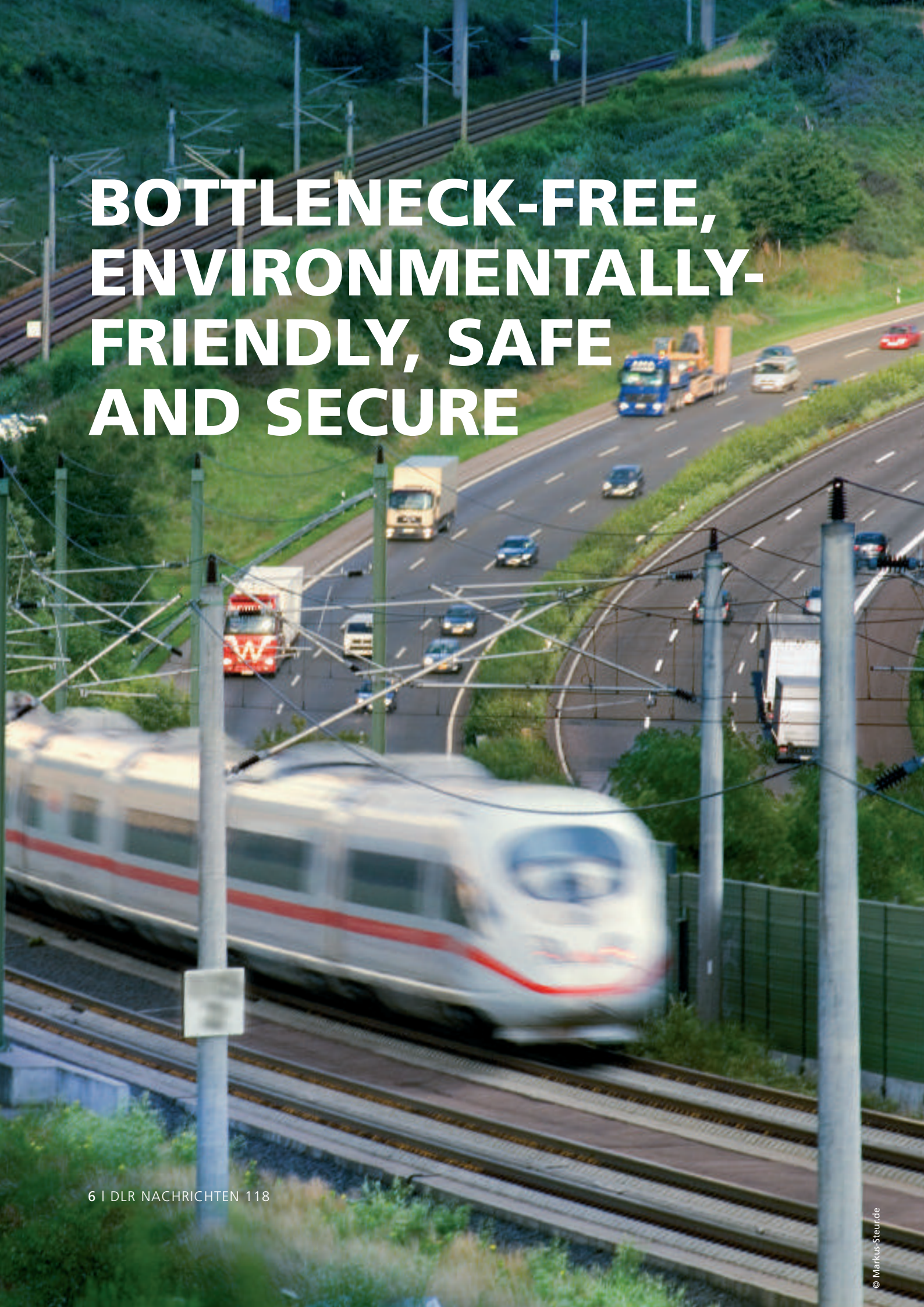
BOTTLENECK-FREE, ENVIRONMENTALLY-FRIENDLY, SAFE AND SECURE



Transport in the 21st century is facing monumental challenges – the German Aerospace Center is tackling them

By Dr.-Ing. Christian Piehler, Program Director Transport at DLR

Every day, 7,500 kilometers of traffic jams obstruct the free flow of traffic on Europe's main roads. At the same time, European rail traffic reaches its limits on 16,000 kilometers of infrastructure. Capacity-related bottlenecks and delays are commonplace in air travel. But that's not all. Noise and exhaust emissions from motor-powered vehicles impair the quality of life in congested areas, and hardly anyone doubts the negative effects on the climate any more. And every year, more than 40,000 people are killed in road accidents alone in Europe.

These traffic problems are the result of a noticeable increase in passenger as well as freight transport over the last decades. Particularly Germany as a transit country sees itself confronted with significantly growing volumes of traffic due to its central location in the heart of Europe.

The problems that already exist for all modes of transport will increase with the onset of the predicted development, especially because an expansion of the transport network adequate to demand hardly appears possible due to economic and ecological reasons. However, fast, reliable, safe and secure traffic connections are a necessary prerequisite for facilitating economic growth. At approximately 1,000 billion Euros, the transport sector has a share of over 10 percent in the gross domestic product of the European Union and provides more than ten million jobs. Added to this is an overall economic importance of transport, which specifically applies to Germany as the worldwide leading export nation.

Mobility without bottlenecks has therefore become a real economic concern for industry. It also articulates the widely spread individual needs that are typical of the way of life in modern societies.

There is no sight of a radical trend reversal either regarding the development of demand for commercial transport or regarding individual mobility behaviour. According to the scientists from the DLR Transport Program, three central challenges arise from the tense relationship between the demands for mobility and the negative effects of mobility: securing mobility, protecting the environment and preserving resources, improving safety and security.

These challenges cannot be met simply by expanding existing infrastructures or liberalizing transport markets. In order to build a sustainable, viable transport system, economic, ecological and societal concerns must be brought into a stable balance.

The DLR Transport Program provides important contributions to this aim through researching and developing state-of-the-art transport technologies, concepts and strategies. We use our specific transport expertise to systematically access DLR internal know-how in the areas of aeronautics, space and energy for transport applications. This symbiosis, which is unique in Germany, ensures problem-oriented results using innovative and sophisticated technologies. We concentrate our efforts on the following three programmatic research topics: Terrestrial Vehicles, Traffic Management and Transport System.

Cars, commercial vehicles, trains, and locomotives of the next generation with a lower energy consumption, lighter structures, optimized aerodynamics, increased safety, better comfort and less noise are in the focus of our research. We improve the effectiveness and efficiency of infrastructure utilization with innovative approaches to managing road and rail traffic as well as airports. Our contributions to traffic management for public mass events and disasters support police and emergency services. We are breaking new ground in transport system evaluation by taking an integral view of transport development and environmental impact.

In our research, concrete applications are always kept firmly within our sights. We therefore form a bridge from basic research through future technologies to economically viable innovations. We are not acting in isolation but seek strategic cooperation and coordination with outstanding research groups and leading companies in Germany as well as in other European countries. We also incorporate our skills into national and European networks, contribute to developing technology platforms and represent the interests of research institutions in panels and associations. By working close together with our partners, we therefore contribute towards the success of the German and European economy and science in the face of global competition.