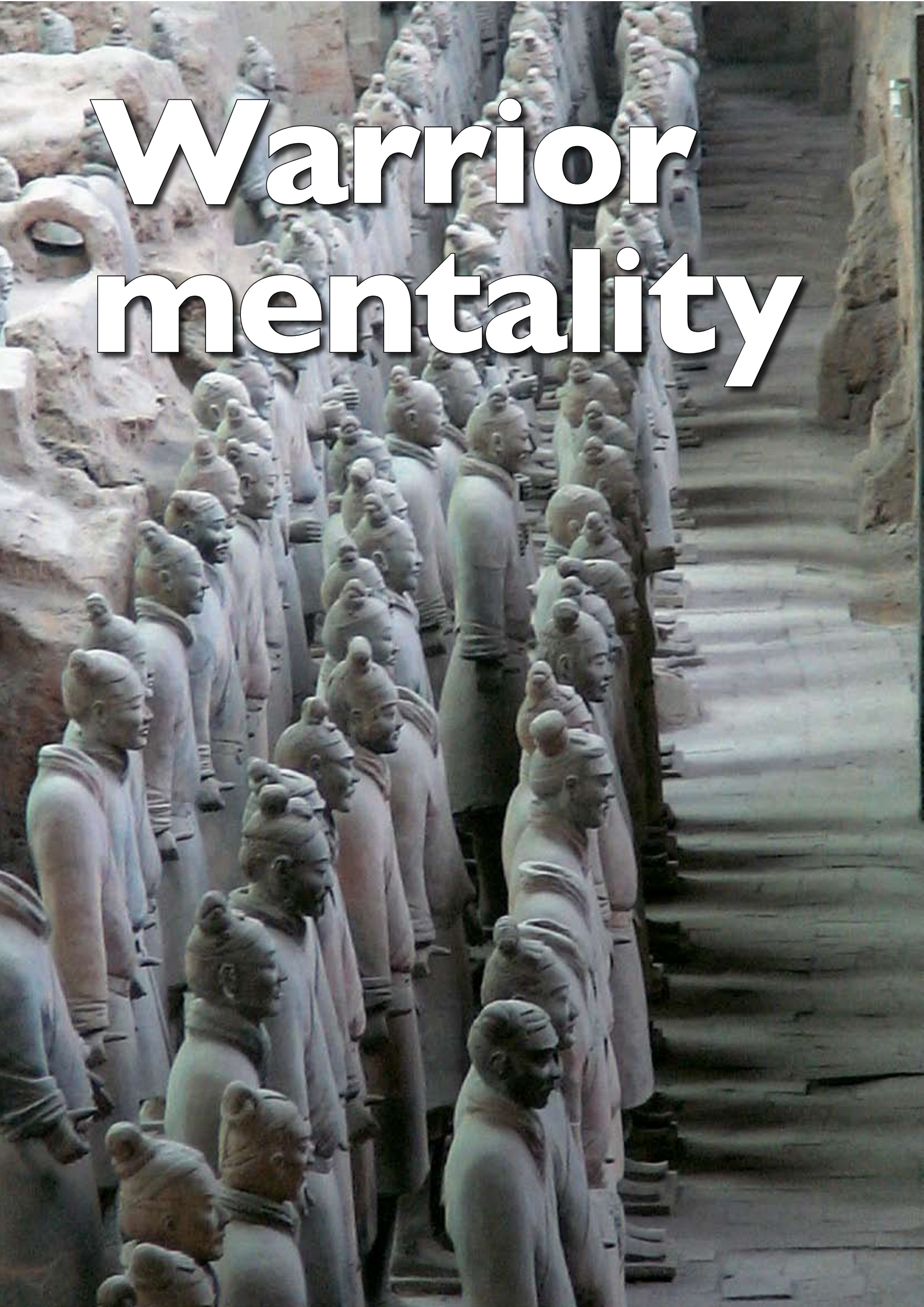

Warrior mentality

With China looking an odds-on bet to beat the US and implement the world's first fully functioning Vehicle Intrastructure Integration programme, JOHN McMAHON wonders who is driving the future of China's thinking highway

For most westerners, China is a far away,exotic place as mysterious as the 8,000 ancient terracotta warriors, horses and chariots buried thousands of years ago.

