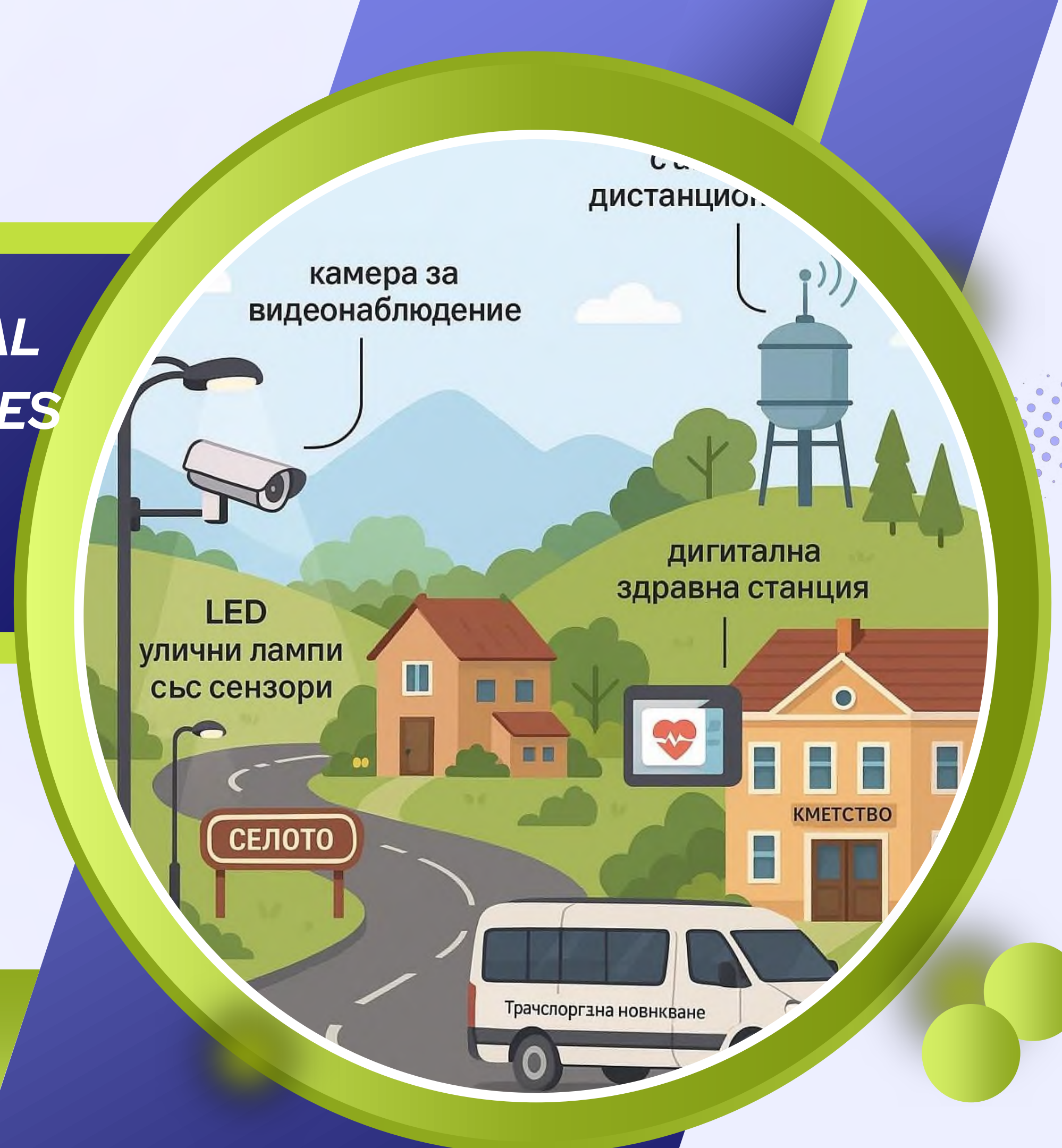


INTELLIGENT SERVICES OF GENERAL INTEREST FOR SMALL MUNICIPALITIES AND SETTLEMENTS



How the EU defines Services of General Interest

According to the European Commission, SGIs (Services of General Interest) are services that public authorities define as essential for society. They include both economic services (such as transport, postal services, energy, water) and social or non-economic services (such as healthcare, education, social assistance).



