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Sittraffic Stream – our satellite-based prioritization system

Priority for mass transit!

Fast and on-time public transport – quick and easy to implement!

Fast and convenient travel across the city, on buses that arrive on the dot at the bus stop, with exact arrival times indicated on easy-to-read dynamic displays – that's what users expect from their public transport providers. With the new, satellite-based Sitraffic® Stream prioritization system, these wishes can now be answered easily and cost-effectively – with a minimum of impact to the flow of private traffic. 'Stream' stands for „**S**imple **t**racking **r**ealtime application for **m**anaging traffic lights and passenger information“ and ensures that at every intersection the light automatically switches to green for an approaching bus and that the exact arrival times can be displayed anywhere along the route.

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 bus carries a so-called on-board unit (OBU) with 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 bus' passing one of the pre-defined registration points to the traffic control center. The control center successively switches all traffic lights on the route to green for the approaching bus. The positioning data are very precise; the average localization accuracy is 5 meters.

Reliable bus prioritization, immediate return to regular switching routines

Sitraffic Stream allows online localization of every single bus. When a bus 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 bus has crossed the intersection, it signs off at the corresponding sign-off point and the control center activates the command to return to normal traffic light switching routines. 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 bus 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. Since Sitraffic Stream is based on satellite navigation (comparable to the functioning of satellite-based toll systems), it can be implemented without any investment in roadside equipment.

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 pre-registration point X" per mobile radio (GPRS) to the traffic control center.

Figure 3:

The control center sends a "Bus approaching" message to the controller at the intersection, including the command to switch the traffic light to green after a certain time interval or, as the case may be, extend the current green phase to let the bus cross 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 bus needs to reach the intersection.

Figure 5:

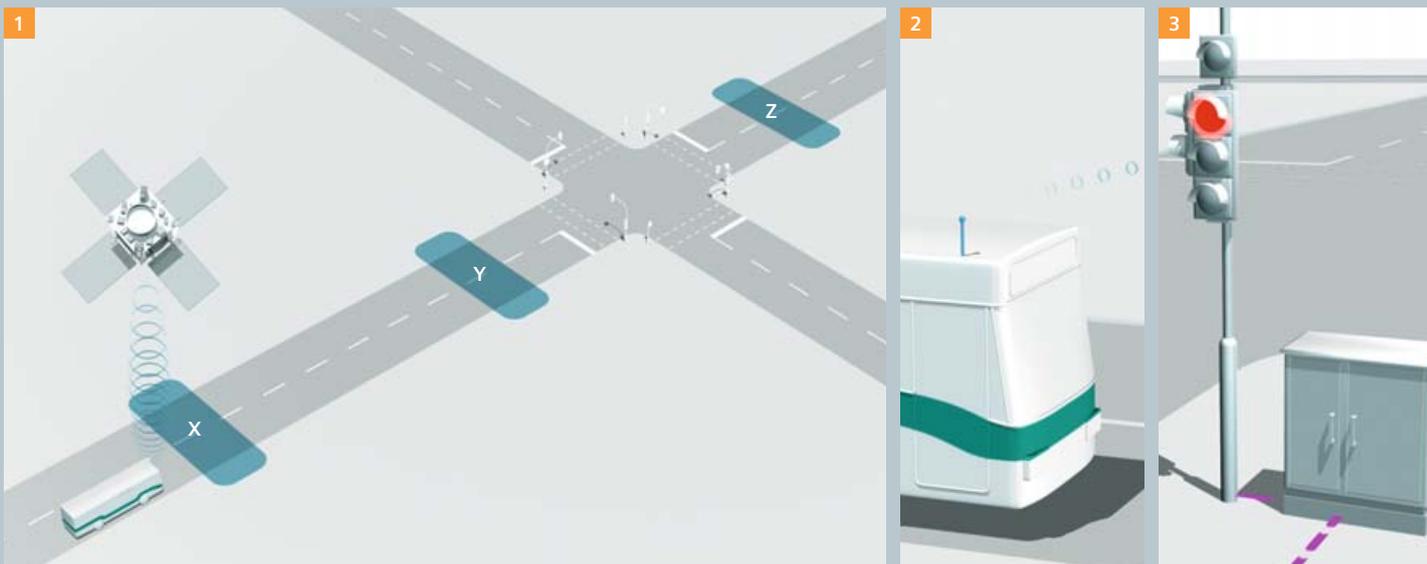
So the bus can cross the intersection without slowing down or stopping, which saves valuable seconds.

