



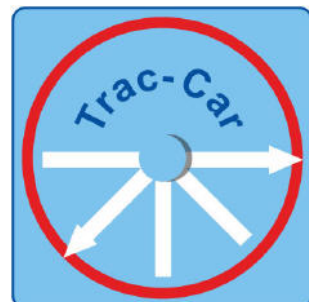
Trac-Car is a global business providing pay-as-you drive traffic charging technology integration.

Using in-vehicle satellite tracking, we offer rating and billing for driver accounts based on actual distance driven, a charging model that enables carbon emissions statistics.

Drivers can replay their journeys , view traffic maps either in-vehicle or over the web.

Trac-Car assembles satellite vehicle tracking and mapping, wireless networking, data rating, collection and analysis, and web self-service for end-user customers .

Vehicle make and model, and the distance driven, give accurate measurement of vehicle carbon emissions within the vehicle charging zone.



## Satellite Vehicle Tracking

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Track cars, track carbon.

Trac-Car logo



## Satellite vehicle tracking

Commercially, this technology has been in use for some ten years e.g. tracking vehicle fleets, police and military vehicles, and lately, large trucks on freeways.

The technology uses GPS positioning, a device that transmits information to a base server over a wireless network, usually a GSM telecommunications network, though other types of wireless networks are playing a larger part.

Data is transferred to an IP network through a GPRS gateway. Once analysed and prepared, the data can be viewed as a journey on GIS mapping software. If the vehicle device is sophisticated enough, drivers can view their progress on a map, also viewing live traffic information, if enabled.

Advances in on-demand scalable infrastructure, accompanied by new GPS chip technology, mean that public vehicle tracking is now feasible.

By provisioning over a GSM network, smart device functions can be automatically provisioned.

### Scale of technology

With end-to-end performance monitoring, infrastructure can be scaled to meet the demand of large numbers of vehicles.

The big difference, now, is that unlike smaller-scale current fleet vehicle operations, it is feasible to track public vehicles in large numbers, with associated large data volumes. For corporate customers that intend to engage in tracking road usage traffic, there is an opportunity to charge for the distances driven, rather than levying a fixed charge for passing a fixed point. It is now possible to change the tracking boundaries at will, within hours, at no extra cost.

### Kyoto Protocol

The Kyoto Protocol mandates a demonstrated reduction in carbon emissions. One method that not only reduces carbon, but also engages the community in the process, is to provide incentives for reduction in vehicle CO<sub>2</sub> emissions - by offering discounts for carbon efficient cars and/or fuel usage.

### Carbon Trading

"Market transactions are driven by relative prices of emission reduction opportunities among market participants. For example, a company with a low cost opportunity to reduce emissions below its allocation of emissions rights can sell these unneeded rights to a company with limited or uneconomic emission reduction opportunities." - International Emissions Trading Association.



## Vehicle Tracking Operations

Trac-Car is a provider of in-vehicle tracking and telecommunications to facilitate pay-as-you drive tariff collection. Trac-Car assembles satellite vehicle tracking and mapping, wireless communications, data collection and analysis, web self-service for journeys and billing

Each in-vehicle device has a unique identifier, linked to vehicle registration. Along with identity, vehicle journey data is transmitted over wireless GSM network as is currently the case with mobile phones and SIM cards.

Trac-Car captures and stores data, and provides journey rating, billing calculation, individual journey replays, and statistical analysis and reports, including levels of carbon emissions, to corporate customers, and other interested parties

Carbon emission measurement is a very exciting spin-off from this technology, allowing cities to take a vehicle carbon trading position.

### How do we operate?

Trac-Car is a service delivery organization. We assemble the end-to-end technology services for pay-as-you drive, ranging across vehicle device, network, data centre, and web self-service and billing calculation services. In addition, we provide the architecture and the integration services.

Trac-Car rates journeys for corporate customers (e.g. cities, local governments) on the basis of vehicle distances tracked e.g. for inner city traffic charging. The fees-for-services are levied on the basis of actual vehicle distances tracked. The local authority provides the rating and discounting information, and we calculate the vehicle owner/driver accounts on a pay-as-you-drive basis

Trac-Car is able to calculate discounts for low carbon emitting vehicles and lower carbon emitting fuel usage. It does this by reference to industry standard emission tables per vehicle make and model. In addition, accurate, live, real-time traffic information can be made available. Individual journey replays and traffic information are displayed over the web to authorised users. For vehicles fitted with a more sophisticated device enabled by Trac-Car software, this information can be displayed in-vehicle.

### National benefits

For a stake in the global future of reduced carbon emissions, the accurate measurement of vehicle emissions, and carbon trading are exciting innovations. Global participation will help to maintain the ecological balance in the planet's complex weather systems that make up our unique surface and atmospheric environment. The future of our planet, and the generations to come, hangs in the balance of achieving this kind of global co-operation in a race against time to reduce global carbon emissions.

## Cities and Local Government

The urban environment is a complex set of inter-dependencies, with a wide variety of stakeholders. Increasing levels of traffic mean that, increasingly, governments want to turn to a user-pays model for roads. Fixed point systems such as photo-recognition and fixed point RFID toll gates were a great innovation, however they have limits. Today's traffic requires finer micro tuning at the street level to be really effective.

In addition, the provision of traffic information direct to drivers allows for better self management of traffic flows. This means that when traffic trouble spots are properly analysed, with real data, better traffic diversion solutions can be readily found and communicated.

Flexible boundary changes for traffic charging zones are an obvious area for improvement on today's systems. In addition, by only charging for the actual distances driven, improved self-regulation of road usage will result. Incentives for low carbon-emitting vehicles provide effective encouragement for the purchase of more eco-efficient vehicles.

### Driver benefits

For the average vehicle owner/driver, charging for actual distances driven is a system that is actually fairer, allowing essential journeys to be undertaken without a prohibitive daily cost. In addition, better information about the state of traffic, road-works etc., will also help in planning journeys to be more pleasant and less time-consuming. If potential jams and hazards can be avoided, shorter, more fuel-efficient journeys result.

The ability to see journeys replayed on the web, over a number of secure channels, is an optional capability that will promote interest, and information about local features and individual journeys, for the many drivers who so choose.

### For all citizens

Citizens stand to benefit from urban improvements, and the reduction in CO2 emissions. Everyone is concerned when it comes to having a clean, green environment with improvements in air quality.

### Car manufacturers

Once car manufacturers see increased demand for low carbon emission vehicles, they will respond with even more interest. The availability of this type of vehicle will grow, and downward pressure on price will continue, making low emission vehicles available and affordable.

In fact, everyone benefits when the environment is taken into real consideration.

Track cars, track carbon!

