



# Škoda Group

## Improving the Passenger Experience – The Latest Developments in Public Transport

Public transport is becoming an increasingly important part of our daily lives.

Many people choose to commute by public transport. As a result, high demands are placed on public transport, particularly in terms of reliability and safety. Nevertheless, the development of new technology is advancing at an unprecedented rate, offering new opportunities to improve the quality and efficiency of public transport. As well as improving the passenger experience, innovations also bring significant economic benefits to operators. By investing in research and development, Škoda Group offers its customers new solutions that completely change the way people perceive public transport and take the travelling experience to a higher level.

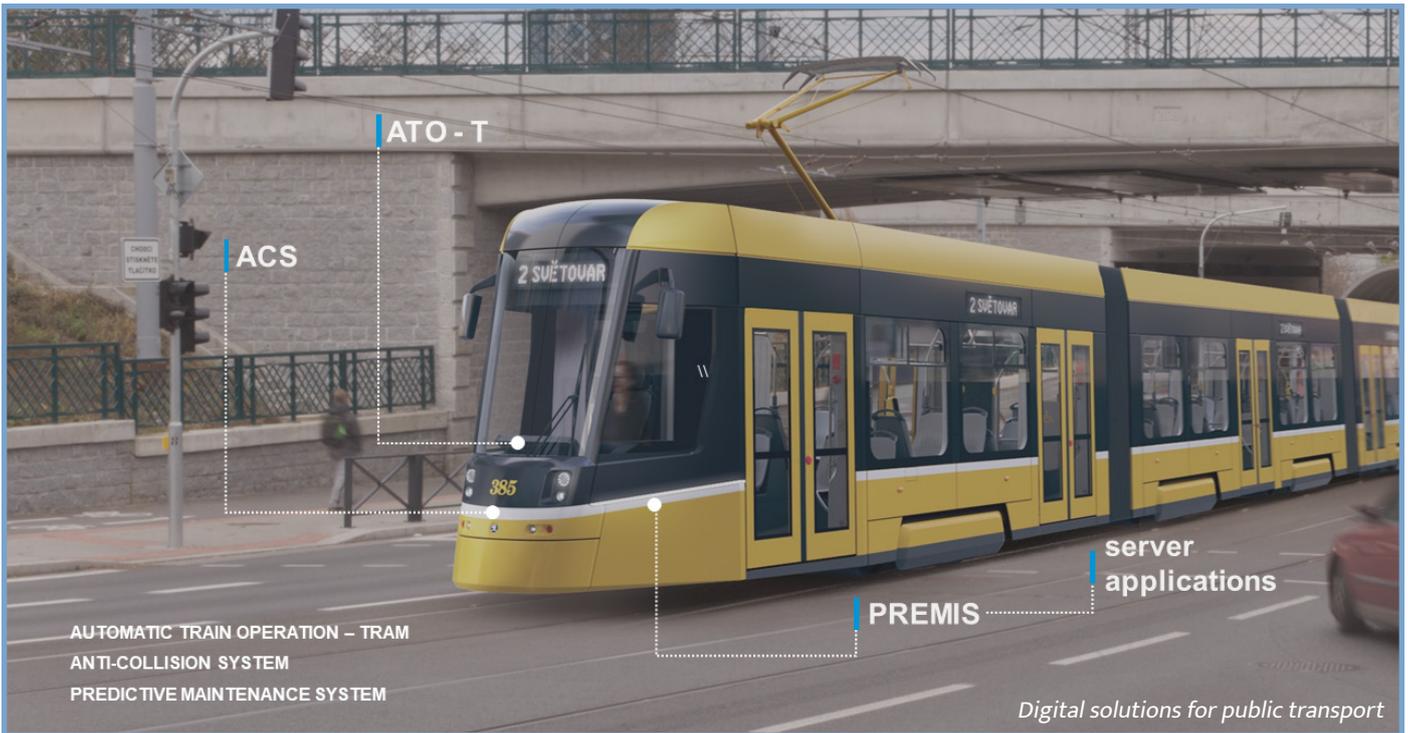
### Reliability

Public transport you can rely on – that's PREMIS, a predictive diagnostic system with elements of artificial intelligence for rolling stock. The digital development centre of Škoda Group has developed a unique system for predictive vehicle maintenance. It enables operators to better plan maintenance or the replacement of worn parts, as well as the early detection of potential risks that would otherwise lead to a sudden interruption of line service. The functions of PREMIS can be divided into two levels. First, PREMIS uses smart sensors to evaluate the technical condition of the vehicle. It sends the collected data on the vehicle in real time to the server application. In the second level, the system analyses the collected data using predictive algorithms, which aim to predict possible failures and at the same time evaluate the reliability of individual components. PREMIS and its hardware elements comply with the principles of Maintenance 4.0, creating an essential tool for optimising maintenance and reducing downtime and unproductive vehicle life-cycle time.

### Comfort and Accessibility

The unique concept of a multi-articulated body, a low floor and freely pivoting bogies brings variability to tram transport, greater comfort for passengers and lower maintenance costs for operators. This patented technology is used in the new Škoda Artic X54 tram. The combination of a greater number of shorter sections in the centre of the vehicle allows the length of the tram to be adjusted while reducing the number of bogies used. This concept allows us to offer passengers a completely flat floor and more space. The use of pivoting bogies is much gentler on the infrastructure, which is subject to less wear

*New multi-articulated tram with pivoting bogies Škoda Artic X54*



and tear than conventional non-pivoting bogies. As a result, operators can make significant savings on repair and maintenance costs. In addition to this unique technology, the new Škoda Artic X54 tram also boasts another world first. It is the first tram in the world to be equipped with a kneeling system, which is best known from the bus and coach sector. By pressing a button, people with reduced mobility can enter the tram with complete freedom. Travelling has never been so easy.

