



**Gomatis**

*Leader in radio traffic lights priority*

## PRIOCOM

### Bus & Tram traffic assistance solution

#### EFFICIENT

- Increase of commercial speed of 10 to 15%
- Improvement of regularity up to 25%
- Optimization of bus services
- Permanent performance stability
- No impact on traffic in opposite direction

#### SIMPLE

- Quick to install, no roadworks
- Automatic adjustment of the system efficiency
- Operational alarms
- Periodic performance reports

#### SPECIALIZED

- System dedicated to the traffic regulation
- BRT, share and dedicated lanes...
- Prioritization of bus and tramway lines

#### COMPATIBLE

- Traffic lights junctions, roundabouts, tramway lights ...
- Controllers interface: R09.16, DIASER, logic signals.
- Emergency and fire vehicle

#### ATTRACTIVE

- Profitable and quick return on investment
- Useful for the served towns
- Passengers comfort
- Fuel consumption diminution

#### INSTALLATIONS

- PRIOCOM, an efficient system, selected and installed in more than 35 big French and European cities :
  - Paris
  - Brussels
  - Geneva
  - Marseilles
  - Lyon
  - Toulouse, ...
- More than 6000 buses, tramways and junctions equipments

## PRIOCOM functional description

**PRIOCOM** is a comprehensive signal priority solution for public transport, designed and produced by COMATIS company.

**PRIOCOM** is an opened and autonomous product, based on permanent radio transmission of the bus arrival time prediction to the next traffic signal. To generate the estimate, **PRIOCOM** uses various approach models for each traffic lights; those models can be modified at any time by updating and broadcasting parameters. Depending of the estimated arrival time, traffic signal controllers can distort its signal cycle, generating a wave of green lights in front of the bus as it is moving forward.

According to the applied settings, **PRIOCOM** tool reduces crossing time at junctions and meet the following needs :

- improve schedule reliability and punctuality
- increase the bus commercial speed
- integrate traffic hazards during the bus approaches at traffic lights
- maintains intervals and regularity between the buses
- can advantage one direction or lines, depending on timetable
- Prioritize lines and improve the system efficiency for the strongest lines.
- measure the performance and report on the system effectiveness
- Automatically propose relevant approaches models, according to data collected continuously by the bus during service.

The Priocom parameters are set according to a strategy, consistent with the transport needs. The settings are configurable per line, per traffic light and per junction. Parameters are set from the server and broadcasted automatically in the bus.

Some privilege options between lines can be set according to calendar periods, days or timetable and according to priority level of service lines.

**PRIOCOM** performs continuous measurements of its own performance and takes into account real time traffic evolution. It remains completely configurable and provides visibility on operational data, on bus services and signal controllers actions. **PRIOCOM** monitors the bus speed, features and performances and sends alarms in case of performance degradation or technical issues.

## PRIOCOM architecture

**PRIOCOM** is composed of the following functional components:

- **In the on-board vehicle (bus, tramway ...):**

**LCU-PRIO** equipment: transmission of priority request and of arrival prediction time before crossing, routes analyses, radio communication with controllers (based on Diaser protocol , R 09-16, ...), event logs collecting, database loading and event logs unloading in the bus depot.

LCU-PRIO uses odometer information to improve location accuracy, even in the areas poorly covered by GPS satellites.

- **In traffic signal controller cabinets :**

**CRT-PRIO** modem radio: radio communication with bus, transmission of the bus arrival time to traffic light controller. It can also control retractable studs and barriers to command the bus access to dedicated road or area. (interface : DIASER, R 09-16 protocols and logic signals)

- **In the bus depot :**

**RFU** radio front end in the depot: radio front-end to communicate with vehicles. It is possible to set up a front-end in each bus depot and bus station. The dialog between RFU and the main PRIOCOM server can be over Ethernet or GPRS network. The Wifi of the transport company can be used too.

