

be in control



Bespoke predictive maintenance solutions for telematics service providers and fleet owners

# Predictive maintenance solutions



## Predictive maintenance solutions using vehicle data

Downtime is one of the most critical threats to fleets today. It can have a major impact on operational costs and can have a negative effect on fleet companies' return on investment. We use downtime as one of the many examples to explain predictive maintenance. Predictive maintenance can also have a positive effect on the number of road incidents. Because defects can be detected earlier, the number of vehicles on the road with potential risks will decrease.

Squarell offers predictive maintenance solutions based on vehicle data for telematics systems. Squarell's vehicle data can be monitored to improve service call schedules and reduce maintenance costs.

## Three key areas of predictive maintenance

We can divide maintenance into three key areas where Squarell's vehicle data can predict necessary maintenance:

1. **Planned maintenance**
2. **Predictive maintenance**
3. **Reactive maintenance**

### 1. Planned maintenance: take early action

Planned maintenance is often recommended by the vehicle's manufacturer. A message on the dashboard informs the driver about the upcoming service call and gives him the responsibility to follow-up on it.

#### *The Squarell solution*

With Squarell's data you can take early action and take the upcoming service into account when scheduling maintenance. The data Squarell provides covers not only maintenance intervals and mileage, but also engine hours and even the total number of engine revolutions.

#### **Example parameters for planned maintenance**

- Service interval
- Total vehicle distance
- Total engine hours
- Total engine revolutions



## 2. Predictive maintenance: continuous monitoring

Since the checks performed during scheduled maintenance are snapshots, parts may still break down over time. A technician can make an estimate based on wear and tear when maintenance should take place, but is not able to predict technical failures.

### *The Squarell solution*

With Squarell's data, it is possible to extend the snapshot intervals to continuous monitoring and prevent future failures. For example: when the brake wear on one side of the vehicle increases, it usually indicates a stuck brake caliper. Another example: if the temperature in a tyre becomes too high, there is a high risk of a blowout.

#### **Examples parameters for predictive maintenance**

- Brake lining remaining
- Tyre pressure/temperature
- Battery potential
- Engine coolant temperature
- Engine oil temperature
- Transmission oil temperature





### 3. Reactive maintenance: utilise dashboard lights

Reactive maintenance is indicated when the previous categories have not been able to prevent a definitive failure.

#### *The Squarell solution*

Dashboard lighting informs the driver about electrical faults or defective parts. Squarell has the solution to make these lights available to the fleet manager, so that he can react directly to this malfunction. He can arrange parts in advance, reserve time in the workshop and possibly deploy a replacement truck.

#### **Error codes for remote diagnosis**

The Squarell data can be extended in specific cases with the underlying error codes. If the fleet owner is able to interpret these codes, he will be able to plan even more accurately using remote diagnosis.

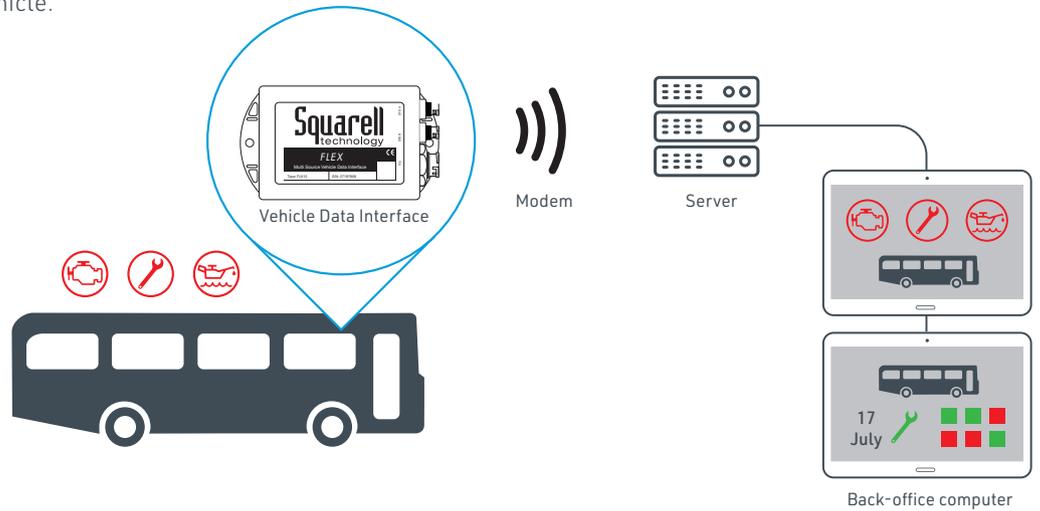
*Please note that interpreting these codes is a specific task that can only be performed if the receiver has a database in which the codes are explained. Squarell can give the code, but not the corresponding error description. Moreover, this solution is very specific and the number of supported vehicles may be limited.*

