

Client Profile



The Government of Romania sought to turn Targu Mures, the capital of Mures County, into a SmartCity. The city is 19 square miles and located in the Mures River Valley, the center of the historical region of Transylvania.

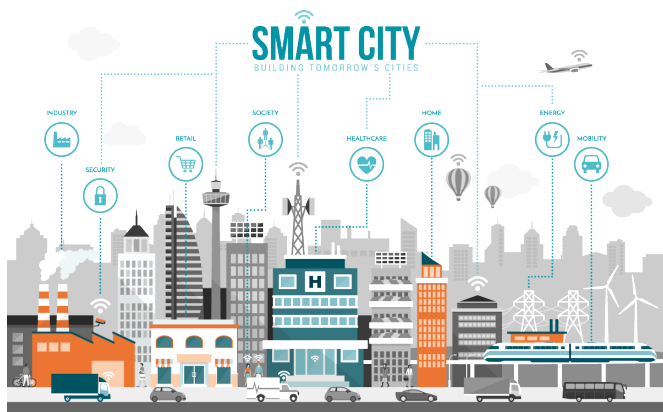


With a population of 142,000, Targu Mures has over 8,500 private and several state-owned companies. There are 3 leading universities with over 10,000 students.

Business Objective

Targu Mures wanted to create the “Digital Mures” SmartCity strategy with two major objectives:

1. Develop a modern infrastructure of private-public services
2. Envision and develop a medical IT technology park specializing in research and medical information including telemedicine



Smart City Benefits

The Digital Mures SmartCity strategy is expected to generate monetary savings, enhance the lifestyles of citizens and improve the private business environment. Actionable Strategies has worked with other government entities in Romania on similar digital transformation initiatives.



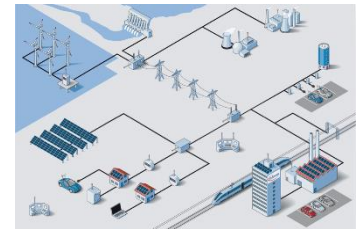
Telemedicine Objectives

An objective of the strategy is to create the “Scientific City for Medical IT” to contribute to the development of telemedicine and the IT industry. Thousands of employment opportunities will be created in Targu Mures. Actionable Strategies has successfully completed a telemedicine project in Romania which proved the economic and technical viability of the model in Romania.



Smart Grid Technologies

From a technology perspective, Actionable Strategies was engaged to assess the viability of powering the SmartCity via SmartGrid technology deployment. Our experience with SmartGrids in Romania and emerging markets was applied throughout the project.



The Government of Romania sought to create a model for a Smart City which it could replicate across Romania, and throughout South Eastern Europe.

Strategic Analysis

The strategic study considered strategy, management, technology, human capital, regulatory, cost and risk aspects of the SmartCity objectives. The major focus was on establishing a Micro Grid to deliver the power required for a Smart City.

The energy strategy addressed the high cost and inefficient use of electrical and heating energy, both identified as major problems of the city. The city spends a significant amount of its budget on energy while relying on a limited number of energy suppliers, creating risk and cost issues.



Targu Mures planned for the development of an integrated system of energy production and use. Renewable resources were a major part of energy mix. Non-traditional power generation schemes included:

- ◆ Biogas
- ◆ Geothermal
- ◆ Cogeneration

Smart Grid Technologies

Powering the SmartCity considered many advanced technologies. These modern technologies were targeted for energy savings, enhanced energy efficiency and reduced greenhouse gases.

Generation

Clean generation and resilience were key technology choices.

- ◆ Distributed Generation
- ◆ Photovoltaic Solar systems
- ◆ Waste-to-energy generation

Infrastructure

Infrastructure investments were required to enable end-to-end grid management and operation.

- ◆ Advanced Telecommunications Platform
- ◆ Supervisory and Management technologies

Distribution

Advanced distribution was planned to maximize efficiency and minimize service disruptions.

- ◆ Energy Distribution Management
- ◆ Smart Metering
- ◆ Asset Management

Consumption

Technology was planned for the endpoints to optimize grid operations and maximize energy savings.

- ◆ Energy Efficient Buildings
- ◆ Public lighting technologies

Key Findings

Smart City technologies were found to be mature enough to support the digital agenda of Targu Mures. Other key constraints were identified that needed to be addressed to succeed in implementing the Smart City strategy.

Human Capital Shortage

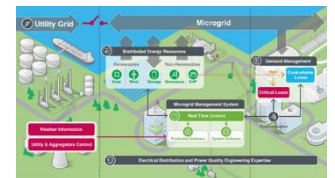
Implementation and operation of Micro Grid technologies necessitated improved Human Capital capabilities. This required over 12 months of lead time for extensive hiring and intensive training and hiring.



- ◆ Management – Experienced program and project managers are required for implementation and skilled managers will then need to run operations
- ◆ Skilled resources – Deployment and operations of the Micro Grid and Smart City technologies require a significant number of skilled engineering and scientific resources, which are not currently available in Targu Mures.

Grid Interoperability

The incumbent power distribution company was not prepared to connect a Micro Grid to the distribution network.



In addition to issues with operating over existing wiring, a number of operational issues had to be resolved.

1. Negotiation of the interconnect agreement
2. Agreement on protection settings for bi-directional energy flow
3. Net Metering for bi-directional energy flow payments and other compensation
4. Time of Use pricing

Regulatory Framework

The Romanian Energy Regulatory Authority had not



AUTORITATEA NAȚIONALĂ DE REGLEMENTARE
IN DOMENIUL ENERGIEI

defined the framework for Micro Grids and interconnection to the distribution network. Based on Actionable Strategies experience in other projects in Romania, significant delays were anticipated.

Real Estate

Municipal buildings are old, not thermally insulated, fitted with old windows, and register very large energy losses. Significant effort outside the scope of a Micro Grid would be required to make these buildings energy efficient.



Electrical wiring, panels, heatsinks and other electrical equipment are also old and would require upgrades to attain energy savings projected from the Micro Grid.

Energy audits had not been performed to develop a phased plan to upgrade buildings based on impact and implementation cost.

Culture and Communication

The plan lacked a strategy to address cultural issues related to energy-saving. Repeated communication over time to change behaviors that led to wasteful energy practices was not built into the plan.



In Romania, there is no culture of energy saving. For example, interior lights are turned on everywhere throughout the day when it is not necessary. Excessive

temperature in rooms is addressed by opening windows.

This culture is found at a larger level. Buildings do not provide



the ability for tenants to control indoor temperatures, leading to tremendous waste. Sub-metering is not

available leading tenants to be indifferent to energy savings. At the municipal level, individual building do not have metering leading to complete disregard for energy consumption.

Recommendation

Actionable Strategies recommended that the Government of Romania halt the impending start of the initiative until further analysis and planning was conducted. In addition, further risk management in planning was required. While disappointing, this advice was in the best interests of the client and the detailed analysis and honest assessment were appreciated.



Strategic Results

The Government of Romania was better enabled to successfully embark on Smart City Strategies, including Targu Mures. Smart City initiatives have subsequently spread across Romania. By 2019, Romania had 330 Smart City projects covering over 6 million citizens.