## Autonomy

The future of transport is vehicles driven without human intervention. However distant this future may seem, Škoda Group is working hard to develop the technologies that will bring us closer to this vision. One of the first steps on the road to autonomy is an anti-collision system. Škoda Group has developed its anti-collision system Škoda ACS for rolling stock based on a combination of lidar, cameras and precise localisation using HD maps and odometry. The combination of these technologies allows the system to create a virtual tunnel which enables the system to detect obstacles, provide early warning and minimise false positive warnings. This makes urban transport safer and more intelligent. Automatic train operation (ATO) is another element that speaks in favour of autonomous transport. A key role in the proper functioning of the system is correct and accurate localisation, for which it uses an electronic map of the track and the fusion

of data from the GNSS module and the odometry module. By accurately determining the position of the vehicle, combined with a detailed map and the use of an optimal timetable generator, the system allows the timetable to be repeatedly updated based on actual track conditions, helping to optimise the journey and keep the train on schedule.

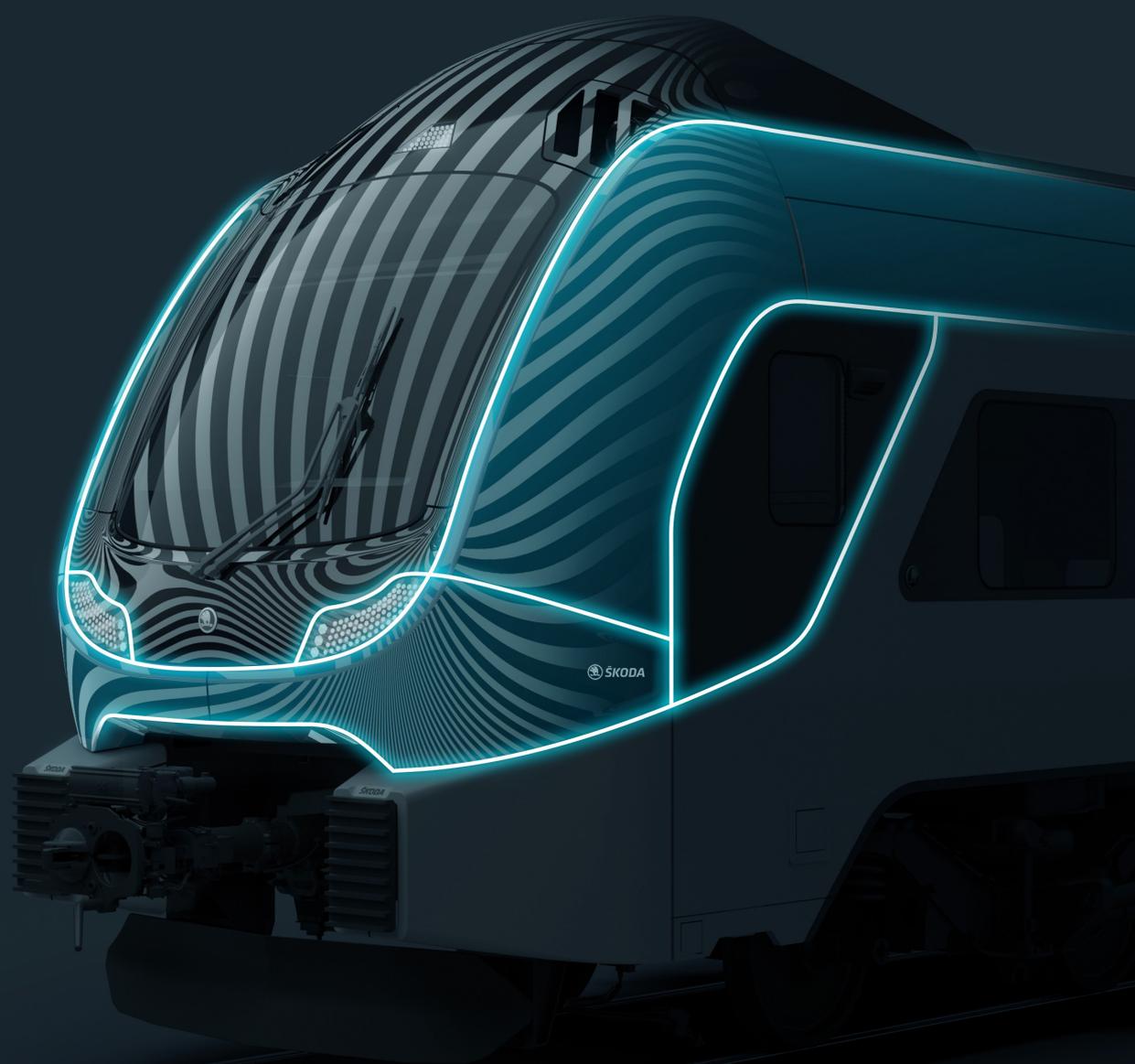
Innovations in public transport technology offer a promising future for both passengers and operators. By providing reliable and safe transport, while also focusing on passenger comfort and accessibility, public transport can become an even more attractive and sustainable option for daily commuting as well as long-distance travel. As we move towards autonomous vehicles, it is essential that we continue to invest in research and development to ensure that public transport systems are efficient, safe and environmentally friendly. By embracing new innovations, public transport can play a vital role in connecting people and communities, creating a better future for ourselves and future generations.

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