

VAiOS



VAiOS BMS

BUILDING MANAGEMENT SYSTEMS



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Building Automation. The upcoming necessity and convenience

BMS are building automation systems. Their main purpose is complete automation for solving the tasks of operational control and management of technological processes of residential buildings, office buildings, hotels and shopping and entertainment complexes.

BMS allows automate the management of all engineering systems of one or more buildings in a single platform.

Building automation systems - It has many advantages:

- ▶ providing maximum comfort;
- ▶ cost optimization;
- ▶ control of energy consumption in the building;



- ▶ regulation of physical access levels in the building.
- ▶ controlling people's virtual access to system management;
- ▶ signaling in damage and malfunctions;
- ▶ reducing the cost of building management and more.

BMS also provides "tools" to help manage electricity:

- ▶ Monitoring of electrical consumption - differentiation between mechanical and electrical energy;
- ▶ Improving response to power-related issues - rapid alarm reporting from the power system;
- ▶ Balancing power factor and voltage interference that can lead to equipment damage as well as power loss.
- ▶ Extracting data from consumption of tubular and non-electrical appliances and optimizing their consumption in order to reduce costs.



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Web-based platforms - advantages and future

The web-based BMS management platform has a number of advantages over standard building automation systems.

VAiOS BMS systems are built on web-based software, which enables the software to work from various devices with an Internet connection.



What else does the web-based VAIOS BMS provide?

- ▶ Access from everywhere - users of the platform can work from everywhere with Internet; all you need is a username and password;
- ▶ no cost to servers and computers - the platform works with servers that operate online; This reduces the price paid by the customer.
- ▶ lower costs for support and maintenance - the platform is serviced and updated remotely, which reduces the cost to the user because there is no team visits.
- ▶ faster response - when platform support or troubleshooting is required, web access shortens time for the response.



Security in access, data and information

VAiOS BMS is a web-based platform. That is why the question is often asked: "How did you protect yourself against hacker attacks?":

- ▶ the platform is accessible from any device with an internet connection, by entering the web address and then a username and password;
- ▶ the security of the software platform is implemented through an SSL communication protocol identical to those used for banking software;
- ▶ internal communication is encrypted through LAN modules and protects against internal theft of information;
- ▶ possibility of secondary backup to a local server as a backup option in case of power failure or other consideration.



Lego-building principle

VAiOS BMS systems are designed to be built and upgraded on a design basis.

Constructed in this way, an unlimited number of modules can be added to the main control module, performing different functions together and separately. Managed through a common platform, they make VAIOS Smart systems limited only by the customer's imagination.





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Machine Learning. Artificial Intelligence into VAIOS BMS

One of the main benefits of the VAIOS BMS system is the machine learning that we carry into the future.

What is Machine Learning?

Machine learning is a module in the BMS platform that is a form of artificial intelligence (AI). It monitors the repetitive commands and settings made by visitors for the particular preferences of BMS system settings (air conditioning temperature, lighting power, etc.). It then starts to anticipate and automatically adjust the desired system operation parameters, according to the preferences of the person entering the building/room.

Here is an example:



Get an employee of a company working in a building equipped with VAIOS BMS automation. Every business day this person arrives at the office at exactly 9:00. It is warm outside and to cool the room it operates, it turns on the air conditioning through its smartphone at 15 degrees. Then, when the room is already cooled down, the employee raises degrees to 20, leaving the air conditioning setting for the rest of the day.

