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Computer-enabled Reduction of Impact on People in Case of Railway Networks Disfunction

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Being one of the main pillars in the transport industry, railway systems facilitate the movement of people and goods. Regarding the passenger transport, the train provides access to the main urban, touristic and educational centres based on a well-defined timetable. Any deviation from the original schedule can determine a decrease in passengers'satisfaction with a possible outcome of searching for alternative means of transportation. Firstly, this paper aims to emphasize the significance of minimizing the effects of a perturbation which causes train delays. Most of the time, an increase in waiting and travel times triggers a drop in quality of service as perceived by the customers with a direct impact on multiple social areas (work, education and personal related). Secondly, an analysis of how digital communication systems can contribute to achieving this goal is performed. We focus on the main areas which can benefit from computer networking features to shorten the time frame between occurrence of a disturbing event and full recovery of the railway services. One of the most common methods used for finding a solution to the train rescheduling problem implies building an optimization model and solving it by different techniques. Details for possible ways of integrating the Internet in the process of timetable updating are highlighted based on a practical example from Romanian railway system. Lastly, starting from a comprehensive literature review, some requirements which shall be covered by the communication infrastructure involved in train rescheduling are included, together with associated risks and mitigation recommendations.

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