News Release

# Successful Introduction of Advanced Traffic Signal System in Russia —Reduces Congestion up to 40 Percent at Moscow Intersections—

November 1, 2017
New Energy and Industrial Technology Development Organization (NEDO)
Kyosan Electric Manufacturing Co., Ltd.
Nomura Research Institute, Ltd.

**NEDO, Kyosan Electric Manufacturing Co., Ltd.; Nomura Research Institute, Ltd.; and the Moscow Government Center of Traffic Regulation have successfully completed the Demonstration Project on a Self-Controlled Advanced Traffic Signal System in Moscow, Russia.**

**Aiming to address the problem of chronic traffic congestion in Moscow, the project involved the installation of an advanced traffic signal system at five consecutive intersections to verify the system's effectiveness in reducing traffic congestion. As a result, a 40 percent reduction in traffic congestion during the morning rush hour was confirmed.**

**This result is expected to contribute to a reduction in carbon dioxide emissions due to lower vehicle fuel consumption as well as increased economic activity due to reduced travel time. In addition, on the basis of this positive result, we plan to promote use of the project's advanced traffic signal system in other cities in Russia.**

Figure 1. Before (left side) and after (right side) images showing improved traffic flow during the morning rush hour. Traffic moving away from the camera is headed toward the center of Moscow.

## 1. Project overview

In Russia, various investment projects are being launched with the aim of modernizing the country. The capital city of Moscow is the largest city in Europe and it continues to grow but chronic traffic congestion is an extremely serious problem that is considered to be a hindrance to

Russia’s economic development. In this context, Moscow has begun a large-scale upgrade of its traffic signal control systems and is exploring up-to-date technological solutions.

On December 21, 2015, NEDO signed a memorandum of understanding with the Government of Moscow regarding cooperation in a demonstration project to introduce a self-controlled advanced traffic signal system designed to reduce traffic congestion. Jointly with Kyosan Electric Manufacturing Co., Ltd.; Nomura Research Institute, Ltd.; and the Moscow Government Center of Traffic Regulation, NEDO conducted the project in Moscow using an advanced traffic signal system named “Autonomous and Real-Time signal control based on Estimation traffic demand for Minimization of Signal waiting time (ARTEMIS).” More specifically, the project involved the installation of the ARTEMIS system, which has previously been proven to be effective in reducing traffic congestion in Japan, at five Moscow intersections with unfavorable traffic conditions to verify the system’s effectiveness in reducing car travel time.

Upon completion of the Demonstration Project on a Self-Controlled Advanced Traffic Signal System, a 40 percent reduction in traffic congestion during the morning rush hour was confirmed. This result is expected to contribute to a reduction in carbon dioxide emissions due to lower vehicle fuel consumption as well as increased economic activity due to reduced travel time. In addition, on the basis of this positive result, we plan to promote use of the ARTEMIS traffic signal system in other cities in Russia.

## 2. Project results

The ARTEMIS system consists of traffic controllers, traffic detectors, and communications networks connecting these devices. The system differs from conventional traffic signal control systems which are arranged based on the principle of centralized control. Rather, ARTEMIS exchanges information on the traffic flow and signals between controllers and predicts arriving traffic flow, thus allowing for autonomous regulation of traffic signal cycles to minimize signal waiting time. Since there is no need for a large-scale centralized control system, start-up costs for reducing traffic congestion can be reduced.