- **In the transport IT department:**

**PRIOCOM Server** : server hosting the PRIOCOM software

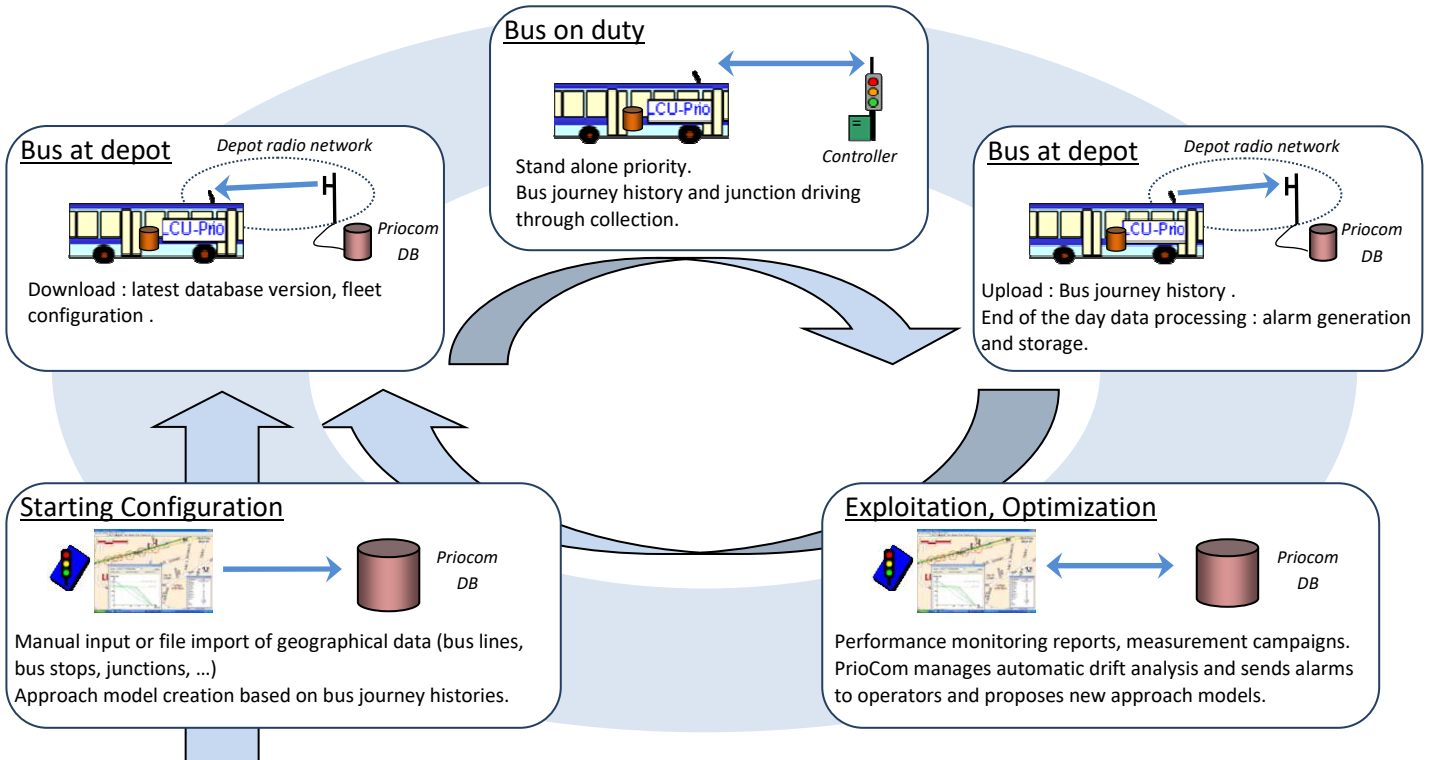
- SGBD MS SQL Server or Oracle : PRIOCOM database
- RDC software: data transfer management with buses in the depot
- IIS Server with **PrioWeb** application: Web portal to access remotely to maintenance and monitoring information, from client computers

**PrioUtil Software**: installed on the PRIOCOM server or on customer computer. Software administration tool of the PRIOCOM system, used to set up the repository and to monitor the efficiency of signal priority.