Despite 800m of its population living below the poverty line, the country's economy is explosive with a GNP of US$1.05 trillion and the fastest incremental rate of growth of private vehicle ownership in the world. About 20,000 new vehicles are registered every week in crowded cities like Beijing and Shanghai. Text books have been rewritten and distributed to focus not so much on historical incidents but rather on success stories of wealthy icons like Bill Gates and Warren Buffett, as well as how the Chinese can influence the world economy.

Doing business in China, as an outsider, can be a confusing and frustrating experience. It can also be an incredibly rewarding one as there are many opportunities emerging all the time, particularly in ITS.

Late but fast developer

As a developing country focused relentlessly on building its economy and supporting soaring exports, the nature of the ITS opportunities are unique with consequences having wider beneficial implications for the global community. China doesn't have much in the way of an existing ITS infrastructure. Basic elements such as in-road loop detectors are not widely in use even in the busiest commercial regions of Shanghai - a situation that paves the way for a technological leap to satellite-based floating vehicle data (FVD). This everything-is-needed environment is perfect for fully deployed Vehicle Infrastructure Integration (VII). This is a dramatic contrast to conditions in the US where it will take much more time to adopt 100 per cent VII applications due to the legacy intersection systems and equipment already in place.

> *"Fully deployed VII offers basic benefits as well as some other visionary possibilities"*

Fully deployed VII offers some basic benefits as well as some other far-reaching visionary possibilities. Some of the basics include: enabling vehicles to communicate directly with a detector-rich infrastructure network providing automatic crash avoidance, road departure warnings, and delivery of other safety and consumer services. In the United States, the world's leading innovator of VII technology, the concept entails a network of 200,000 roadside installations. These installations would communicate with transponders in vehicles and transponder-equipped vehicles would communicate with each other. An example of a far-reaching application is a rather ominous possibility seemingly out of George Orwell's cautionary tale "1984."

Once the VII infrastructure is in place, the Chinese government could monitor all transponder-equipped vehicles. By utilizing Satellite GPS technology, the DOT could track vehicle transponder codes, like a vehicle identification code, any where on the planet. It's worth noting that the US government, in defining VII parameters considers individual privacy a top priority. Unless individuals agree to allow VII applications to have access to their vehicle's identifying elements for, say, security purposes if their vehicles are stolen.

Mario Prioietti, co-founder and CTO of TechnoCom and an expert on wireless and location infrastructures, calls VII an ambitious plan that could take the US another four years to fully deploy. What exactly makes it so ambitious? Is it because the plan calls for the integration of GPS with Dedicated Short Range Communications (DSRC)? Is it because automotive manufacturers have to cooperate at the engineering design level? Or is it because more than a few bugs have yet to worked out?

Political will, or lack of it

The real obstacles have more to do with politics than technical know-how. Consider that in order for VII to work, automobile manufacturers, wireless communication companies, traffic control manufacturers and DOTs have to come together and work multilaterally in a close collaborative fashion. Implementing full-scale VII in China, or anywhere else for that matter, involves the bringing together of various technologies in a way that hasn't been done before. It is a whole new way of looking at the design of an intersection and a new of way of doing business, and that takes time. It takes time for the companies to work together at the design level. All the flanking technologies need to be converged in highly integrated fashion.

Indeed, the degree to which VII will be effective will largely dependent on the extent to which the technological convergence will take place. It's a process of replacing the traditional ITS business model with a whole new operating system for innovation and production. What Thomas Friedman refers to in his ground-

breaking book, "The World is Flat" as a platform. He goes on to explain that the human race is entering a worldwide change of habits due to gaining access and utilizing platforms. VII is an example of a platform that will contribute to equal opportunities between countries. This "flattening of the world" is a good thing as it forces the recognition of each country's intrinsic value and the value of countries that choose to work together.

Showcasing talents

A US company has been the leader in promoting public awareness of VII in the United States. Together with large corporate sponsors, they have created the Innovative Mobility Showcase (IMS) a kind of traveling road show demonstration exhibiting VII in action. The IMS effectively gives all those who see it a glimpse of the future. The IMS was first unveiled at the 12th ITS World Congress at SBC Park in San Francisco in November 2005. One of the foreign visitors who didn't catch the IMS demonstration was Qing Wang, the VP and Marketing Director for LBW Tech (LBW). She was attending the conference searching for the best company to develop, manufacture and distribute traffic control products. Her search led her to many traffic control product vendors where she began asking questions about possible system designs and equipment acquisitions for their company's first ITS project located in Chongqing, China.

