

Smarter, safer, and more efficient commutes: Modernizing public transportation system in Dushanbe

THE WINNER IOT PROJECT OF THE YEAR 2024

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Dushanbe, the lively capital of Tajikistan with a population of over 1.5 million, is stepping into the future by modernizing its public transportation system. To keep up with the city's growth and the evolving needs of its residents, the [Dushanbe Smart City](#) initiative teamed up with a Wialon partner — Sarfaroz — to implement an advanced public transport management solution.

This collaboration is driving fleet digitalization and transforming transportation in Dushanbe by enhancing safety, cutting down fuel misuse, and making passengers much happier.

Explore how this partnership is making a positive impact on the community.

Challenge

As Dushanbe expanded, so did the demand for a robust public transportation system. Over the past three years, the city has been replacing old buses and trolleybuses with modern, connected models. However, simply adding new vehicles wasn't enough to meet the ambitious goals of the Smart City initiative. To ensure the new fleet operated smoothly and efficiently, Dushanbe set out to address several key areas:

- Fuel and route management:** Preventing fuel misuse and ensuring buses stay on their routes and schedules.
- Passenger flow and safety:** Tracking passenger counts and monitoring driver behavior to enhance safety.
- Communication and emergency response:** Improving communication between drivers and dispatchers and enabling quick responses to incidents.

Solution

To achieve these goals and modernize public transportation, Sarfaroz deployed a comprehensive fleet digitalization solution for Dushanbe Smart City, combining Wialon's capabilities with custom-developed software and carefully selected hardware to create a system tailored to the city's needs.

Hardware implementation

- GPS trackers (Teltonika FMB125):** Installed on each bus and trolleybus, these trackers provide real-time location updates to ensure vehicles stay on route and on schedule, giving passengers and operators peace of mind. To avoid disrupting daily services, Sarfaroz completed installations at night with three dedicated workgroups.



Buses at night as the Sarfaroz team prepares for tracker installation

- Fuel sensors (Escort TD150):** These sensors continuously monitor fuel levels, helping to prevent misuse and reduce unnecessary consumption.
- Passenger flow sensors (PP-01):** Positioned at entry points, these sensors count the number of passengers boarding and alighting, enabling smarter service planning and route optimization to meet actual demand.
- Hands-free communication devices:** These devices enable seamless communication between drivers and dispatchers.
- SOS buttons:** Installed in every vehicle, these buttons provide drivers with an instant way to report emergencies.
- Information screens at bus stops:** These displays offer real-time updates on bus and trolleybus arrivals, keeping passengers informed and reducing wait times. No more guessing games — everyone knows exactly when their ride will arrive.
- Dispatcher center equipment:** The central monitoring hub is equipped with PCs, printers, access points, workstations, and large monitoring screens. This setup allows dispatchers to oversee the entire fleet efficiently and respond promptly to any situation.

Software implementation

At the heart of the fleet digitalization effort was Wialon, serving as the backbone of the solution with its [advanced fleet management](#) tools. Sarfaroz leveraged Wialon's core and specialized features, enhancing them with additional custom developments to meet Dushanbe's specific needs.

- Public transportation management functionality:** Wialon's tools allowed fleet managers and operators to track buses and trolleybuses in real time, ensuring vehicles adhered to routes, stayed on schedule, and maintained efficient daily operations.
- Route management:** Wialon enabled the creation, adjustment, and monitoring of routes and schedules. This ensured buses were allocated to areas with the highest demand, making public transport more efficient and reliable.
- Driver behavior monitoring:** With Wialon's monitoring capabilities, fleet managers could track driving metrics such as braking, acceleration, and speed compliance. This data helped identify and address risky behaviors, leading to safer driving and reduced road incidents.

In addition to Wialon's features, Sarfaroz introduced custom solutions to further enhance the their system:

