

# production manager

Journal for Logistics & Production

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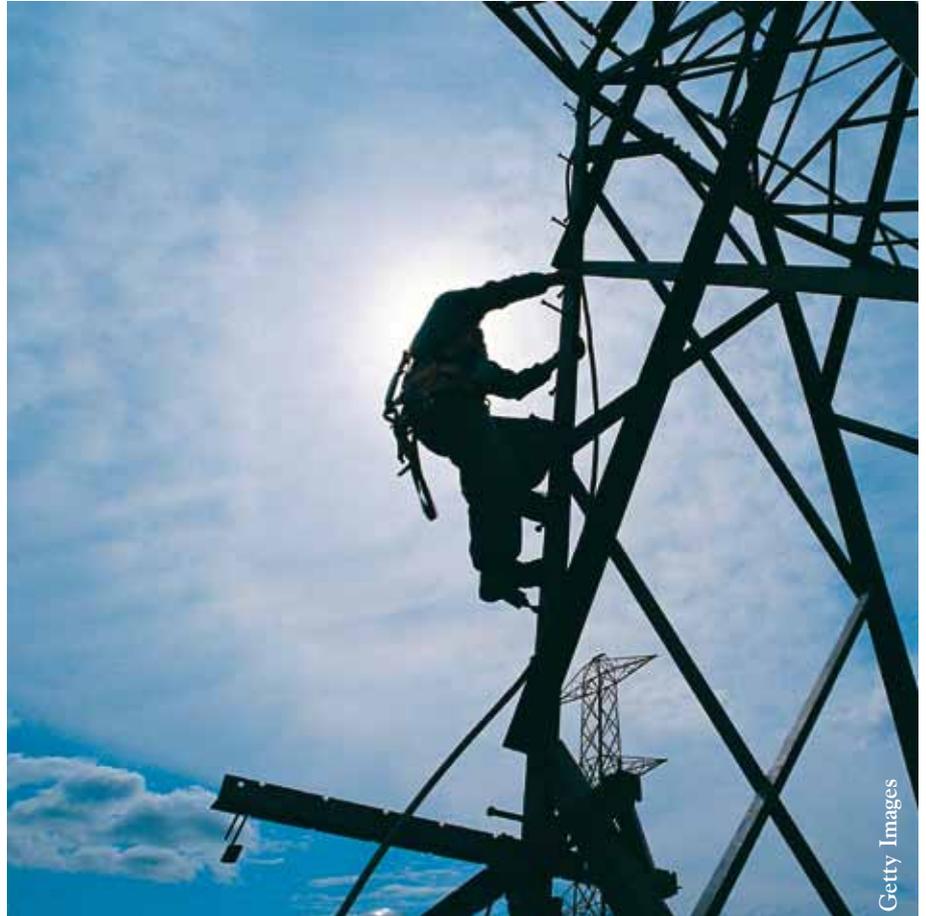
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Getty Images

**Workforce management: Qualicision®-based optimisation**

## Planned maintenance and fault clearance

The efficient operation of widely distributed infrastructures such as energy supply networks is a demanding task of key economic importance. During planned measures, work must be performed on the network infrastructure that conserves its value, guarantees security of supply or optimises its structure. For example, the scheduling of maintenance, construction and fault clearance including fault receipt and processing is a continual optimisation process. It is crucial, as fault clearance and maintenance of supply networks is a resource-intensive task and makes up a relevant proportion of the costs of a network operator.

Within the operation of planned measures, there are opportunities for increasing efficiency in the management of personnel resources in conjunction with

other operating resources, i.e. there is a general increase in efficiency in the management of the workforce.

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## News ticker

+++ PSI acquires more new customers in the steel industry in Brazil – Vallourec & Sumitomo Tubos do Brasil opt for PSI*metals*  
 +++ PSI subsidiary inControl Tech implements communication project for Malaysian Railways  
 +++ PSI implements new warehouse management system for Görtz – supplier of shoes and accessories optimises business processes with PSI*wms*  
 +++ PSI receives order from ZUFALL logistics group for software migration – new version of the warehouse management system optimises business processes  
 +++ PSI receives follow-up order from Austrian Teich AG – PSI*metals* automates production processes in new foil rolling mill II  
 +++ PSI Logistics offers freight cost check-up – transparency in the cost structure leads to cash benefits in the short term  
 +++ PSI supplies software solution for the new Berlin Brandenburg International BBI Airport – PSI*airport* for controlling the baggage transport and sorting system  
 +++

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## Editorial



**Dear readers,**

*Qualicision® technology enables the implementation of software systems for intelligent decision-making support and process optimisation across industry sectors, and for more efficient handling of production processes and any other business processes. The more complex the business processes, the more it comes down to the appropriate identification and handling of conflicting goals – a speciality of Qualicision, which provides a generally applicable methodology for this. While the optimisation goals in the processes are generally different,*

