Bachelorthesis - Abstract

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Topic: Requirements for IT-systems in Coach Transport

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With the "Passenger Transportation Act" in 1934, it was prohibited for bus companies to offer long distance transportation services inside Germany. The reason for this proscription was the protection of the German railways from competition.

However, on January 1st 2013, after a series of discussions, it has been decided to abolish the regulations and hence to make it possible for bus companies to compete with German railways provided that some requirements are met. Therefore, long distance bus companies need to ensure coach accessibility and guarantee for a distance of at least 50 kilometers in between every single stop. Apart from the mentioned preconditions, long distance transportation services require further developments regarding both the technical equipment and the IT-systems - compared to the short distance services.

It is the aim of the following paper to consecutively compile these specific IT-system requirements in Coach Transport as well as to compare them to ones in local passenger traffic afterwards.

First and foremost, the functions, which are supported by IT-systems are illustrated and explained. It is possible to divide the functions in three different segments. The superior function blocks can be regarded as planning, disposition, operations management, ticketing, passenger information, final payment, and additional contributions. Every block can be further divided in different single functions. In addition to the already existing functions there are some more, which are imaginable to be realized or of increasing importance in the future.

Simultaneously, the dependencies of the different single functions on each other are explained, as it is important for the functionality of IT-systems to reconsider in what way to link the partitions. Planning and disposition, for instance, are highly dependent on each other. Therefore it is impossible to execute vehicle disposition and personnel allocation until bus schedule development or crew scheduling respectively has been

completed. For a better understanding, the single dependencies are illustrated in an autonomously developed diagram.

Afterwards, the necessary functions for local traffic transportation are opposed to the ones essential for Coach Transport and the systematic differences are demonstrated. Subsequently, the resulting IT-system requirements are studied. The most serious reason for the differences is the remarkably extended distances in Coach Transport. Planning and operations management are related to a relatively small area, such as a city, in local traffic. In contrast to that, intercity coaches are on the roads across the whole country. Regarding to ticketing, basic differences are the extended sales possibilities in Coach Transport. Therefore, the IT-system has to associate the different sales possibilities. For every ticket available a reserved seat must exist. Furthermore, additional options such as taking a bicycle or bulky luggage have to be considered in ticketing. Tickets can be sold in different variations, in electronic or printed versions. Additionally, it has to be possible for the bus driver to check the different ticket variations. Passenger information in Coach Transport is more expensive because passengers get informed about lateness by short message service or e-mail. Likewise, it is possible for customers to receive information about punctuality of the coaches by customer hotline or the specific company's website. It would be meaningful to develop an application in order to directly inform customers about changes in the timetable or delays. In addition, passengers should be informed about connecting buses and the local conditions before reaching the appropriating stop. For the establishment of bus network systems Germany as a whole needs to be considered. Moreover, so-called "request stops" need to be integrated.

Regarding to disposition it is justifiable to assert that personnel dispatching is much more complicated, due to the increasing distances. It is important to distinguish whether one or two coach drivers are necessary for a specific tour, if it is reasonable to appoint a flexible driver, or if a layover at the final destination in combination with a connection tour on the next morning should be included. Due to the long distances, stopover for gas refill could become necessary. Additionally, the vehicle's comfort and equipment requirements differ from the ones in local short distance transportation services. Passengers are able to use wireless local area network or electricity while traveling. Moreover, they can purchase snacks and drinks, an on-board toilet is available, and the legroom is larger than in local traffic busses. For the future, it is imaginable to create functions to reward constant passengers or to offer taxi-connection services. Additionally, it is important to use GSM/GPRS devices in Coach Transport.

This is important for both, to locate the vehicles in order to make it possible for headquarters to determine whether the coaches arrive on time and to enable the communication between headquarters and coach drivers.

Additionally, the text will debate if existing systems from the local traffic meet the requirements and where it is necessary to develop specific systems. The products of the company IVU for local traffic are used to compare the necessary systems to the ones already existing.

The comparison shows that basic functions can be managed with already existing systems. Regarding to operations management and final payment existing systems from local traffic are sufficient.

Also for planning and disposition basic functions are given. However, it is necessary to add some details in order to make it possible to consider request stops, gas refill stops and to solve the problem of driver quantity.

Especially in the areas of ticketing, passenger information, and additional contributions, new IT-systems need to be developed or already existing systems have to be extended. In ticketing it is particularly important to guarantee connectivity of different sales possibilities, the ability of dynamic price controls, and the support of seat reservations. Regarding to the passenger information the existing system from local traffic has to advance, that delays can be established by detection and passengers will be informed by SMS, e-mail, the internet or even a mobile application. For this purpose a specific application for Coach Transport has to be developed. New systems are necessary too in order to offer a media center, a taxi connection-service or seat reservations because these functions are not available in local traffic.

Subsequently demand and utility of specific needed IT-systems are estimated. It shows that especially regarding to planning, disposition, and ticketing further developments or respectively advancements of existing systems are indispensable. Furthermore, the development of systems for passenger information and some additional functions are useful because it may derive a benefit to the passengers. Therefore, it would be advantageous for coach companies as the recently mentioned measurements are likely to increase their competitiveness against the German Railways.

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