First Mile has developed a building automation system based on InduSoft Web Studio to monitor a hospital in Moscow.

Nowhere is the quality of a building automation system more important than in a hospital. Not only is the comfort and safety of the patients a prime concern, but that of the hospital workers as well. Doctors, nurses, and administrators must all be protected from the spread of viruses and bacteria. A hospital must also be energy efficient, with backup and redundant systems in place designed to turn on in the event of a power outage or other emergency.

Prevention of infectious and communicable diseases begins with air quality, and therefore, the building management system is one of the most vital automated processes in the building. Important functions like the regulation of temperature, air filtration, and fire prevention security systems can all be lifesaving aspects of building management. Failure to properly monitor these systems or a lack of warning about issues in air filtration or fire can be disastrous for a medical facility. This extends to far more than the safety of the staff and patients. Hospitals also require very specific constant...
temperatures to conduct lab tests and maintain the integrity of medical results. Failure to properly control things like temperature or air flow could compromise the results of testing, or even damage sensitive equipment.

The Central Clinical Hospital of the Federal Custom Service, located in Moscow, contracted with the Russian company First Mile to develop a building management system that would meet all the requirements of a state-of-the-art medical facility. First Mile created a building management system for them using InduSoft Web Studio for a powerful medical facility automation application.

The Challenge
The Central Clinical Hospital of the Federal Custom Service contacted First Mile for serious upgrades to their current monitoring system. The clinical hospital needed supervisory control for nearly all of the engineering systems in the facility. Those included the HVAC system for heating, cooling, and air regulation, as well as the security system to detect and alert operators to fire hazards. As with any medical facility, the Central Clinical Hospital brought with it strict requirements.

First Mile worked to meet the challenging needs of the hospital, using InduSoft Web Studio. One challenge that arose was the issue of the Russian language, which uses Cyrillic characters. In order for operators to clearly read and understand the information displayed by the software, the program would need to be written in a Cyrillic font. Luckily, First Mile was easily able to create a full BMS SCADA project using the Cyrillic alphabet, because InduSoft Web Studio supports Unicode. While 99% of Russian clients for First Mile prefer this format, the ability to develop in any language without additional plugins or modules was important. Occasionally, internationally based clients want options for both Cyrillic characters and Latin characters, and instructions in both in English and other languages.

Figure 2: An individual screen shows one of the 60 different HVAC systems in a graphical layout, complete with temperature trend and alarm panel.
The Solution
The installation of the new system for the hospital offered a smooth transition. They constructed an application with a minimal number of screens by using key technology and VBScripting native to InduSoft Web Studio. The finished product monitors each of the engineering functions, collect information on the ventilation system, the air chiller and HVAC, the temperature, and air supply. The issue of the hot water supply was also a major aspect of the design of the system. The water, distributed by the largest supplier in Moscow, Monsenergo, required quick changes in temperature and pressure.

The hot water system utilizes sensors that communicate information to the building management system such as the power supply, the filter pressure, and the voltage supplied to the special heater. The system monitors high pressure water kept at temperatures over 212 degrees Farenheit (100 degrees centigrade). This water is prepared within the heater, and then pressure and temperature must be reduced as it moves into the main supply.

First Mile schedules the temperature to meet set points for different zones within the hospital, as not all areas of the facility are in use on weekends or after office hours, and the temperatures of some areas are also determined by occupancy. Therefore, a great deal of flexibility is required in order to maintain temperature where and when it is required.

The security systems, such as the fire and gas security systems are also monitored by the application designed using InduSoft Web Studio. For example, in the event of a fire, operators immediately receive an alert informing them of the location of the fire, so that they can immediately investigate further or alert fire response authorities.

The Results
The result of First Mile's project was a system installed on desktop computers running the Windows 7 operating system. In addition, because InduSoft includes built in drivers for the WAGO I/O 750-841 controllers (the Modbus/TCP protocol) the software was able to communicate directly with the equipment.

The capabilities also exist for remote thin client monitoring of systems on the web. First Mile continues to use InduSoft
Web Studio for additional projects. This is, in part, due to the experience that they gained in developing and installing the system for the Central Clinical Hospital. Developing in InduSoft Web Studio was much easier and faster than with other programs, it was easier to use the Cyrillic alphabet than in other software, and InduSoft Web Studio is much easier to configure for the hardware communication protocols of different manufacturers.

This combination of important features was provided at an attractive price point, which is another reason that First Mile continues to develop their building management systems in InduSoft Web Studio. Another useful aspect of IWS is the customizability, which will allow First Mile to continue to add functionality to their applications, such as web thin clients or additional alerts and alarms as the needs of the hospital change. Even if new versions of InduSoft Web Studio are released, our history of forward compatibility ensure that applications can always adapt to meet changing technology.