Sittraffic Stream – our satellite-based prioritization system
Priority for fire brigades!
Fast passage for rescue vehicles – safety for all road users!

In 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 realtime 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 passage 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 predefined rescue vehicle routes. Since it was not possible to track a vehicle’s current position in realtime, 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. By the way, the registration points are a purely software-based function and require no roadside 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 below 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 preregistration 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 that 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 that 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. Then the center orders the intersection controller to return to the regular traffic light switching program.

Figure 7:
Hence the system returns to normal operation immediately after the rescue vehicle has left the intersection, and traffic on the other lanes and streets can be given the green light. The interventions by Sitraffic Stream are limited to only a few seconds so that the impact on other road users remains minimal.
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 available options for exact positioning and tracking of individual vehicles and the purely software-based definition of the required reference points in the road network enables also valuable additional functions. The system can be used, for instance, to realize a bus prioritization scheme including dynamic passenger information, record and analyze journey profiles, or implement access control functions for specific areas.
Sitraffic Stream: Successful deployment in Böblingen

In Böblingen, a midsized 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. The system’s performance has convinced everybody 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, Yunex Traffic 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 prize 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 provide 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 the other road users, too, things are much safer now.”

Marcus Winz,  
Senior Fire Officer, Volunteer Fire Brigade Böblingen