Key characteristics of SGIs

- Public Service Obligations (PSO) – public authorities require the provider to carry out a specific mission for the common good, even if the service is not profitable by itself.
- Essential for all citizens – ensuring access to quality, reliable, and affordable services across the entire territory, including remote areas.
- Serve social and territorial cohesion – supporting solidarity, unity, and equality among the EU regions.

Who can provide them?

It is not mandatory for SGIs to be delivered solely by the state. The EU recognizes that public, private, or public-private organizations can offer them – as long as the quality, universality, and accessibility of the service are guaranteed.

Today, with the help of smart technologies, digital tools, and artificial intelligence, these services can be delivered more efficiently, with fewer resources and better coverage, even in remote areas. In the context of declining populations, staff shortages, and limited budgets, this is a real opportunity for municipalities to maintain quality services without costly or complex maintenance.



WHAT PRACTICAL SGIS CAN BE DEVELOPED IN SMALL MUNICIPALITIES?

SERVICES FOR BASIC INFRASTRUCTURE AND SECURITY:

Intelligent Street lighting

Intelligent LED lighting fixtures with automatic adjustment based on movement/time of day

Small settlements can modernize their street lighting with intelligent LED lamps that are both energy-efficient and safer for people. These lighting fixtures are equipped with built-in motion and light sensors that automatically adjust the brightness depending on the time of day and the presence of people or vehicles in the area.

For example, at night the lamps operate in minimal mode, but when they detect movement – a passing person or car – they temporarily increase their brightness and then dim again.

In addition, the system can be controlled remotely from the municipal center – for switching on/off according to a schedule, detecting malfunctions, and optimizing costs.

Combined with solar panels or autonomous power supply, this solution is particularly suitable for dispersed villages with limited budgets, where every saved bulb matters.



WHAT PRACTICAL SGIS CAN BE DEVELOPED IN SMALL MUNICIPALITIES?

SERVICES FOR BASIC INFRASTRUCTURE AND SECURITY:

Security Video Surveillance

Central monitoring of key points in villages, connected to the municipal center or border police.

A video surveillance system can be installed in small settlements by placing cameras at strategic locations – entrances and exits of villages, around public buildings, parks, playgrounds, and critical infrastructure. The cameras can be linked to a central monitoring station in the municipality or accessed by the local police department or border police.

*The system can be enhanced with **Artificial Intelligence (AI)** for:*

- automatic detection of movement during unusual hours;*
- recognition of vehicle license plates;*
- alerts for suspicious behavior or vandalism;*
- automatic recording and notifications in case of specific events (e.g., intrusion into a restricted area).*

The data can be securely stored in a cloud platform and used by law enforcement when necessary. With the help of AI, the system does not require constant human monitoring but automatically alerts in case of irregularities, making it particularly suitable for small villages with limited staff.



WHAT PRACTICAL SGIS CAN BE DEVELOPED IN SMALL MUNICIPALITIES?

SERVICES FOR BASIC INFRASTRUCTURE AND SECURITY:

Water Supply Management

Remote monitoring of reservoirs and network pressure; alerts in case of failures.

The municipality can implement a remote water supply monitoring system using sensors and automated devices installed on reservoirs, water tanks, and key points of the network. These devices track water levels, pressure, and possible failures (e.g., burst pipes or empty tanks) and automatically send alerts via mobile networks or the internet. This ensures a quick response and prevents potential damage.

The system is built in coordination with the regional water utility operator and aims to support its work through timely notifications of critical deviations.

Secure Access to Drinking Water

Small filtration systems and automated water quality control.

In small settlements without central water supply, the municipality can install a hydrophore system – a water pump with a pressure tank and automatic control – to deliver water from a local source to all households. The system can be combined with filtration and UV disinfection, as well as remote monitoring of pressure and reservoir levels, ensuring a quick response in case of failures.

This is a cost-effective and reliable solution for villages with 20–200 inhabitants, providing constant and controlled access to water.



WHAT PRACTICAL SGIS CAN BE DEVELOPED IN SMALL MUNICIPALITIES?