Chongqing ITS project represents the first of several transportation initiatives totalling US$1 billion. It will be a massive undertaking, similar in some respects, at least to its impact on China's rapidly expanding economic growth (currently around 10 per cent a year) to the size and scope of President Eisenhower's original 1956 Federal Aid Highway Act.

LBW was approached by the Chongqing Road Bureau despite the fact they had never undertaken an ITS project before. Their track record of delivering successful civil engineering projects and having an untarnished reputation for accessing top level experts in nearly every field of technological endeavour was considered far more important and relevant. LBW has also been involved with Bluetooth wireless product development and R&D.

Gwan-chi-ing

Perhaps the strongest reason the international consulting firm got the contract is Ling Tang, the CEO of LBW. She has many solid relationships with some of China's most powerful industrial and political leaders. Chinese commerce and business networking relies heavily on the concept of gwan-chi ('network') which is an important business relationship based on trust, friendship and respect. Without having gwan-chi, a businessperson will not get very far in China.

"LBW was approached by the Chongqing Road Bureau despite having never undertaken an ITS project before"

As part of LBW's usual business model, Qing was prospecting the ITS World Congress in San Francisco for a partner who could come into the Chongqing project with LBW Tech and provide guidance and leadership in creating, from the ground up, a fully functional state-of-the-art ITS system. Ironically, Qing hadn't yet heard about VII. In fact, it was a Singapore traffic control company that first introduced the concept of VII to LBW. just before Ling flew to Chongqing last August to make a presentation before the Road Bureau. She met with the aforementioned American manufacturing company and learned more about the VII application. She also learned more about the kind of horizontal collaboration needed to fully realize VII even on a small scale.

As it turned out, Ling's presentation before the Chongqing DOTs drew great interest in the advanced technology. In fact, the project managers and ITS planners were so intrigued they immediately advocated doing whatever was necessary to incorporate VII into China's ongoing ITS developments.

Shanghai is one of the world's fastest-growing cities

photo by Luis Ferreira

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Photo by Luis Ferreira

Risk assessment

There are several major technical risks for VII. Integrating multiple technologies in a way that does what it's supposed to do is, by itself, a challenge, let alone relying on technologies that haven't been developed yet. For example, real-time data crunching on a massive scale between hardware and software remains a major hurdle. The partners developing the core VII network are wrestling with issues that in large part haven't been encountered before.

Perhaps the best way to describe this timing-of-events issue is to draw an analogy with the introduction of the electric light bulb back in 1879. It took several decades for the electrification to kick in and have a big economic and productivity impact. Why? Because it was not enough to install electric motors and scrap the old technology – steam engines.

The whole way of manufacturing had to be reconfigured. In the case of electricity the key breakthrough was in how buildings and assembly lines were redesigned and managed. Factories in the steam age tended to be multistorey buildings designed to brace the weight belts and other big transmission devices needed to drive steam power systems. Once small, powerful electric motors were introduced, everyone hoped for a quick productivity boost. It took time to accumulate the savings needed to redesign enough buildings. Long, low and cheap-to-build single story factories with small electric motors powering machines of all sizes were also required. Only when there was a crucial mass of experienced factory architects, electrical engineers and managers, who understood the complementarities among the electric motor, the redesign of the factory and redesign of the production line, did electrification really deliver the productivity breakthrough in manufacturing.

The big issue

It's the same for VII. There is new technology and large integration issues to overcome. There have been highly successful examples of technology introduction that relate to VII, including Electronic Toll Collection in Singapore; however, these applications are limited in scope and geography. Can the core VII network be deployed with the realization that the real benefits of a technology are not always determined until after the technology has been put into the market and many applications have been attempted? China will be taking a hard look at the immediate, intermediate and long-term benefits.

"There is new technology and large integration issues to overcome"

The only thing that is solid about VII at this point is the knowledge that successful development will rely heavily on continual and horizontal interaction among technology developers, application developers and end-users. The Chinese government is willing to do what's necessary to solve their problems.