- **Variant for emergency and fire vehicles :**

**FASTCOM**: this variant uses the same operating mode as PrioCom but the priority request is taken into account with a strongest level.

## PRIOCOM functional principle



PrioCom ensures the effective functioning and the signal priority performance thanks to automatic bus event logs processing. PrioCom sends alarm messages by email to the appropriate recipients in case of performance drifts or technical issues.

These data are processed to provide summary or detailed reports, available online, line per line, and for various periods (week, month and quarter).

## Time gained and performance statistics per approach procedure

Performance report of measurement campaign :

Rapport d'activité

Du 01/04/2015 au 01/08/2015 Page: Heures Pleines Matin Référentiel: --- Appliquer

Code	Nom	Trajet	Passages	% Vert	Attente	Tps moyen	Passages SP	% Vert SP	Attente SP	Tps moyen SP	Gain
CF016	Foch Cathédrale	0	6009	71.1%	15.6 s	4.5 s	6144	26.8%	26.5 s	19.4 s	14.9 s
CF016	Foch Cathédrale	3	5451	62.7%	11.1 s	4.1 s	3312	31.8%	21.6 s	14.8 s	10.6 s
CF016	Foch Cathédrale	1	6380	63.4%	11.5 s	4.2 s	4144	35.9%	23.0 s	14.7 s	10.5 s
CF016	Foch Cathédrale	2	5104	34.3%	17.1 s	11.2 s	3677	17.9%	23.5 s	19.3 s	8.1 s
CF072	Pont du Cens	2	4177	49.5%	20.5 s	10.4 s	111	33.6%	27.3 s	18.1 s	7.7 s
CF072	Pont du Cens	1	10559	56.8%	18.2 s	7.9 s	1431	26.5%	20.7 s	15.2 s	7.4 s
CF072	Pont du Cens	3	4110	58.7%	20.2 s	8.4 s	113	31.6%	22.4 s	15.3 s	7.0 s
CF491	Nizan - Hugo	3	3890	86.1%	12.6 s	1.8 s	570	53.5%	18.2 s	8.5 s	6.7 s
CF072	Pont du Cens	4	109	43.7%	21.5 s	12.1 s	27	25.9%	24.9 s	18.5 s	6.4 s
CF072	Pont du Cens	0	10753	64.9%	20.7 s	7.3 s	1448	43.1%	20.2 s	11.5 s	4.2 s
CF491	Nizan - Hugo	2	3926	86.5%	11.3 s	1.5 s	592	72.6%	14.2 s	3.9 s	2.4 s
CF148	Route de Ste-Luce - Ru...	1	9970	99.8%	7.2 s	0.0 s	47	88.6%	16.2 s	1.8 s	1.8 s
CF472	Rondeau - Millerand	0	14434	99.5%	13.4 s	0.1 s	27	87.5%	4.3 s	0.5 s	0.5 s
CF504	Route de Ste-Luce - Rue...	1	9979	4.3%	7.0 s	6.7 s	49	69.6%	22.0 s	6.7 s	0.0 s

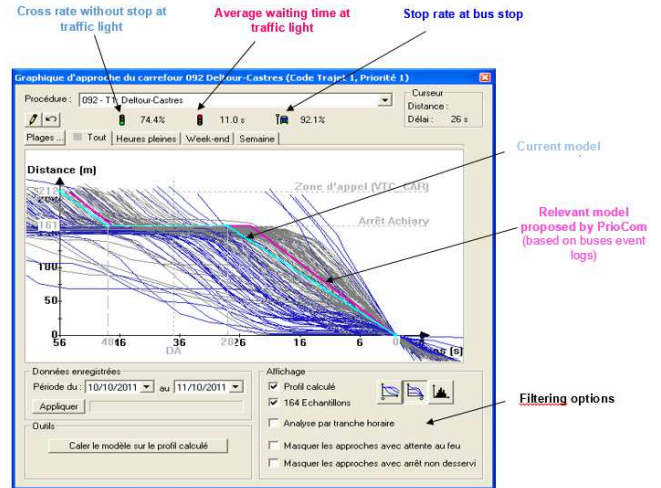
Distinction des mesures Sans Priorité (SP) | Valeurs nominales | Cumul des gains : 78.9 s | Détails | Exporter