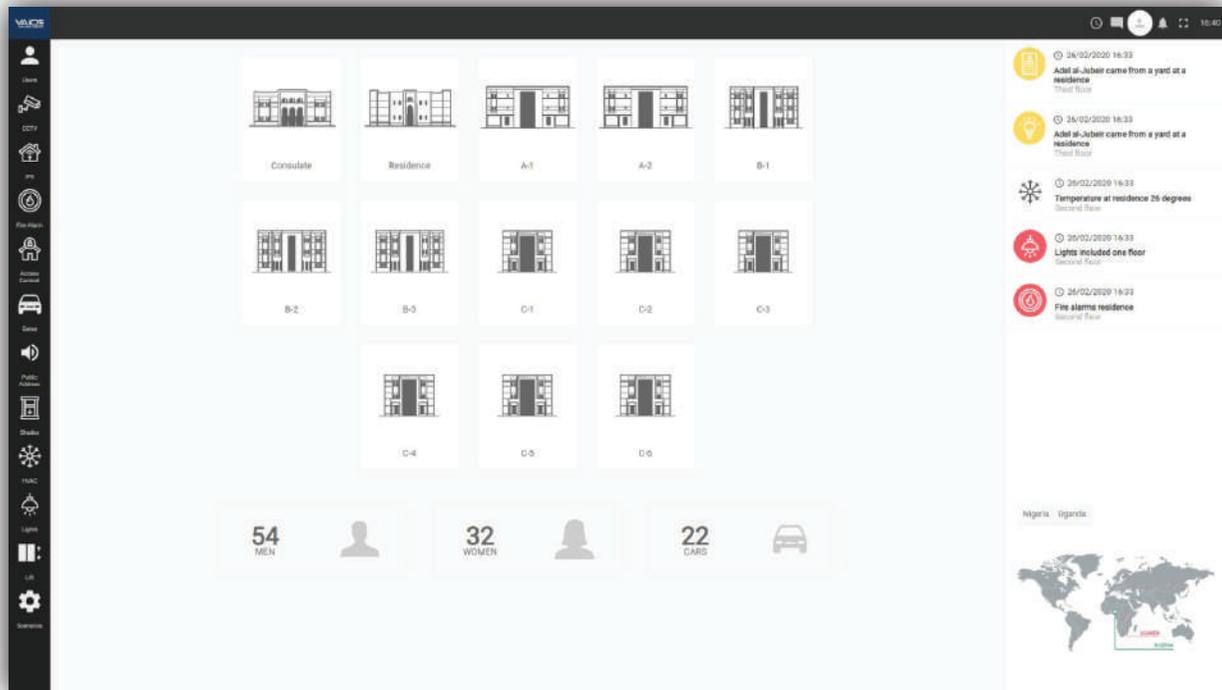
The machine learning module "remembers" this preference of the employee. Then it starts turning on the air conditioner at a temperature of 20 degrees 1-2 hours before the employee arrives. Thus, the room has been at the preferred temperature since arrival.





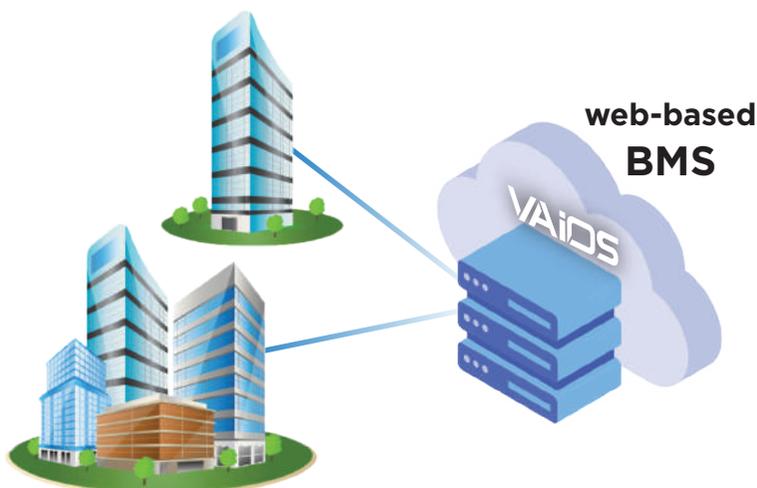
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No limit on the number of managed buildings



VAiOS BMS systems can manage not only one, but a whole complex of buildings. Also, BMS can be accessed and controlled on the platform from distant kilometers of buildings or building complexes.

This is possible again thanks to the web-based software, as well as the development of VAIOS to integrate locally built hardware into one system. In other words, buildings hundreds of even thousands of miles apart can be monitored and managed by an account, which is also located remotely from both buildings.