*goal conflicts can be handled in a generally applicable way with Qualicision, in a manner of speaking.*

*The range of applications is wide-ranging. We previously reported on Qualicision-based sequencing at BMW and several other car brands such as Volkswagen, Audi and Volvo [1/2009]. The recently commissioned optimal management of depots for buses and trams was the first use of Qualicision in the PSI Group.*

*In this edition, you will read about two new applications. The editorial article describes the integration of Qualicision into the workforce management tool PSIcommand, and highlights the benefit to the customer when operating, maintaining and rectifying complex infrastructures. The second application is as optimisation software for the fashion label Ulla Popken, which sells its fashion range in over 300 branches by mail order and online. The Qualicision solution is used to calculate demand-based stock transfer between branches and ensures an optimum balance between demand and stock levels in the branches. Both applications are very different at first glance. Yet they are similar: both are based on the same Qualicision core that identifies and handles conflicting goals in the processes.*

*Whether the automotive industry or the distribution of a fashion label, whether bus depots or the maintenance of infrastructure networks, goal conflicts are resolved: after all, optimisation is optimisation. For this reason, Qualicision solutions will continue to expand the PSI product portfolio for production, energy and infrastructure management with intelligent optimisation functionalities in the future. Perhaps you will also become Qualicision users soon. And I would be delighted if that were the case.*

*Yours faithfully,  
 Dr. Rudolf Felix*

*Managing Director  
 F/L/S Fuzzy Logik Systeme GmbH*

► *Continued from page 1*

### Efficient workforce management

The coordination cost of preparing and scheduling the appropriate resources for the work assignments is known to be high. For this reason, efficient workforce management must master all scheduled and operative processes despite the complexity of the task. When selecting the resources, highly diverse optimisation aspects, restrictions and correlations, e.g.: network topology, system specifics, technical specifications to be followed, weather conditions, consumer wishes, fault incidents, the degree to which employees are equipped and their individual qualification profiles must be considered. A further increase in the complexity of the planning processes results from the fact that the influencing factors outlined are only partly foreseeable, i.e. the levels of difficulty and cost of the work to be processed are merely estimated and are not precisely known in many cases. On the other hand, appropriate workforce management generates significant potential for reducing costs. This results from appropriate coordination of the activities of the workforce and can take place on different levels. In the operation of planned maintenance measures and the fault clearance, efficiency can be increased in particular by reducing non-productive times. Non-productive times include travel times to work sites, setup times, documentation times or correcting incorrect routes which can occur in daily practice e.g. due to false informations. The complexity to be mastered in appropriate workforce management goes far beyond the aspect of pure travel time optimisation, which is often addressed solely. Due to the complexity of the operating tasks, the organisational conditions and the dependencies of different

activities in topologically correlated networks, integrated optimisation taking account of all factors is needed which extends far beyond pure travel time minimisation. Only in this way can workforce management do justice to the entire range of operating goals when operating the tasks of the workforce with the required efficiency.

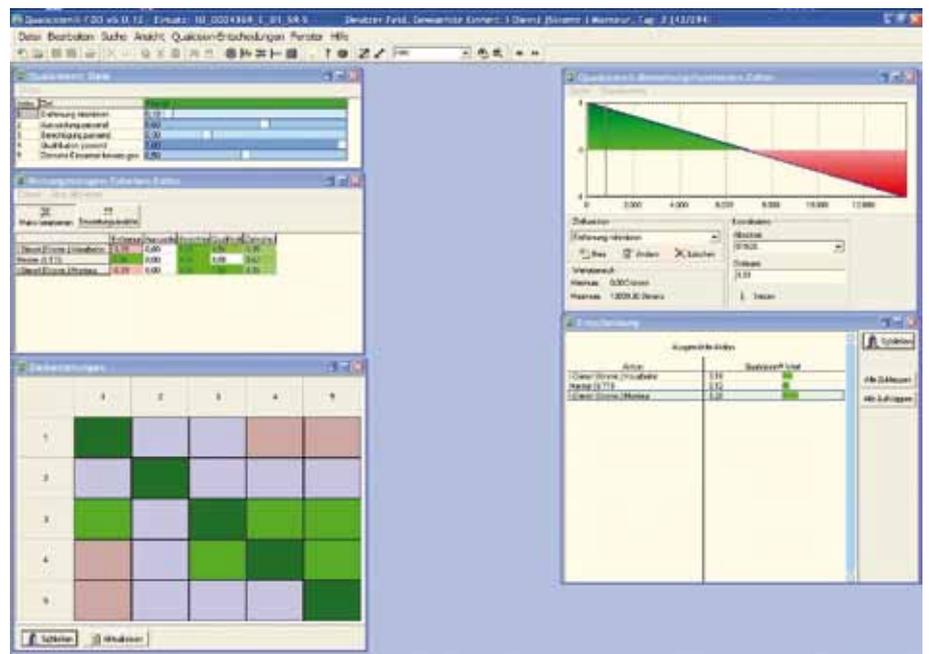
### Complex nature of the target portfolio to be optimised

