

Reducing costs and improving quality of service in traffic telematics

As an integral part of ITS, telematics systems contribute greatly to the safe, economical and sustainable transportation of people and goods, and also enable new operational scenarios. On the other hand, however, the costs of such systems do not allow a complete coverage of telematics-based traffic management on all highways and other important roads. There are not only the investment costs but also the costs of maintenance – which, as we can see today, limit the use of these systems to highly busy or hazardous road segments.

Both the telematics systems and the required communication systems consist of highly integrated and complex devices. In the case of microprocessor-controlled equipment and communication devices (such as routers and servers), the outdoor location, with its substantial alterations in temperature and humidity, constitutes a highly unfriendly environment.

To encourage a wider dissemination of telematics systems, there are currently two main goals to be achieved. One is to reduce the maintenance costs of the equipment and the other is to make the installed systems as reliable as possible for use on busy or dangerous road segments. An expert in the sector, PSI Production, has devised a solution that enables road operators to considerably reduce maintenance costs, detect possible defects earlier and thus reduce or even avoid downtimes.

Introducing the OMS

PSI's Operations Management System (OMS) can cut maintenance costs while encouraging greater adoption of telematics equipment. The implementation of the OMS

helps to support road operators' tasks. Because ITS telematics systems are often used to enforce traffic laws, their operation and set-up must be properly monitored and maintained. And newer ITS applications such as dynamic lane management require a secure operation. OMS can help address both of those issues. As traffic operations management requires both process control and operation control functions, PSI's OMS consists of two components: the SCADA (system control and data acquisition) and the MES (maintenance execution system).



(Main) ITS applications such as the control of VMS can benefit from the OMS (Left) Screenshot of a schematic VMS gantry presentation in the OMS



| Need to know?

How an operations management system (OMS) can streamline efficiencies in traffic telematics systems

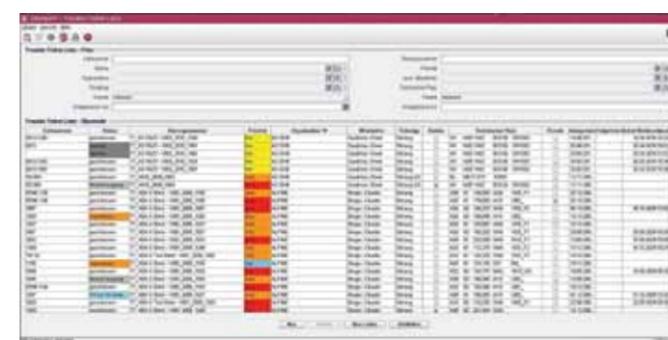
- > A powerful OMS can be used for the monitoring and maintenance of traffic telematics/communication infrastructure
- > The OMS provides a reduction in maintenance costs while improving the quality of service
- > Because of the cost savings it produces, the OMS pays for itself in a short time compared to the lifetime of the telematics equipment

a result of these analyses, fault notifications are initiated to be handled by the MES module.

The MES is designed to manage both the event-driven and planned maintenance. Therefore the telematics and communication equipment is managed in an inventory component. For each device, the lifecycle documentation – consisting of master data, installation locations, faults, planned maintenance schedules and availability figures – is available. A contract management component handles all obligations for internal and external service providers with respect to fault clearance and planned maintenance. Based on existing agreements, 'trouble tickets' are generated from the fault notifications initiated by the

SCADA component and assigned to the responsible service provider. The complete workflow of fault clearance is monitored. If deadlines are exceeded by the service provider, alerts are generated to inform the operator and help to escalate the fault clearance process.

Planned maintenance orders are also managed and scheduled by the MES module. According to the different requirements of the telematics and communication devices, maintenance orders are generated automatically and assigned to the responsible service provider. The coordination process for terminating the execution of the service orders is supported with respect to the current operational and seasonal situation.



(Above) The OMS generates trouble tickets to show where system faults are (Left) Geographic road presentations in PSI's OMS

Lower maintenance costs

The combined evaluation of the telematics systems and communication network in the OMS yields maximum information for fault identification and avoids any unnecessary and cost-intensive workload. A fault event in the communication network, for example, may be responsible for non-responding telematics devices. If this can be determined via the OMS, the service team (with the appropriate tools) can be sent to the correct location.

In addition there is a potential of cost reduction while coordinating planned and event-based maintenance work. If low-priority faults are detected by the OMS, the related trouble tickets could not only be executed separately

is usually the basis for the calculation of payments or fines. As one of its in-built features, the OMS tracks the activities – thereby generating a basis for the unambiguous evaluation of whether contractual obligations are met in respect to response and repair times. The key values for the services are generated by the OMS and forwarded to financial systems such as Enterprise Resource Planning.

Improving availability

Using an OMS reduces outages in at least two ways. Planned maintenance orders are automatically generated according to technical guidelines and their execution is monitored. This guarantees the substitution of defective or worn parts before downtimes occur. In addition, while acquiring life data and states of telematics and communication devices, it is not only current information that is available; the operations history is also collected and can be used to adjust the planned maintenance schedule. If specific devices fail more frequently due to a hostile environment at their location, their planned maintenance could be intensified. On the other hand, necessary maintenance orders could be balanced to an acceptable level if given performance limits are more than met.

Overall, the use of the OMS offers transparent maintenance processes and a good database for future investment decisions. ○

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