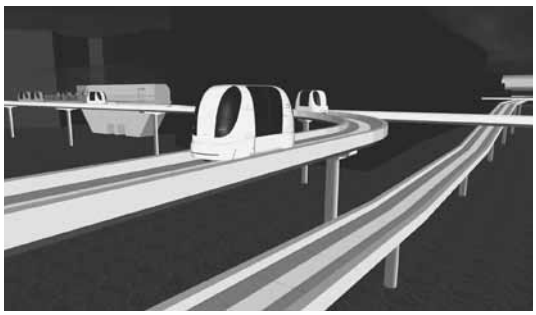
ITS world congress Tokyo 2013



A simulation of a planned railway line. Right, a simulator looks at the impact on the traffic system from using a new concept electric vehicle. KKE

Draw the future with traffic simulation

In contemporary society, automobiles play an indispensable role in transporting people and goods. However, a variety of issues— traffic accidents, traffic congestion, environmental pollution and massive consumption of fossil fuels, to name a few— are becoming serious global problems and critical for all humankind. These are issues that require fundamental solutions for the future.

Facing these various problems to actualize an ideal future city, building effective transportation infrastructure is one of the significant aspects that cannot be ignored.

Kozo Keikaku Engineering Inc. (KKE) in Tokyo provides solutions for these problems using an advanced traffic simulation software suite called PTV Vision, developed by PTV Group, one of the world's leading providers of products and solutions for traffic and transportation planning.

Combining PTV Vision software with KKE's existing solutions such as disaster response solutions and evacuation simulations, disaster risk management, logistics planning, wireless network simulations, etc., KKE is confident it can contribute to build a better society by providing comprehensive social simulation tools.

PTV's traffic software is used in projects of various sizes: from large-scale to detailed studies. Customers in more than 100 countries worldwide have chosen the software for smart city development, traffic flow simulation and evaluation.

Yusuke Okahira KKE

Keisuke Hata KKE

KKE distributes the traffic software in Japan, and hopes to contribute to the construction of better social design and city planning.

The traffic simulation software contains two systems, Visum and Vissim. Visum enables the development of personal behavior-based demand models using activity-oriented modeling, such as, home to work to shopping to home. Users can implement cutting-edge assignment algorithms, and the system supports public transit planning, optimizes time schedules and stop locations. It is a comprehensive, flexible software system for transportation planning, travel demand modeling and network data management that can be used on all continents for metropolitan, regional, statewide and national planning applications.

Another component of the software, Vissim, is the leading microscopic simulation program for multi-modal traffic flow modeling. With its unique high level of detail, it accurately simulates urban and highway traffic, including cyclists, motorized vehicles and pedestrians. Vissim is the ideal tool for transportation professionals to analyze different traffic scenarios before implementation. It allows finding a solution that takes traffic and transportation quality, safety and cost into account. It has a sophisticated 3-D ani-

mation function and can calculate carbon dioxide emissions with the add-on EnViVer.

"The strength of this software is that it can simulate both macro and micro levels to estimate a realistic situation," says Yusuke Okahira, of the Business Development Department of KKE.

The following are three representative examples of the consulting and solutions that KKE provides collaborating with the PTV Vision software.

Disaster prevention

One of the lessons KKE reaffirmed from the tragic Great East Japan Earthquake of March 2011 is the importance of preparing disaster prevention planning that includes evacuation routes in advance.

Even though KKE has been providing an evacuation simulation service for over a decade, few people appreciated this system until the gigantic triple disaster hit Japan. Today, the demand for this consulting service has increased and even the national government has asked each local government to establish an evacuation system.

"Especially, the demand for evacuation plans from nuclear power plants is increasing," Okahira says.

In case of a nuclear accident, radioactive particles can be carried by wind currents. KKE simulates each case considering the geography and wind direction, to predict the movement and time required for an evacuation. Currently, KKE has offered this service to more than 10 local governments and companies, including Kyoto, one of the most popular cities in Japan for tourists.

Other than the case of nuclear power plants, KKE offers evacuation simulations for many cases, including evacuating from tsunami, inside skyscrapers when elevators don't work and dispersing from stadiums.

Smart mobility system

With Japan having an aging population combined with a declining birthrate, and facing global warming, the demand for developing a new type of city with leading-edge systems, including electric vehicles, has been growing throughout the country.