The extensive range of operating goals is often contradictory in nature and so has to be optimally weighed up against one another. For example, high utilisation of service employees must be ensured while simultaneously equalising the workload. The allocation of employees to work tasks according to qualification must be harmonised with adherence to deadlines and centralisation of tasks at neighbouring sites while simultaneously controlling the resulting travel times. As such operational goals must, in many cases, still be differentiated by area and place of residence of the workforce em-

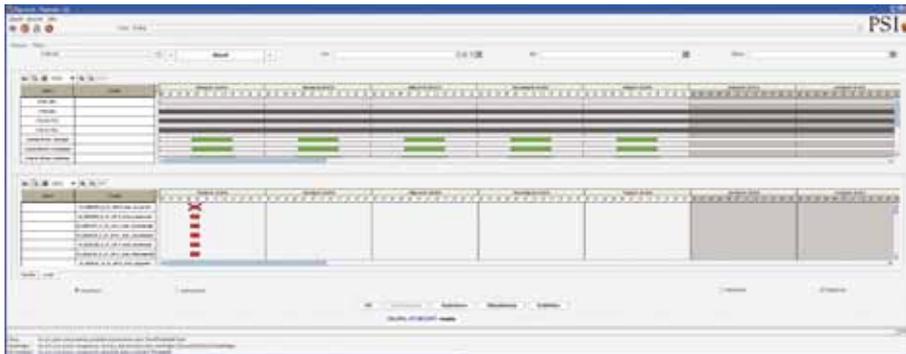
ployees, resulting in a wide range of optimisation goals and consequently a high complexity of the optimisation process in workforce management.

Furthermore, it should be noted that individual optimisation goals have to be subdivided. For example, the equalisation of the workload of service employees must be differentiated according to the minimisation of the work load differences and the optimisation of the overall workload of the workforce. Work tasks should be disposed to service employees according to additional somewhat contradictory criteria, such as necessary qualification profiles, the reduction of outsourcing or striving for the maximum possible variety of activities.

Therefore, not all optimisation goals can be met simultaneously and equally well, as these contradict each other in full or part, as already outlined. It is therefore particularly a question of optimally balanced coordination of the optimisation goals when it comes to managing the workforce. However, optimisation criteria that are sensitive to each other must be handled in such a way that costly,



Qualicision® parameterisation: Process optimisation with due regard to relevant factors Source: F/L/S



PSIcommand: Work platform for maintenance, construction and fault clearance Source: PSI AG

manual interventions in the allocation of work assignments to service employees, an unwanted increase in non-productive times due to incorrect routes, or additional communication times to clarify facts are avoided, e.g. in order to break down previously encountered emotional rejection of assignments and thereby ease frustrations among participating employees.

The complexity of the optimisation process in workforce management described above can no longer be controlled manually if all efficiency potentials are to be utilised appropriately during optimisation. The person responsible for workforce management and in particular the planner and dispatcher therefore requires systematic software support.

### PSIcommand extended to include Qualicision®-based workforce management optimisation

PSIcommand is the combined solution from PSI AG for operative maintenance, construction and fault clearance. Its configurable order model and flexible interfaces make it possible to master the complexity of the different processes and data flows. PSIcommand provides functions for coordination and support of all operating activities in fault clearance, maintenance and construction,

and for mobile service optimisation. The solution supports mobile employees with direct access to all important information, relieves the workload of central coordination offices using extended functions on mobile devices, and facilitates seamless documentation of assignment data even while on site. The comprehensive integration of all workstations involved, e.g. in district foreman's offices or production planning offices, technical integration into the business management and logistics processes via data exchange with other data processing systems, and seamless integration into the PSIcontrol network management system make PSIcommand a universal workforce management solution.

### From responsive to plannable process

With PSIcommand Qualicision® Inside, the range of services of PSIcommand is extended to include multi-criteria optimisation functionality. The integrated Qualicision® module provides optimisation that can take any number of criteria into account. Qualicision is an application (see figure: Qualicision® parameterisation) for multi-criteria decision-making and optimisation which is capable of determining operating goals through intelligent registration and analysis of every starting situation, with

optimum assignment allocation of workforce units by weighing up goal and criteria conflicts. The Qualicision® optimisation module, which is fully integrated into PSIcommand, can be configured to suit customer requirements, so any optimisation goals and conditions can be addressed. The optimisation goals can be configured online by the user by specifying priorities. Using goal conflict analysis, goal conflicts can be calculated and displayed from accurate and up-to-date data. An online connection to the process data enables real-time optimisations, transforming workforce management from a responsive to a plannable process. Overall, both planning and operative workforce management becomes easier and more efficient. ☺

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