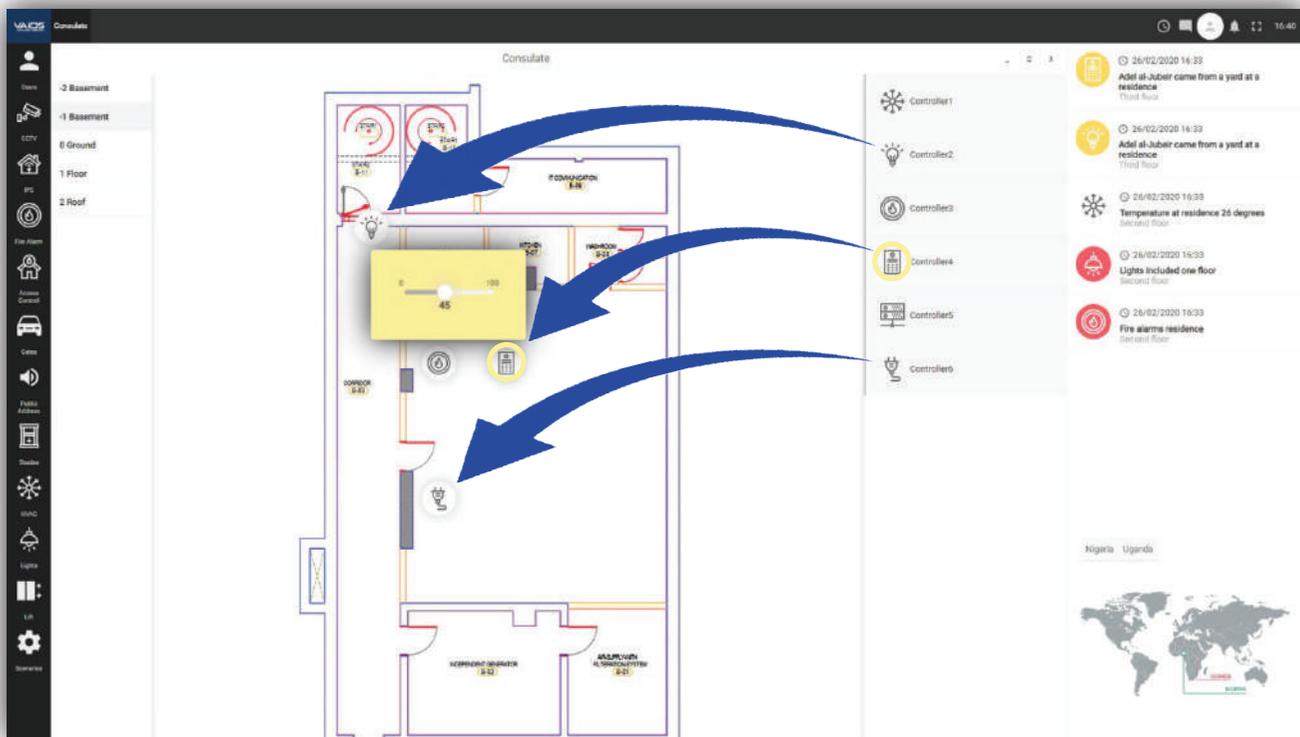
It is on this principle that we build the BMS system for the Embassies of the Ministry of Foreign Affairs of Saudi Arabia in Kampala (Uganda) and Kano (Nigeria).



VAIOS

Easy control of BMS systems

The interface of VAIOS BMS systems is designed to be easily and quickly accessible by any terminal device: controller, camera, sensor, smart key, etc.



By one Click you can adjust the parameters of the terminal in which you want it to work.

Merges and controls devices of different manufacturers

BMS systems have the ability to integrate all end devices, regardless of their manufacturer. In this way, users can install their preferred brands in their home, office, office building or complex without having to comply



AIR CONDITIONING
DAIKIN



LIGHTING
OSRAM



CCTV CAMERA
BOSCH



SMOKE DETECTOR
HOCHIKI



VAIOS

Collects process data and retrieves analysis and optimization reports

VAiOS BMS systems have a module that collects and provides analysis of system performance data down to its smallest detail and each individual sensor or other terminal device. Subsequently, analyzes of different characteristics and categories can be extracted through the detailed data collected through the same module.



