

Problems of limited context in redesign of complex situations in infrastructures

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Abstract

Society changes continuously which puts pressure on transport infrastructure to accommodate the consequences of these changes. Design of infrastructure does not always consider risks that are a result of the changed situation. Three cases are discussed that are caused by a too narrow focus of designers. The first case shows how the focus on the initial problem in seeking an alternative layout, without paying due attention to the context of the transport system, contributed to an accident. The second case discusses the temporary layouts users met during reconstruction works. The temporary nature caused designers to accept sub-optimal solutions. The difficulties for users in understanding constantly changing circumstances were also not taken into account. The final case discusses how the implementations of new technologies might influence redesign of the physical infrastructure. Although methods exist that cover these problems implicitly, there are no simple solutions to tackle them. Risks included in the design in these cases had to be dealt with by the road users. Awareness of these issues is the most important factor to ensure that they are addressed sufficiently for new and temporary situations. The traffic HAZOP introduced in this paper makes such discussions explicit.

Introduction

Redesign of road infrastructure is a common phenomenon. Redesign may have various underlying reasons, such as increase in use, required maintenance or new conditions for certain traffic situations. Demands for transport are still growing which may cause bottlenecks in transport networks. Moreover, demands may change as a result of new development areas in the neighbourhood of current infrastructure. Such areas could involve large living areas*, which cause mainly additional car traffic and public transport. Other developments are business or science parks, which not only attract additional personal transport but also change the demand for goods transportation. Apart from changes in transport demands, changing transport policies

* In the Netherlands so-called VINEX locations are developed in which within a period of 5-10 years hundreds of new houses and apartments are built