

The background of the entire page is a photograph of a red fire truck and a silver Mercedes-Benz sedan on a road. The fire truck is a Mercedes-Benz ATECO model, with 'Feuerwehr Böblingen' written on its side and a fire department emblem. The sedan is a classic Mercedes-Benz W124. The scene is overlaid with a futuristic digital interface consisting of green circular patterns, a satellite icon, and vertical columns of binary code (0s and 1s).

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## Sittraffic Stream satellite-based prioritization system

Priority for fire brigades!

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# Fast passage for rescue vehicles – safety for all road users!

In case of an emergency, every second counts! Rescue vehicles need to arrive at the scene as quickly and safely as possible – without endangering other road users and without keeping cross traffic waiting any longer than absolutely necessary. With the new, satellite-based Sitraffic® Stream prioritization system, this objective can now be reached easily and cost-effectively – with only minimal impact on the general flow of traffic. ‘Stream’ stands for “Simple tracking real-time application for managing traffic lights and passenger information” and ensures that at every intersection the light automatically switches to green for the approaching rescue vehicle.

## Easy and cost-effective thanks to satellite navigation

Sitraffic Stream benefits from the advantages of satellite navigation technology, which works without extensive and costly roadside installations. Every rescue vehicle carries a so-called on-board unit (OBU) with integrated GPS and GPRS receivers. The OBU uses GPS to determine the vehicle’s exact position, and GPRS to transmit the positioning data as well as the vehicle’s passing of one of the predefined registration points to the traffic control center. The control center then successively switches all traffic lights on the route to green for the

approaching rescue vehicle. The positioning data are very precise; the average localization accuracy is 5 meters.

## Rescue vehicle prioritization with minimal impact on cross traffic

Up to now, prioritization systems used to be tied to special pre-defined rescue vehicle routes. Since it was not possible to track a vehicle’s current position in real time, the green phases along the chosen route were activated at fixed time intervals, without reference to the vehicle’s actual progression. This meant long intervention phases of 3 to 5 minutes at each intersection, with considerable impact on cross traffic and a risk of extended tailbacks during peak hours.

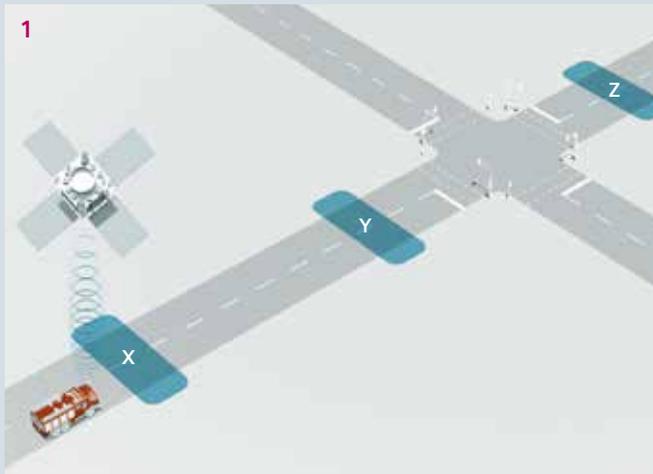
Sitraffic Stream allows online localization and tracking of every single rescue vehicle. When a rescue vehicle passes the registration point before the intersection, the control center arranges for the traffic light to be switched to green just in time. As soon as the vehicle has crossed the intersection, it signs off at the corresponding sign-off point and the control center activates the command to return to the normal traffic light switching routine. Sitraffic Stream interventions at an intersection generally don’t last longer than 40 seconds at the most. Incidentally, the registration points are a purely software-based function and require no road-side infrastructure.

## No special equipment for intersection controllers needed

The traffic controllers at the intersection can remain just as they are. No additional communication hardware components are required to use Sitraffic Stream, because the vehicles communicate directly with the control center. From there, the system passes the relevant information on to the intersection controllers via existing communication links.



# The basic principle is simple. As is the implementation!



The implementation of Sitraffic Stream is fast and cost-effective because it requires no changes or extensions to the technical roadside infrastructure. And the prioritization process is as straightforward as it gets, as the pictures above illustrate.

**Figure 1:** For each intersection, two registration points at a distance of X and Y meters before the intersection, as well as a sign-off point Z are defined on the software level. As Sitraffic Stream is based on satellite navigation (comparable to the functioning of satellite-based toll systems), no specific roadside equipment is required.

**Figure 2:** The on-board unit installed in the vehicle uses satellite navigation (GPS) to identify the first registration point and sends the message "Passed registration point X" per mobile radio (GPRS) to the traffic control center.

**Figure 3:** The control center sends a "Rescue vehicle approaching" message to the controller at the intersection, together with the command to switch the traffic light to green after a specified time interval or, as the case may be, extend the current green phase to let the vehicle pass without stopping.