Accordingly, it will be easy for the government to establish what they want out of the VII innovative technology and set ground rules with the various entities involved. VII applications are most likely to get fully implemented first in China simply because their architecture gives new meaning to the phrase "wide open." Consumer acceptance shouldn't be a problem since many of their choices are pre-determined anyway. So, after Ling's meeting in Congqing, it wasn't very surprising that everyone associated with the design of the proposed Chongqing ITS project urged LBW to bring the leading VII companies to China as soon as possible. TH

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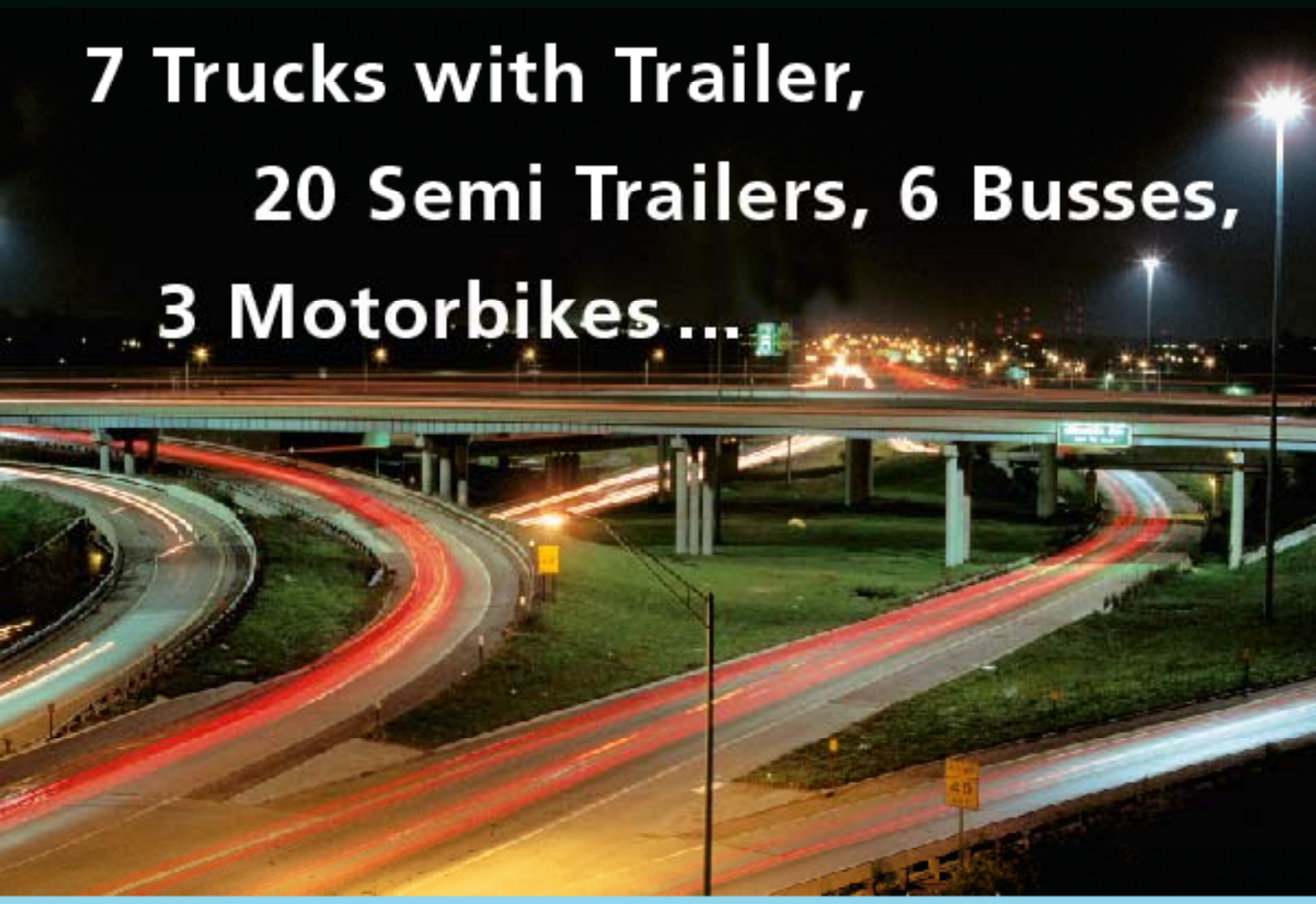

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