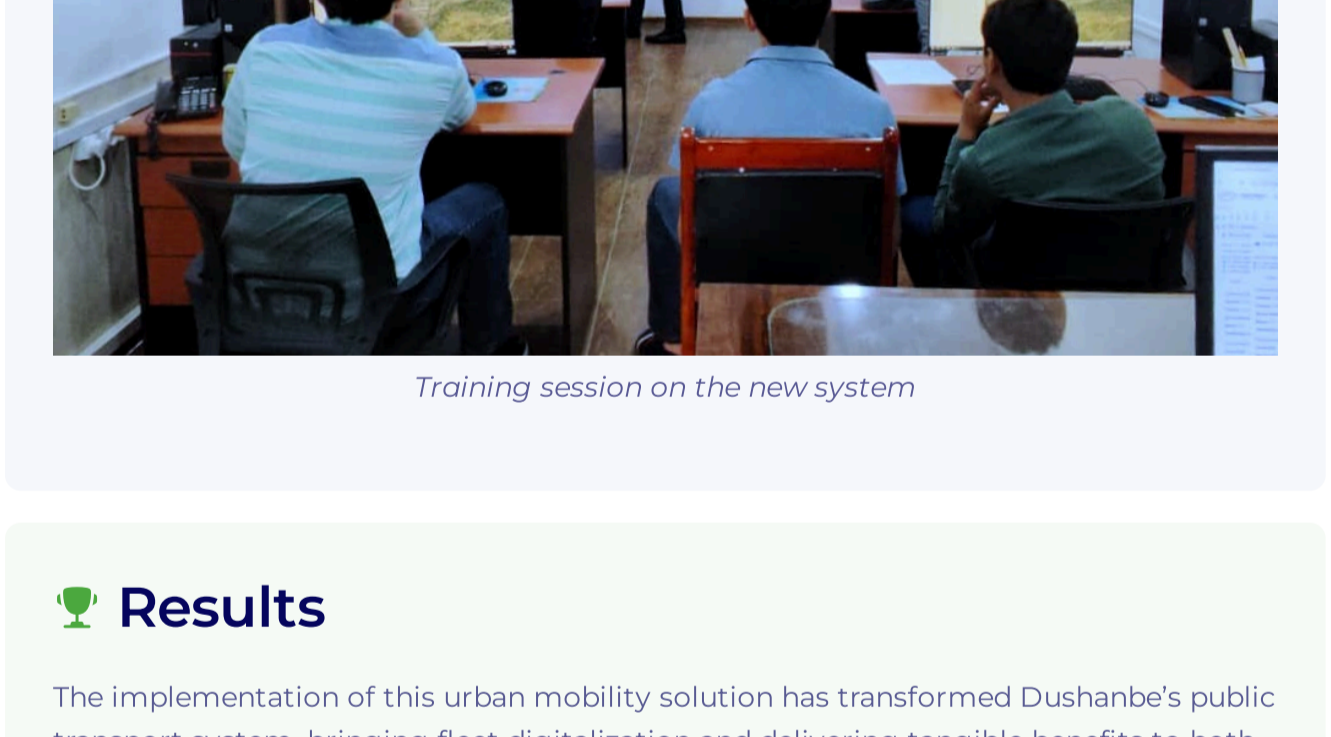
- Custom software for passenger information:** Sarfaroz developed software to integrate Wialon with digital information screens at bus stops. These screens display real-time bus and trolleybus arrival updates, helping passengers plan their journeys with confidence.
- Two-way communication system:** A communication feature between drivers and dispatchers was implemented to ensure quick responses to operational challenges and emergencies, improving overall service reliability.

Training and support

To ensure the system's success and that the customer could fully benefit from it, Sarfaroz offered comprehensive training for fleet managers, dispatchers, and technical staff, equipping them to confidently manage the upgraded system.

The support package included user-friendly manuals, ongoing technical assistance to quickly resolve issues, and both warranty and post-warranty maintenance services to ensure long-term reliability.

Additionally, dispatchers received specialized training and certification, enabling them to handle emergencies effectively and optimize daily operations.



Training session on the new system

Results

The implementation of this urban mobility solution has transformed Dushanbe's public transport system, bringing fleet digitalization and delivering tangible benefits to both residents and city officials.

This success story doesn't just improve life for Dushanbe's residents — it also stands as a model for other cities looking to transform their public transport networks with [smart city solutions](#). The city's investment in transportation modernization has resulted in:

- Better safety**
With detailed monitoring of driver behavior risky practices have been significantly reduced, making the roads safer for everyone.
- Cost savings**
With fuel sensors providing accurate data, the city now has tighter control over fuel usage. This not only prevents misuse but also saves money that can be directed toward other important urban initiatives.
- Smarter resource management**
Passenger flow sensors now provide accurate data on how many people are using public transport, helping fleet managers allocate buses and trolleybuses exactly where they're needed most.
- Timely services**
Thanks to GPS tracking and better route management, buses are sticking to schedules. This means fewer delays, smoother commutes, and a service passengers can depend on.
- Happier passengers**
Digital screens at bus stops give passengers real-time updates on arrivals, eliminating the guessing game and making daily commutes less stressful and more convenient.
- Operational efficiency**
Streamlined processes and real-time monitoring tools have made the entire public transportation system more modern and efficient, creating a win-win for operators and passengers alike.

Company profile

IoT project of the year nomination: Corporate or large government fleets

Country: Tajikistan

Industry: Passenger transportation

Website: sarfaroz.tj/en

Solutions

Wialon

Hardware

- Teltonika FMC125
- Escort TD online

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