing scientific relationship all over the world in the field of interdisciplinary research in complex systems, such as the field of smart, sustainable and safe cities programmed by NextTechnologies Ltd. Complex Systems Research Institute.

The majority of these studies focus on smart cities, and they can be successfully implemented in various areas of developing sustainable and safe communities all over the world.

Cordially,

Budapest, 30th December 2021

Guest editors:
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