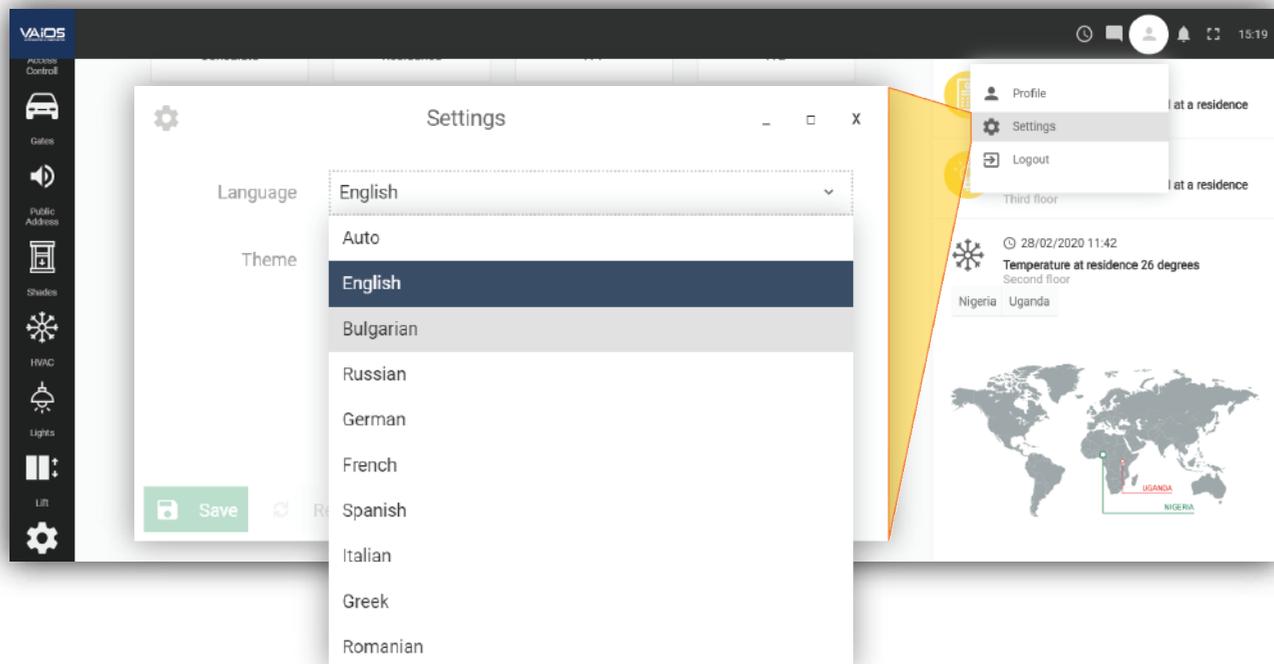
For example, by collecting and analyzing human flow in a building, one can identify the most visited places, as well as derive a graph of the characteristics of that human flow by age, gender, purpose of the visit (employee or visitor to the building), etc. Following this analysis, changes in the layout and layout of the building may be foreseen. By concentrating the sites visited in one part of the whole building, the amounts of electricity used for cooling in the summer or warming in the winter can be reduced.



VAIOS

Software that works in every language

Most of the BMS systems built by VAIOS contain a custom part. This gives the option to build a translation interface in any language without any restriction.



Translating a language into the interface is sometimes not enough. The principles of representation and layout in Arab languages for example, is almost entirely mirrored. Not only the writing is from right to left (the opposite of popular from left to right), but dictated by this detail, many designs and layouts are different.

VAIOS BMS takes such details into consideration, and when ordering and translating the interface, even the smallest details are considered to satisfy the customer.





VAiDS

Security. An important part of all automation

One of the key units in BMS systems is the increased security they provide in the DMS/SMS part.

DMS or SMS are abbreviations for Danger Management System and Security Management System respectively.