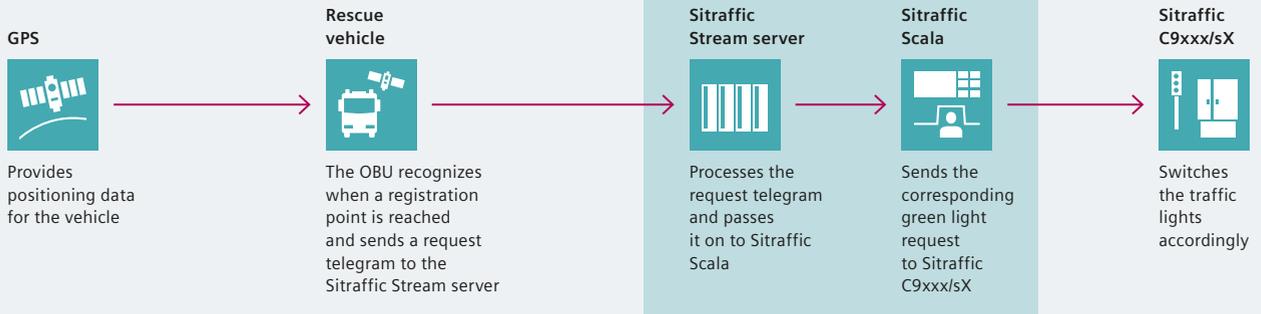
**Figure 4:** By the time the vehicle drives by the second registration point close to the intersection, the light has already switched to green or received the command to stay green for the time the vehicle needs to reach the intersection.

**Figure 5:** The rescue vehicle can cross the intersection quickly and safely, saving valuable seconds without any risk to other road users.

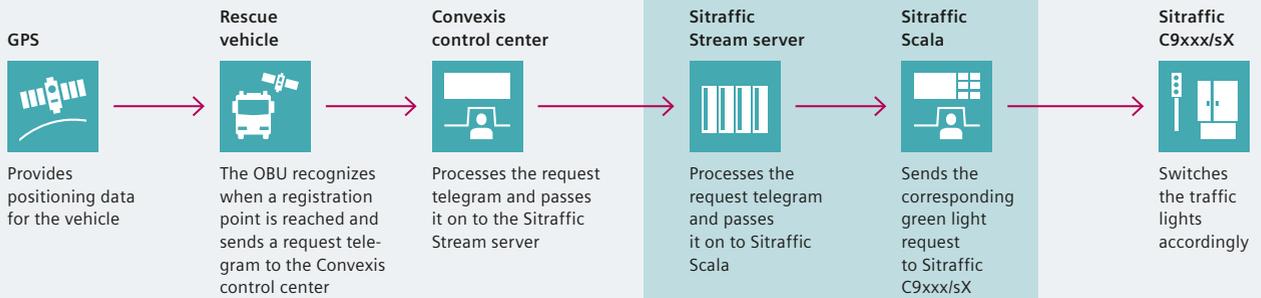
**Figure 6:** A few meters behind the intersection the rescue vehicle passes the sign-off point. The OBU recognizes this point per satellite navigation and sends the "Passed sign-off point Z" telegram per mobile radio to the traffic control center. The center then orders the intersection controller to return to the regular traffic light switching program.

Hence the system returns to normal operation immediately after the rescue vehicle has left the intersection, and traffic in the other lanes and streets can be given the green light. The interventions by Sitraffic Stream are limited to just a few seconds so that the impact on other road users remains minimal.

### The working principle of Sitraffic Stream



### The working principle of Sitraffic Stream in combination with the Rescuetrack on-board unit (in Germany only)



Ensuring the safe and fast passage of fire engines, rescue vehicles and police cars is one of the main tasks of Sitraffic Stream. But the possibility of precisely positioning and tracking individual vehicles and the purely software-based definition of the required reference points in the road network also enable valuable additional functions. The system can be used, for instance, to record and analyze journey profiles, or even to implement access control functions for specific areas.

#### Compatible with the Rescuetrack operations control system

Sitraffic Stream can now also be used in combination with the rescue operations control system from Convexis. This enables an alternative connection option for existing Rescuetrack on-board units: They can now be linked up to Sitraffic Stream technology, too, eliminating the need to install additional on-board units in the rescue vehicles.

# Sitraffic Stream: Successful deployment in Böblingen

In Böblingen, a mid-sized town south of Stuttgart, Sitraffic Stream has been successfully performing as a prioritization solution for fire brigade vehicles for some time now. In a pilot project, registration points were defined at four intersections and two fire rescue vehicles equipped with OBUs. All those involved were impressed by the system's performance, and the city will now implement Sitraffic Stream across the entire urban area.

**Excellent value –  
also in the experts' eyes**

## 1. Best Practice Award for Telematics Applications

For their joint Sitraffic Stream pilot project, Siemens Mobility and Logistics and the town of Böblingen won the Best Practice Award for Municipal Telematics Applications in the "up to 50,000 inhabitants" category. The award was created by the European TelematicsPRO association in 2012. On April 10, 2013, the award was presented by Olaf Lies, the Transport Minister of the German State of Lower Saxony, in the scope of the Hanover Fair. The initiators of the award include, besides the European TelematicsPRO association and Bitkom e.V., the three central organizations of municipal government in Germany, namely the German Association of Cities and Towns, the German County Association, and the German Association of Towns and Municipalities.

## 2. Winner of the "Landmarks in the Land of Ideas" competition

The "Germany, Land of Ideas" initiative has launched a competition for lighthouse projects that propose forward-thinking ideas for the future of cities, towns and municipalities. Sitraffic Stream in Böblingen is the 2013/2014 winner of the "Landmarks in the Land of Ideas" competition in the topic area "Ideen finden Stadt" ("Ideas for the city").



**"I'm thrilled by how well this system works! It makes crossing an intersection so much faster and safer for us! For other road users, too, things are much safer now."**

Marcus Winz,  
Senior Fire Officer,  
Volunteer Fire Brigade  
Böblingen



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