Figure 6:

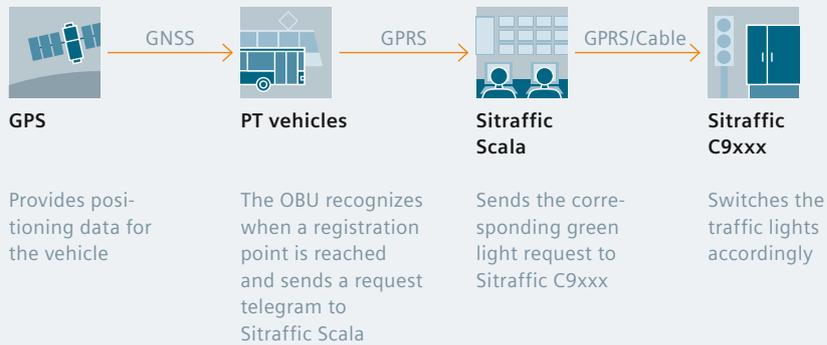
A few meters behind the intersection the bus passes the sign-off point. The OBU in the bus recognizes this point per satellite navigation and sends the "Passed sign-off point Z" telegram per mobile radio to the traffic control center. Then the center orders the intersection controller to return to the regular traffic light switching program.

Figure 7:

Hence the system returns to normal operation immediately after the bus has left the intersection, and traffic on the other 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.

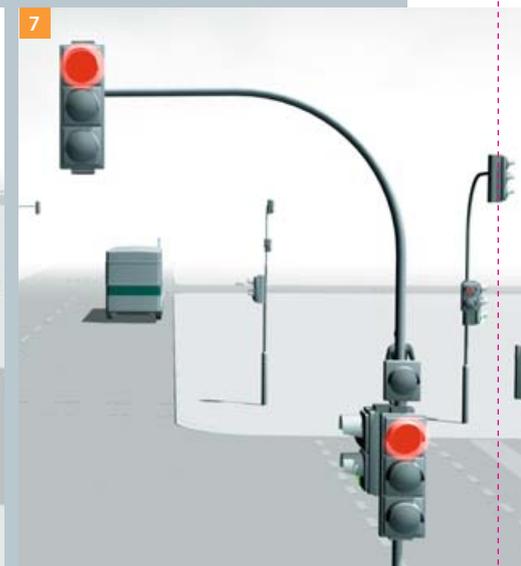
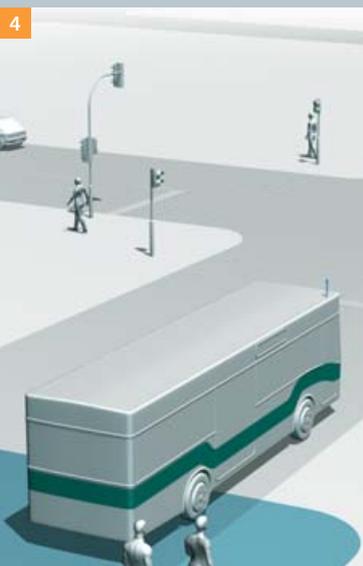


The working principle of Sitraffic Stream



Sitraffic Stream is a cost-effective solution for small and medium-sized towns planning to implement a system for bus prioritization system and/or for ensuring the safe and fast passage of police, fire and rescue vehicles. Since the system permits the exact positioning and tracking of individual vehicles, and the required reference points in the road network are defined on software level, the user can realize valuable additional functions.

Besides bus prioritization including dynamic passenger information, the system offers options for recording and analyzing journey profiles, or even implementing access control functions for specific areas. What's more, Sitraffic Stream can be extended to additional bus lines and routes at any time – simply per software function.



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 public transport and fire brigade vehicles for some time now. In a pilot project, registration points have been defined at four intersections and ten buses and two fire rescue vehicles equipped with OBUs. The system's performance convinced everybody and the city now plans to 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 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").

**"With Sitraffic Stream there
is now an affordable and extremely
reliable bus prioritization system
for towns of the size of Böblingen."**

Reinhard Schopf,
Town of Böblingen



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The information in this document contains general descriptions of technical options, which may not be present in every individual case. The desired performance characteristics are therefore to be specified on a case-by-case basis when the contract is agreed.

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