The DMS/SMS part of Building Automation provides unification and unified management of all known security systems, both of one building and its occupants, and of the entire building complex.

With integrated security automation, you can control each module simultaneously and separately. Module integration, in turn, allows for combined scenarios for emergencies involving different modules.

 Users	USERS
 CCTV	CCTV
 IPS	ALARM MODULE
 Fire Alarm	FIRE ALARM MODULE
 Access Control	ACCESS CONTROL
 Gates	PARKING AND GARAGES
 Public Address	PAS (Public Address System)
 Shades	WINDOWS & CURTAINS
 HVAC	AIR CONDITIONING
 Lights	LIGHTING
 Lift	ELEVATOR
 Scenarios	BMS SCENARIOS



VAIOS

ACCESS CONTROL MODULE

The Access Control module is the leading DMS/SMS system of VAIOS.

The main reason for this is the direct linkage of the module to the locking mechanisms, which is essential for security as well as for the implementation of emergency scenarios.

The module has a detailed software based on time attendance's software, which can track security, access and presence in the building.

Access control is a defining feature of all VAIOS automations and has a defining role in emergency or other BMS scenarios.



DMS/SMS MODULE

ALARM MODULE

The alarm module is an automated alarm system integrated into the DMS/SMS. Through the alarm module you have:

- ▶ keep track of the protected object and its current status
- ▶ by names of the RFID keys can receive information which persons are on site;
- ▶ notifications informing about the activation and deactivation of the module, as well as about the illegal violation of the perimeter



Generally, the module performs the role of informing the main software and according to the message the system goes into different modes

- ▶ automated scenarios;
- ▶ activating a local alarm;
- ▶ notification of employee/manager/owner (according to the type of the protected site);
- ▶ others

DMS/SMS MODULE



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MODULE PARKING AND GARAGES

DMS/SMS MODULE

Based on the access and time attendance control system, the Parking and Garages module is aimed at controlling access to sites.

Access through this module can be achieved through:

- ▶ through a ticket system;
- ▶ through a control card system;
- ▶ via barcode readers from a smartphone display;
- ▶ by recognizing a vehicle number;
- ▶ by remote cards;
- ▶ through a payment system;



- ▶ as well as a combination of these options
- ▶ manual or automatic control.



The module is a leader in building BMS scenarios when building a smart home or office. Its key role in the bandwidth mode is as a start button to initiate events upon arrival or departure.

On the other hand, the module plays an important role in scenarios related to the evacuation of buildings in an emergency.



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CCTV MODULE

The CCTV module enables the object to be monitored in real time and recorded directly through the VAIOS BMS platform account. This eliminates the need to install additional software. All you need to do is log in and the web-based principle of working on the platform does the rest



DMS/SMS MODULE



In addition to these facilities, the module can be built with cameras that recognize bio data or other characteristic elements (car numbers), which expands further the application of the CCTV module

PAS MODULE

The PAS module has been developed and performs two main functions in the VAIOS DMS/SMS segment of the BMS system:

- ▶ Acts as an additional alarm panel, activating through speakers in the facility with recorded messages for specific actions and procedures to be followed in an emergency;
- ▶ At the same time, it sends an automatic alert to the Police, Fire and Ambulance Services for a site accident.



DMS/SMS MODULE



FIRE ALARM MODULE / FAM



DMS/SMS MODULE

The Fire Alarm Module (FAM) is an essential part of VAIOS DMS/SMS. Its local security function is just as important.

As part of the overall DMS/SMS, the fire detection module has key functions in ensuring the security of the people in the facility:

- ▶ Report locally at the site of the crash;
- ▶ Report to the fire department for an emergency;
- ▶ Communicates with the Notification Module to select and activate the corresponding message;
- ▶ Communicates with the Fire Extinguisher module to activate the extinguishing points in the site.

FIRE EXTINGUISHING MODULE / FEM



DMS/SMS MODULE

The VAIOS DMS/SMS Fire Extinguishing Module (FEM) is directly connected to the FAM and activates immediately after receiving an alarm, and according to system programming, it can activate fire extinguishing:

- ▶ In the entire building;
- ▶ In the local area of the alarm;
- ▶ step by step in the building, after the change of temperature through the sensors.



