FARCASE

Deployment of an Environmental Monitoring System within Tarnów's Intelligent Transportation System

Project Background

To address increasing challenges related to air quality and traffic management, the City of Tarnów implemented a modern environmental monitoring system as part of its broader Intelligent Transportation System (ITS) strategy. The project, delivered by Far Data Sp. z o.o. in 2021, enables comprehensive analysis of air pollution and its correlation with road traffic intensity.

Project Scope

As part of the implementation, three environmental monitoring stations were installed to measure key air quality parameters, including:

- **Particulate matter**: PM_1, $PM_{2.5}$, PM_{10}
- **Gases**: CO, CO_2, NO, NO_2, SO_2
- **Volatile Organic Compounds (VOCs)**

In addition, the system was equipped with radar-based traffic monitoring to analyze vehicle flow and assess its impact on pollutant levels.

FARDATA

Far Data Sp. z o.o.
Lipowa 3, 30-702 Kraków • Tel. 12 255 99 99
biuro@fardata.pl • www.fardata.pl

FARCASE

Case Study

Benefits of Implementation

1. Improved Air Quality and Public Health

Real-time pollution data allows the city to implement effective anti-smog strategies, such as optimizing traffic lights, promoting public transport, and introducing temporary traffic restrictions during periods of high pollution.

2. Intelligent Traffic Management

Traffic radar data provides insights into vehicle volume, enabling dynamic traffic light optimization and congestion reduction. Real-time analysis supports **adaptive traffic control** based on pollution levels.

3. Forecasting and Crisis Prevention

The system identifies pollution trends and patterns, empowering city authorities to:

- Restrict traffic in high-emission zones
- Plan and implement **Low Emission Zones**
- Improve infrastructure for cyclists and pedestrians

4. Real-Time Public Information

Air quality data is displayed on **ITS variable message signs** and a dedicated mobile app, allowing residents to stay informed and adjust their transportation choices accordingly.

5. Support for Sustainable Urban Mobility

Data analytics help the city plan for greener transport solutions, such as **electric buses and bike-sharing systems**.

FARDATA

Far Data Sp. z o.o.
Lipowa 3, 30-702 Kraków • Tel. 12 255 99 99
biuro@fardata.pl • www.fardata.pl

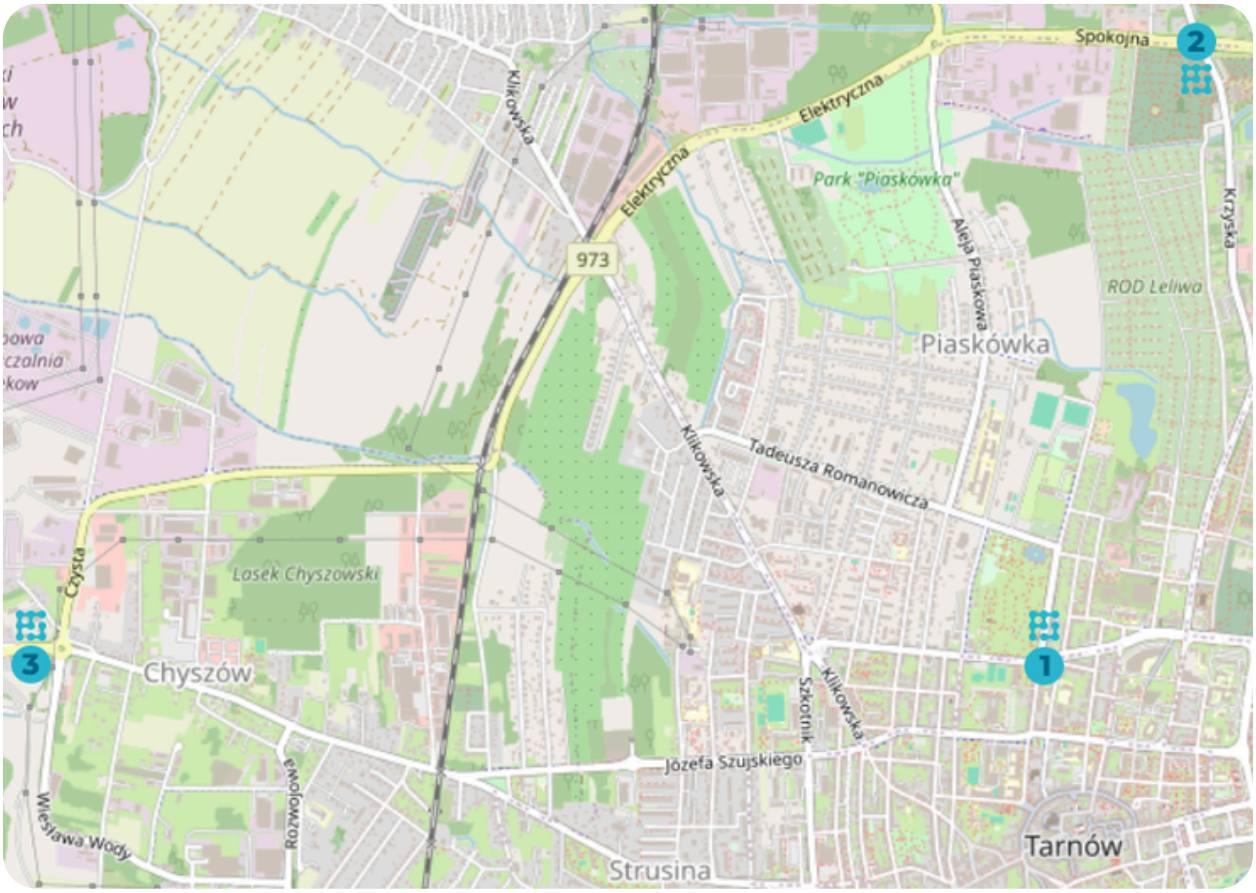
FARCASE

Case Study

Conclusion

The integration of environmental monitoring into Tarnów's ITS demonstrates how **smart technologies** can support urban transformation. The system provides both **critical environmental data** and **real-time traffic insights**, leading to reduced emissions and a **higher quality of life** for residents.

The project, delivered by **Far Data Sp. z o.o.**, stands as a practical example of **Smart City principles in action**, making Tarnów a model for other municipalities seeking to combine ITS with environmental sustainability.



FARDATA

Far Data Sp. z o.o.
Lipowa 3, 30-702 Kraków • Tel. 12 255 99 99
biuro@fardata.pl • www.fardata.pl

FARCASE

Case Study

FARDATA

Far Data Sp. z o.o.
Lipowa 3, 30-702 Kraków • Tel. 12 255 99 99
biuro@fardata.pl • www.fardata.pl

FARCASE

Case Study

FARDATA

Far Data Sp. z o.o.
Lipowa 3, 30-702 Kraków • Tel. 12 255 99 99
biuro@fardata.pl • www.fardata.pl

FARCASE

Case Study

FARDATA

Far Data Sp. z o.o.
Lipowa 3, 30-702 Kraków • Tel. 12 255 99 99
biuro@fardata.pl • www.fardata.pl