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Chapter XVI

ORISS: A Web-Based Carpooling System

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Abstract

In this chapter, we present the Web-based carpooling system ORISS, which was initially developed by a student project group at University of Oldenburg. It is currently being deployed at Carl von Ossietzky University of Oldenburg with support of the DBU (Federal German Foundation for the Environment). We describe the role of carpools in traffic, particularly in commuter traffic, and show perspectives of an increased usage of carpools. A significant impact on the eco-balance of the university can be expected. We explain how Internet technologies and geographic information systems can be used for the arrangement of carpools, and show advantages over traditional methods of carpooling. The concrete architecture of ORISS and the algorithms used are outlined. We conclude the chapter by describing the circumstances of deployment and propose possible future extensions of the system.

Introduction

In this chapter we describe the Web-based carpooling system ORISS (Oldenburg RIdeSharing System). The system was initially developed by a student project group at the Department of Computer Science of Carl von Ossietzky University of Oldenburg. Following the initial development phase, ORISS was extended by several student theses.

This chapter is structured as follows: First, the fundamental problem of arranging carpools is outlined and the use of Internet technologies to solve this problem is explained. The second subsection deals with the social and environmental effects of carpooling, while the subsection "A classification of carpooling" gives an overview of different types of carpooling. The subsection entitled "Project goals and circumstances of development" describes our intention in offering the proposed solution. Next the particular circumstances of developing ORISS are described.

Afterwards, we describe the implementation on the basis of the system architecture, the user interface and the algorithms used. Finally, we give an overview of the additional work that has been done in the context of ORISS and a preview regarding the deployment of ORISS at Carl von Ossietzky University of Oldenburg.

Fundamentals

Problem to be Solved

There are several reasons demanding the arrangement of carpools: On the one hand, substituting one multi-person carpool ride for several one-person private car rides is sensible for ecological reasons, since a reduction in environmental pollution can be expected. In certain cases, even the substitution of a carpool ride for a ride using public transportation may be ecologically beneficial.

On the other hand, considering purely pragmatic reasons, it may be said that due to overstressing of the public road infrastructure, which arises particularly during rush hour traffic, building a carpool is directly associated with individual benefits.

Happily, commuter traffic—from and to offices, and similar traffic from/to campuses in particular—can bring about a great traffic reduction if carpools spread. One reason is that these types of traffic show many opportunities for bundling movements from or to nearby locations. It is therefore not only most