Automation for convenience

SMART AIR CONDITIONING



The air conditioner is no longer a comfort but a necessity for home comfort. VAIOS BMS automation enables the temperature to be programmed according to the person in the room, following the preferences for a series of days (see *"Machine Learning"*, page 5).

The system can also be adjusted independently and according to the outside temperature.

SMART WINDOWS & CURTAINS

The ventilation of the premises is of the utmost importance for the comfort of home or office even if we have the highest class ventilation system. This is where automation covers the control of windows and curtains. With Smart Windows and Curtains you have:

- ▶ remote control movement of windows ;
- ▶ control of the blinds / curtains in the premises.

Smart Windows and Curtains also play an important role in BMS scenarios, both for your convenience and your security (see *"BMS scenarios"*)



MODULE WINDOWS AND SURFACE



Lighting automation enables:

- ▶ switching the lights on and off;
- ▶ dimming and controlling light in rooms;
- ▶ control of interior and exterior lighting

These listed automations are just a part of all possibilities, practically everything managed with the participation of measuring instruments can be automated:

- ▶ *from the boiler, irrigation and the elevator in the building*
- ▶ *to utility meters to increase control over your own or other's consumption.*



BMS scenarios

What is the scenario in BMS?

Combining the modules and their common permissions allows users to program scripts that trigger a single command.

The scenario in BMS systems is a series of adjustments to the settings of the individual end devices, as well as to enable or disable them. This single sequence is accomplished by system presetting.

BMS scenarios are of two main types::

- ▶ scenarios that **increase convenience**;
- ▶ scenarios that **increase security**.



SCENARIOS FOR MORE COMFORT

BMS scenarios related to comfort enhancement aim to:

- ▶ to ease your commitments that you think about daily and
- ▶ not only give you a feeling but a better standard of living.

An example of BMS scenarios that provides more comfort:

After returning home after working with the car parking in the garage, the system is set up and automatically follows a series of BMS programmed processes:



- ✓ smart air conditioner adjusts the temperature in the living room,
- ✓ smart home curtains come down,
- ✓ smart lighting is activated on the way from the garage to the living room,
- ✓ includes a hot water tank after workday and
- ✓ even plays the preferred TV channel or radio.



VAIOS

SCENARIOS FOR MORE SECURITY

VAIOS DMS / SMS is designed to be a leading factor - the security it offers. This security is represented by:

- ▶ certainly for the immediate events,
- ▶ in preventive measures,
- ▶ as well as in DMS / SMS scenarios - how the system should handle emergencies in which the system would act automatically.



Such emergencies can be

Fire - activation of the fire alarm and extinguishing systems; releasing the locking of all exits in the building; automatic notification of the fire service.

Flood - automatic notification of the fire service; activation of PAS for automatic message;



Burglary - locks all mechanisms in the building; automatically inform the security services; activates alarm and warning systems;

A natural disaster, such as an earthquake recorded by the anti-shock sensors of the alarm module and issuing an automatic message through the alert module.





VAIOS

Custom BMS

50% of the construction of each BMS VAIOS system produces custom for the customer. Experience has shown that this is the only surefire way to provide the customer with all of his requirements for system capabilities - comprehensive or reduced.



VAIOS is the only manufacturer of this class of technology that can deliver custom products to its customers, both at the hardware and software levels.

Software according to your needs



BMS implementation practices enable all VAIOS automations to be unique and tailored to the needs of each individual client.

It is this **individual customized approach to building software capabilities for the system that is the key feature that sets VAIOS apart from other market makers today.**

Unique designer hardware

As a manufacturer, VAIOS gives its customers the ability to own end-devices with a unique design, the vision of which is selected and approved by the customers themselves, without compromising quality and capabilities.

We designed and installed such a unique design for the Embassies of MOFA (Ministry of Foreign Affairs of Saudi Arabia) in Kampala (Uganda) and Kano (Nigeria).