PRIORITY ENABLED | PRIORITY DISABLED | GAIN

## PRIO-Util : Configurations and alarms

Approach models are iteratively created using the bus real-time activity. **Prio-Util** can create several variants of an approach model to take into account time of day and day of week.

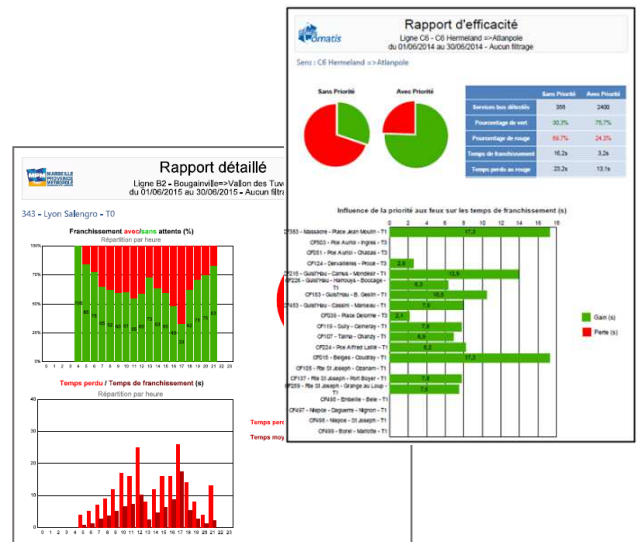
The regular services data are permanently logged by all the buses, and uploaded when they come back to the depot. When significant drifts are detected on the monitored parameters, efficiency alarms are automatically generated. In this case, a new approach model is generated and is proposed to be downloaded into the bus.



## PRIO-Web : Statistical analysis

The statistical analysis can be performed according to many criteria: procedure, time slot over a period, population of vehicles and/or traffic lights controllers, services, routes, average approach profiles...

Many filtering options help creating various measurement procedures to assess the speed and regularity benefits provided by the system. These measurement methods are based on crossing time at junctions or timing records, while avoiding bias created by general traffic condition changes.

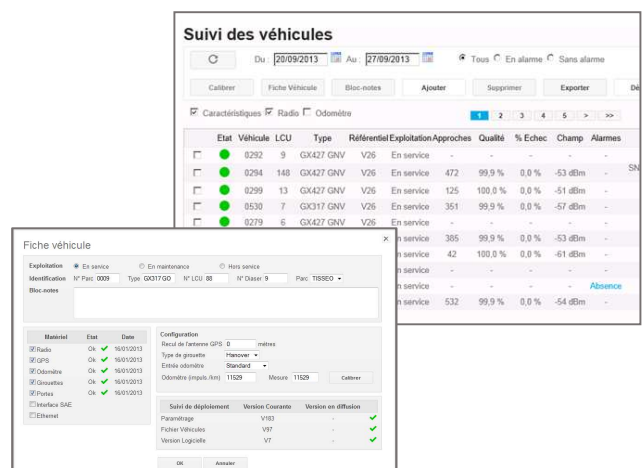


## PRIO-Web : Maintenance

All the subsystems and the radio links are supervised by **PRIO-Web**.

In most cases, this module is able to detect anomalies before the apparition of failures.

Alarm messages are transmitted to the right recipient depending on the defect.



## COMATIS

8 rue CARNOT - 78210 Saint-Cyr- l'Ecole  
 Phone : +33 (0)1 39 30 29 00 Fax : +33 (0)1 39 30 29 01  
 www.comatis.com