KKE supports efforts to plan and design a future traffic system by simulating and evaluating each case such as how would the introduction of a new mobility system effect the current traffic or where and how many battery chargers should be set for electric vehicles. According to Okahira, most requests for this service are from automobile or railcar manufacturers.

"Another advantage of this software is that it makes it easier for people to understand how the city would be changed by using the visualized simulation screen with 3-D animations. It can be effective especially in cases where explanations to citizens are essential, for example, introducing a new mobility," Okahira says.

Also, recently, when Japanese manufacturers want to sell their newly introduced mobility option to a town, especially outside Japan, it is important to give a presentation on the infrastructure design plan to show how the people's lives would be made more convenient or how traffic would be changed because of the new vehicle. In this case, PTV software allows manufacturers to project a suitable traffic design for a city by forecasting and analyzing data based on the demands of a city.

For Japan, this software would also be helpful for examining a new urban transportation plan toward the recovery and redevelopment of the areas stricken by the Great East Japan Earthquake.

Online simulation

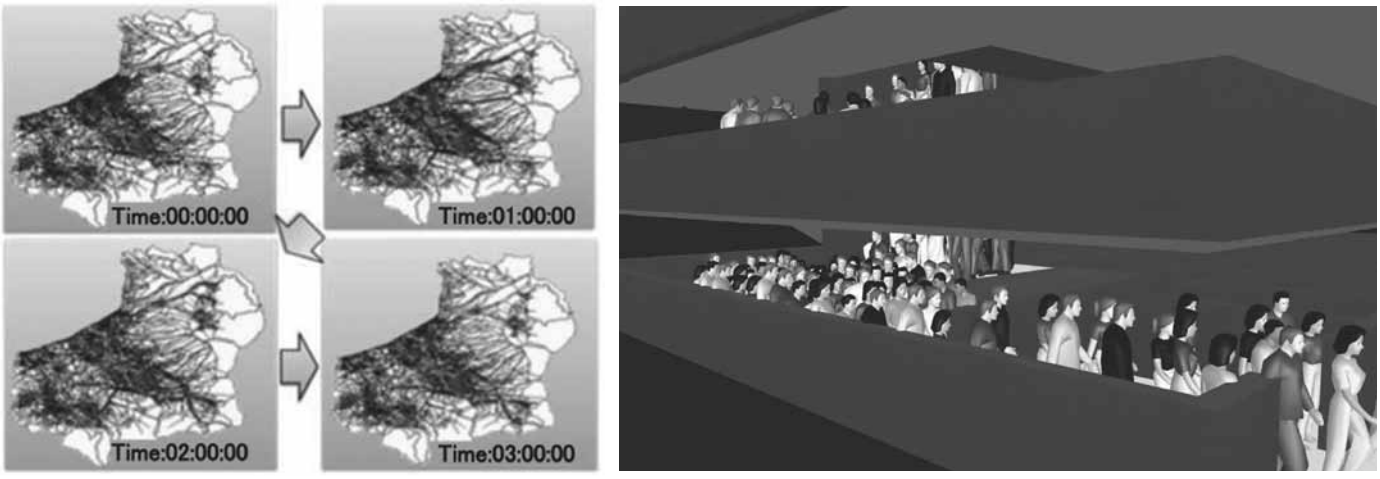
To solve a common problem such as traffic jams, PTV software optimizes the traffic system by simulating the traffic conditions of five to 10 minutes later, such as by deploying signals in accordance with congestion, delays and recovery simulation.

"The fewer traffic jams we have, the less carbon emissions we get, too," says Keisuke Hata of the Business Development Department of KKE.

In Alberta, Canada, the city of Edmonton successfully improved by 40 percent the time delays caused by traffic jams using the PTV online simulation to control traffic signals as well as organize the traffic system by changing navigation commands based on the actual information from the traffic jam.

Toward the coming Tokyo Olympics in 2020, there are high expectations for the economy, and also for promoting and introducing efficient transportation systems. "It can be a good opportunity to redesign the city to have effective traffic as well as evacuation systems," Hata says. It would be a great chance to show Japanese transportation technology to the world.

For details on PTV Vision visit: http://www4.kke.co.jp/ptv-vision



Left, a macro view traffic simulation with PTV Visum software. Right, a evacuation simulation of inside a skyscraper. KKE