SUPPORTING SERVICES IN REMOTE SETTLEMENTS:

On-Demand Transport

A smart booking system for municipal minibus trips – for example, a municipal bus that can be requested by phone or via a mobile app.

The municipality can organize a flexible transport service with a municipal minibus that is booked in advance – by phone, through a mobile application, or with the assistance of the local mayor's representative. The service can operate on specific days of the week according to a schedule, covering remote villages and providing transport to administrative, healthcare, or commercial centers. This is an effective solution for small villages without regular public transport and with an elderly population.

Mobile Administrative Team

A mobile municipal team that, according to a schedule, assists people in villages with communication with administrative structures, documents, applications, and social assistance.



WHAT PRACTICAL SGI CAN BE DEVELOPED IN SMALL MUNICIPALITIES?

HOW DO DIGITALIZATION AND ARTIFICIAL INTELLIGENCE HELP?

Emergency Assistance Stations

Digital stations connected to a medical center with basic measuring devices (blood pressure, temperature).

Small medical points connected to a central facility – a designated location in a small settlement where people can receive basic healthcare services without having to travel to a big city. These can be organized in different ways – in the local health office, the mayor's office, the community center, or as a mobile station.

*Municipalities can implement **a health kiosk** of the CS Smart type – a compact medical booth installed in the mayor's office or another public building that allows remote communication with a doctor. The kiosk is equipped with devices for measuring blood pressure, temperature, pulse, and oxygen saturation, as well as with a camera and screen for video consultations. No medical personnel is required on-site – it is sufficient for a municipal employee or trained volunteer to assist when needed and maintain contact with a hospital or the 112 emergency line.*

*In Bulgaria, several municipalities already use **smart bracelets for remote health monitoring** of elderly and vulnerable people. Burgas provides bracelets to elderly people living alone and to individuals with dementia, Blagoevgrad uses them for people with chronic illnesses and children with disabilities, while Lesichovo and Ardino have introduced pilot telecare systems for elderly residents and people with permanent disabilities. In Sofia, a 24/7 monitoring service is also being tested.*



WHAT PRACTICAL SGI CAN BE DEVELOPED IN SMALL MUNICIPALITIES?

HOW DO DIGITALIZATION AND ARTIFICIAL INTELLIGENCE HELP?

Health Monitoring (Telecare Services)

The Bulgarian Red Cross project “Home Care” includes integrated health and social services and remote monitoring with smart bracelets (telecare) in 7 municipalities in Northwestern Bulgaria (Vratsa, Krivodol, Oryahovo, Byala Slatina, Montana, Vidin, and Belogradchik). Through a control and communication center in the city of Vratsa, vital signs are monitored and alerts are triggered in case of risk, providing 24/7 support. The devices include bracelets for monitoring oxygen saturation, pulse, stress, and steps, as well as certified telemonitoring systems measuring ECG, blood pressure, temperature, and SOS signals. The service covers over 940 people and is included in the national strategic documents for long-term care for the period 2022–2027.

Telemedicine is the use of telecommunication technologies to provide medical services remotely – including diagnosis, treatment, and consultations by doctors.

Telecare refers to technologies that support independent and safe living at home – through sensors, apps, reminders, and connection with family members or caregivers.





WHAT PRACTICAL SGI CAN BE DEVELOPED IN SMALL MUNICIPALITIES?

HOW DO DIGITALIZATION AND ARTIFICIAL INTELLIGENCE HELP?

Sensors and IoT Devices

Detect burned-out lamps, leaks, pipe pressure, and movement near schools.

Small connected devices can be installed on poles, reservoirs, manholes, or public buildings. They automatically detect issues – such as a burned-out street lamp, a drop in water pressure, the presence of a leak, unusual movement in a schoolyard, or a failure in a pumping station. The signals are transmitted to the municipal center or a mobile application, enabling a quick response without the need for on-site inspections.

Artificial Intelligence (AI) and Video Surveillance

Analysis of video surveillance for suspicious activity; prediction of failures or water loss.

AI-powered software can process video surveillance footage and automatically detect risky situations – such as vandalism, intrusion into a restricted area, or suspicious behavior during nighttime hours. In addition, by analyzing collected data, AI can predict upcoming failures (e.g., in the electrical system or water supply) before they occur, helping with prevention rather than just repairs.