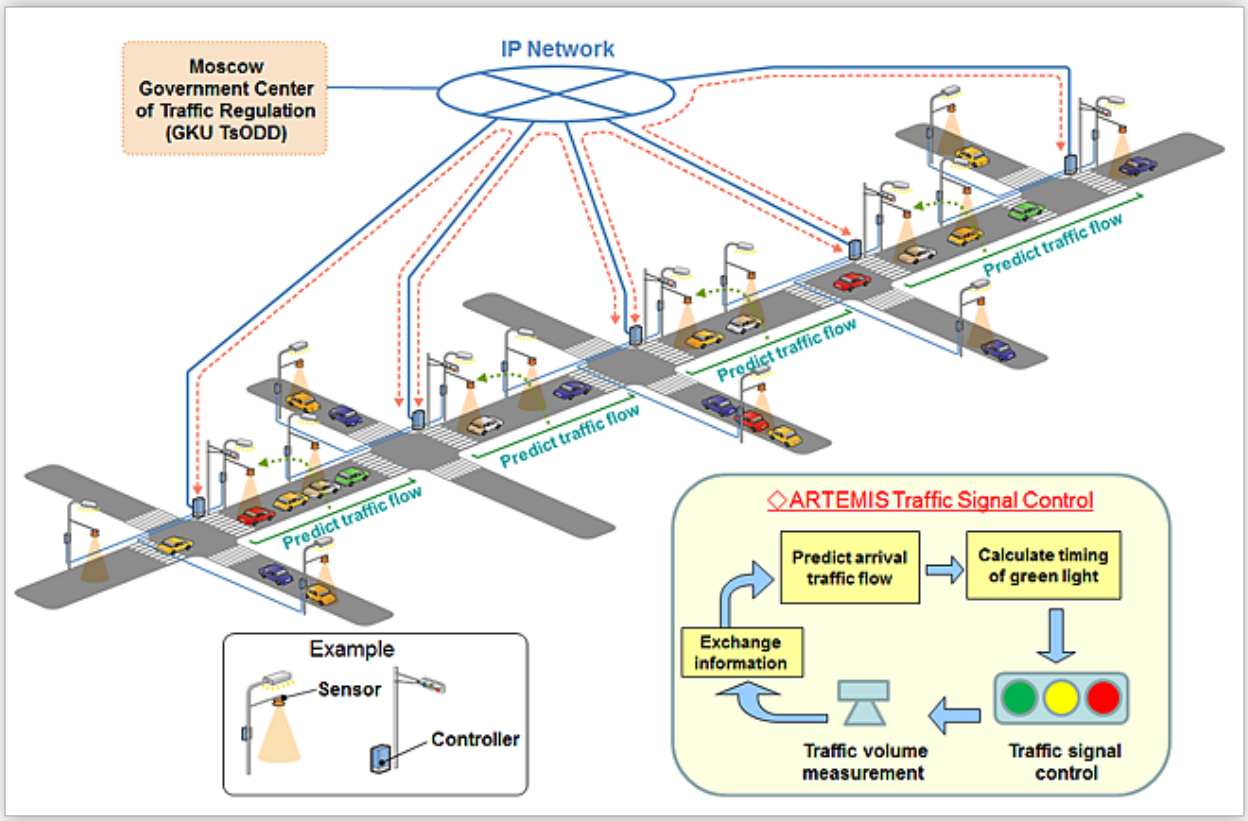


Figure 2. Diagram of ARTEMIS system.

During the demonstration project, car travel time was measured between five consecutive intersections (a total length of two kilometers) on Onezhskaya Street in Moscow. Measurements were performed during morning and evening rush hours one week prior to the implementation of the project and one week after. As a result, car travel time in the direction of Moscow city center was reduced by 40 percent during the busiest morning rush hour.

| Average car travel time before project | Average car travel time after project | Reduction in car travel time | Reduction effect |
|---|---|---|---|
| 7 minutes 54 seconds (474 seconds) | 4 minutes 46 seconds (286 seconds) | 3 minutes 8 seconds (188 seconds) | 40 percent |

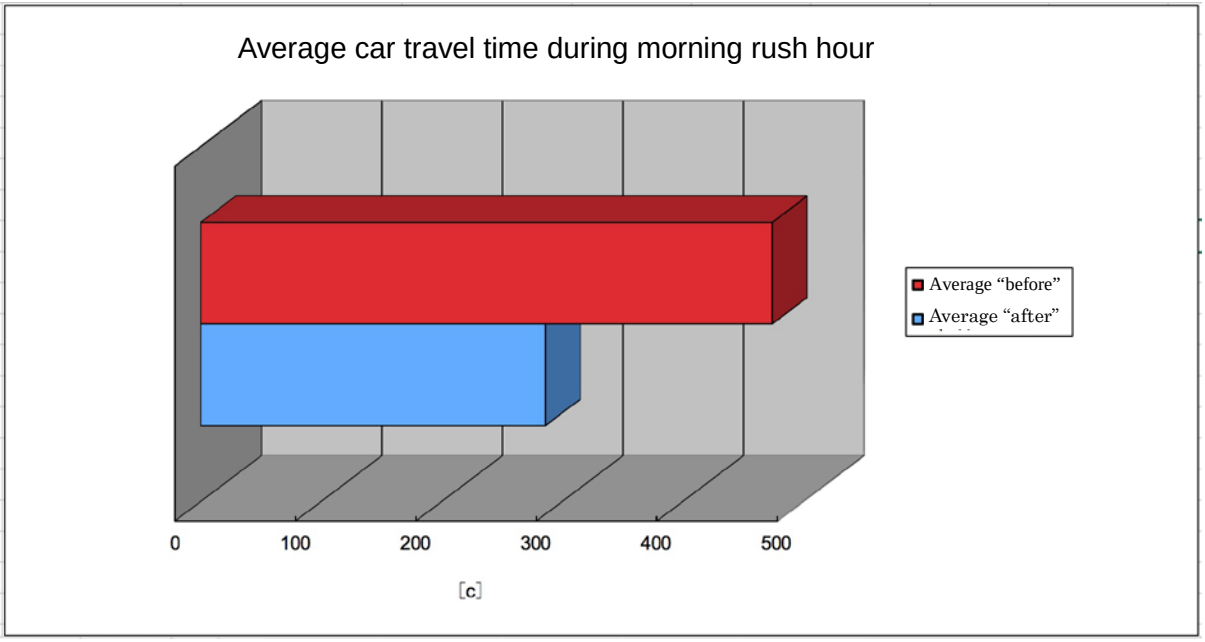


Figure 3. Comparison of average car travel time during morning rush hour going toward the center of Moscow before and after the demonstration project.

## 3. Project completion ceremony

On the occasion of the completion of the demonstration project, a ceremony was held in Moscow on October 31, 2017.

Many parties involved with the project were invited to take part in the ceremony: NEDO, Kyosan Electric Manufacturing Co., Ltd.; Nomura Research Institute, Ltd.; the Embassy of Japan in Russia; the Government of Moscow; the Government of the Russian Federation; and other Russian entities.

## 4. For more information, please contact:


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