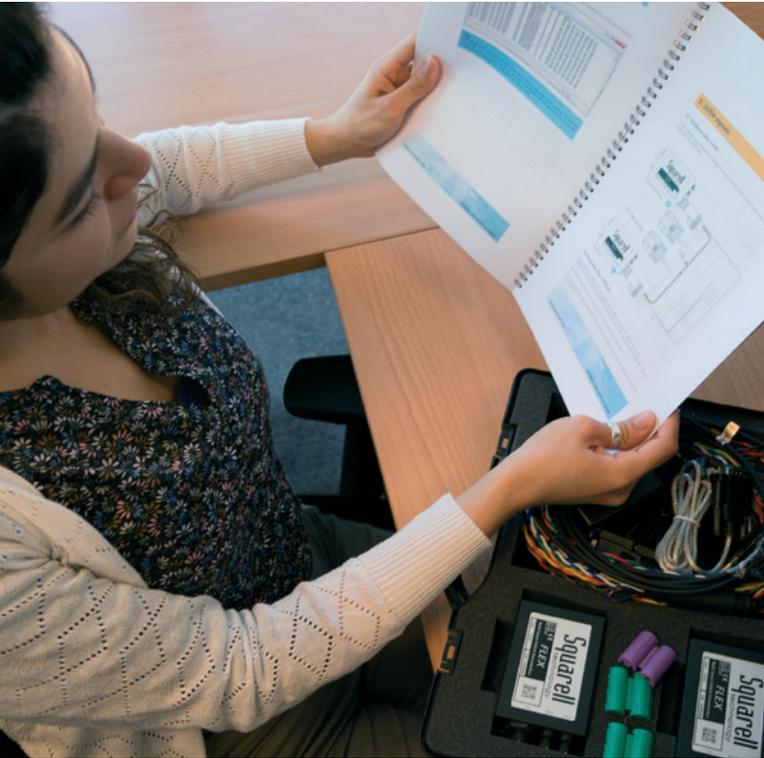
#### **Examples parameters for reactive maintenance**

- Engine MIL indicator
- Worn brake lining
- Brake failure
- ABS failure
- AdBlue level low

### Technical example of a solution

This is an example of a predictive maintenance solution. The Squarell Vehicle Data Interface then processes and translates the data obtained and sends it via a modem to the server of the Telematics Service Provider (TSP). The TSP now receives a fault message, for example, and can decide to carry out maintenance on the vehicle.





## Squarell hardware

Squarell's solutions are brand-independent, ideal for comparing data from fleets with various vehicle brands. Access to the vehicle's fleet management system is not required to be used for predictive maintenance. Squarell's hardware is able to read vehicle data from any vehicle on the market without causing warranty and liability issues. Check [support.squarell.com](https://support.squarell.com) for the supported vehicles.

### **Get predictive maintenance solutions**

Contact us at [squarell.com](https://squarell.com) for more information on predictive maintenance solutions.



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