WHAT PRACTICAL SGI CAN BE DEVELOPED IN SMALL MUNICIPALITIES?

HOW DO DIGITALIZATION AND ARTIFICIAL INTELLIGENCE HELP?

GIS and Mobile Applications

Maps of infrastructure + real-time reports from citizens.

Geographic Information Systems (GIS) make it possible to visualize specific infrastructure on a map – streets, lamps, pipelines, reservoirs, cameras, and more. Citizens can also submit reports through a mobile application – for example, “the streetlight is not working,” “there is a leak,” or “I see suspicious behavior.” This provides the municipality with real-time insights into problems and areas that require attention.

Digital Monitoring Dashboards

The municipality can monitor the status of lighting, water, and cameras in real time.

Digital monitoring dashboards are screens or tablets that display in real time what is happening in the village or municipality:

- *whether all streetlights are on;*
- *the current water pressure in the pipeline;*
- *whether any camera has detected movement;*
- *if there is a citizen report about something not working.*

This “dashboard” acts as a control center – it collects information from various systems (lighting, video surveillance, water, transport, etc.) and presents it in an easy-to-understand way: with lights, colors, numbers, or alerts. In this way, municipal staff do not have to wait for someone to call but can immediately see if there is a problem and respond quickly.

WHAT PRACTICAL SGI CAN BE DEVELOPED IN SMALL MUNICIPALITIES?

HOW DO DIGITALIZATION AND ARTIFICIAL INTELLIGENCE HELP?

Digital Monitoring Dashboards

What does this mean:

- **Everything in one place** – no need to monitor multiple apps or visit sites in person.
- **Automatic alerts** – the dashboard signals issues such as a burned-out lamp, low water levels, or detected movement.
- **Real-time view and control** – you can see what is happening with the infrastructure, even via phone or remotely.
- **Easy maintenance** – these platforms are offered as ready-made and flexible solutions that can be adapted to specific needs, with minimal training for the municipal team.

Examples:

- **Urban Cockpit / Smart City Dashboard (Novunex)** – A software solution that presents real indicators on a municipal dashboard, such as temperature, water, lighting, traffic, parking, and winter maintenance. Successfully implemented in Austria – in the town of Neuhaus, where water systems and winter conditions are monitored.
- **Sentilo – Barcelona** – Developed by the municipality of Barcelona, the Sentilo platform collects data from tens of thousands of sensors – for traffic, noise, air quality, street lighting, water systems, and more. The information is displayed in real time on a centralized dashboard and includes automatic alerts when needed. The advantage of being open-source software (published in a repository) is that any city worldwide can adapt it and replicate what Barcelona has achieved. Other administrations and companies needing to process large volumes of information can also use it.

Key Features of Services of General Interest

Many of the solutions described here already exist as ready-made products, developed by Bulgarian and European companies with experience in working with small municipalities. This includes intelligent street lighting, AI-powered video surveillance, remote monitoring of water reservoirs and tanks, digital health stations, and on-demand transport systems.

When we say “**ready-made solutions**,” we mean that these products have already been tested, are fully operational, and can be implemented immediately without being designed from scratch. In coordination with the providers, the software and technical settings can be easily adjusted to the needs of a specific settlement – for example, interface language, connection with municipal systems, operating hours, number of users, and other specific requirements.

It is important to note that **complex IT teams** or large investments in maintenance are not required. What is needed is proper planning, clear priorities, and partnership with suppliers who understand the needs of small municipalities. In this way, through concrete and achievable steps, the quality of life in remote areas can be genuinely improved.



- Creates a map with accessible routes and buildings
- Citizens can report inaccessible objects

What is achieved:



SH-T10
Medical Health
Checkup Kiosks



Benefits for Municipalities /Population/:

Smart solutions reduce costs through energy efficiency and remote management, improve security with limited staff, and provide better control over water and infrastructure. They make citizen involvement easier and support the transition to more predictable and efficient local governance.

Smart services of general interest are not just for big cities. With small but targeted investments, digitalization and AI can improve life in villages and municipalities along the border – ensuring light, water, and security at a dignified and sustainable level.

