



AUTOMARSHAL

Automatic number plate
recognition

What is Automarshal?

Automarshal is the software for automatic number plate recognition in a traffic flow and at checkpoints.

Automarshal is used to automate checkpoints, parking lots, carwashes, logistics and warehouse complexes, weighing and filling stations; to control access of vehicles to the territory of corporate offices, industrial zones, gated communities, hotels and airports; to monitor traffic on highways.

The functionality of the system allows:



creating user access lists



tracking statistical data
and generating reports



importing data from
third party databases



controlling external
devices



calculating the time and
cost of parking



interfacing with access control,
video surveillance and
integrated security systems

What is Automarshal?

Automarshal recognizes number plates by analyzing video streams from cameras, and stores information about all passing vehicles in the database.



2 modifications of the software

for vehicle speed up to 30 km/h and up to 270 km/h



Licensing

is performed based on the number of purchased recognition channels – video cameras connected to one PC



Software product line

also includes a specialized Automarshal.Gate software version and Automarshal.SDK development kit

Why Automarshal?



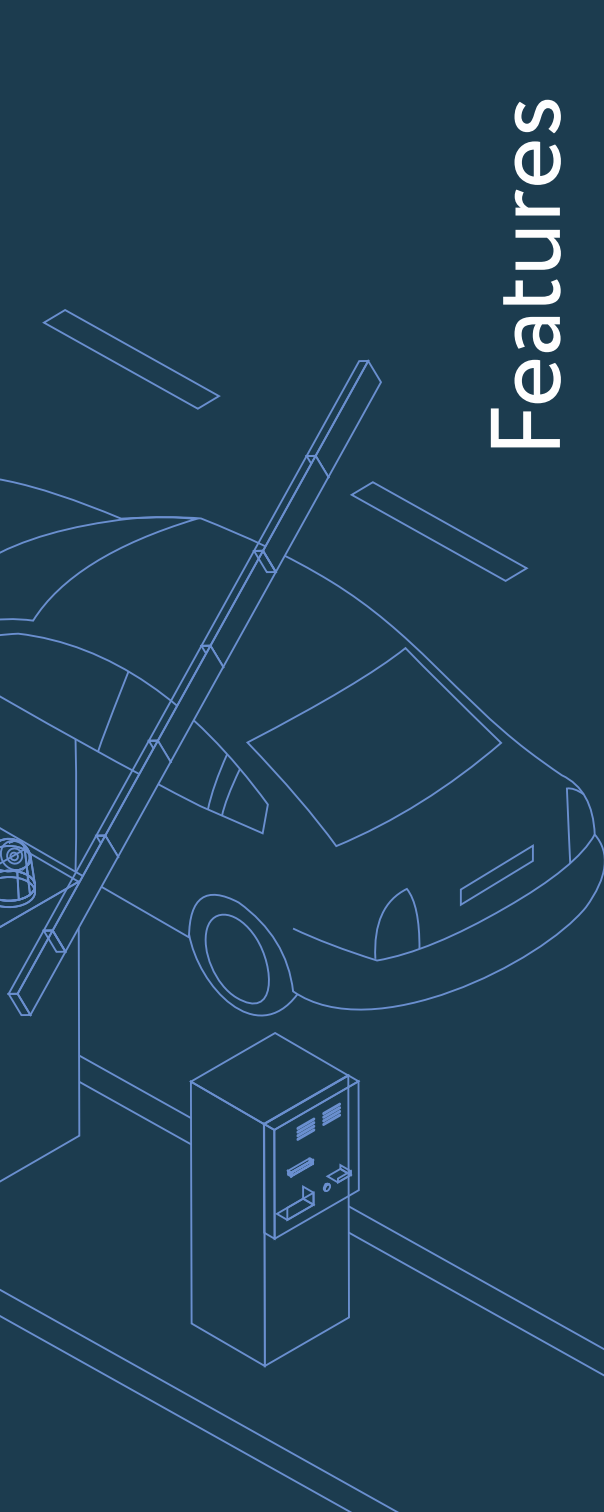
Automarshal implements an innovative technology of image analysis based on simultaneous operation of two parallel algorithms using **neural networks** and **random functions method**. This ensures **utmost reliability of recognition up to 98%** even under the roughest conditions: dirty and damaged license plates, at night, during heavy rainfall and in blazing sunshine.



Modest system requirements significantly reduce the price of the final solution for number plate recognition (cameras + computer + software).



Easy setup allows for effortless launch of the system. **Free one year technical support** is an additional guarantee of successful installation and operation of Automarshal at customer facilities. Free software updates to new versions are also available to users during the first year.

A line art illustration on a dark blue background. It shows a car from a side profile, with a camera or sensor mounted on its roof. Below the car is a rectangular control box with some internal components visible. The entire illustration is composed of white and light blue lines.

Features

Quick start

Intuitive interface does not require a user to have programming and administration skills. The installation and initial configuration of Automarshal usually do not exceed 30 minutes.

Simultaneous recognition of all number plates in a camera view

Automarshal analyzes movement trajectory of each vehicle in the camera's field of view, which ensures simultaneous recognition of all number plates in a frame and allows making individual entries about each of them in the recognition log.

Statistics, notifications and reports

A system user can receive summary statistics about the number of entries/exits for any period, view passages of a specific vehicle, evaluate traffic intensity by time of day, etc. It is also possible to receive e-mail, SMS, and Telegram notifications about passage of a specific vehicle or vehicles from a specific list.

Multi-country license plate recognition

The list of supported countries is constantly expanding (actual list is available on automarshal.net). Recognition of single- and dual line license plates, common, inverse and special license plate types is supported.

Remote access

The web-client allows to access the program remotely via a web browser or from any mobile device. The users of the system can issue vehicle passes remotely. The road barrier can be opened remotely via a phone call to a gsm-module.

Unlimited number of vehicle access lists

You can create any number of vehicle access lists with custom settings: validity period, day of the week, time of day, number of passages, and number of available parking spaces.

Data backup

The data on vehicle passage can be stored in the local database and transferred to the central database, which is used to store the information from all systems installed at the facility. The use of data replication mechanism allows simultaneous storage of data both in local databases and in the central database.

Flexible adjustment of recognition parameters

In Automarshal, you can block repeated recognition of the same vehicle, ignore stationary vehicles, recognize number plates of vehicles moving in a certain direction, etc.

Secure storage of data

Due to an industrial DBMS (MS SQL Server), Automarshal ensures safe data storage and high speed access to stored data.

Integration with third party systems

Automarshal software is easily integrated with access control systems, video surveillance systems, automated parking systems and carwash/service station systems. Technical support is provided at the integration stage free of charge.

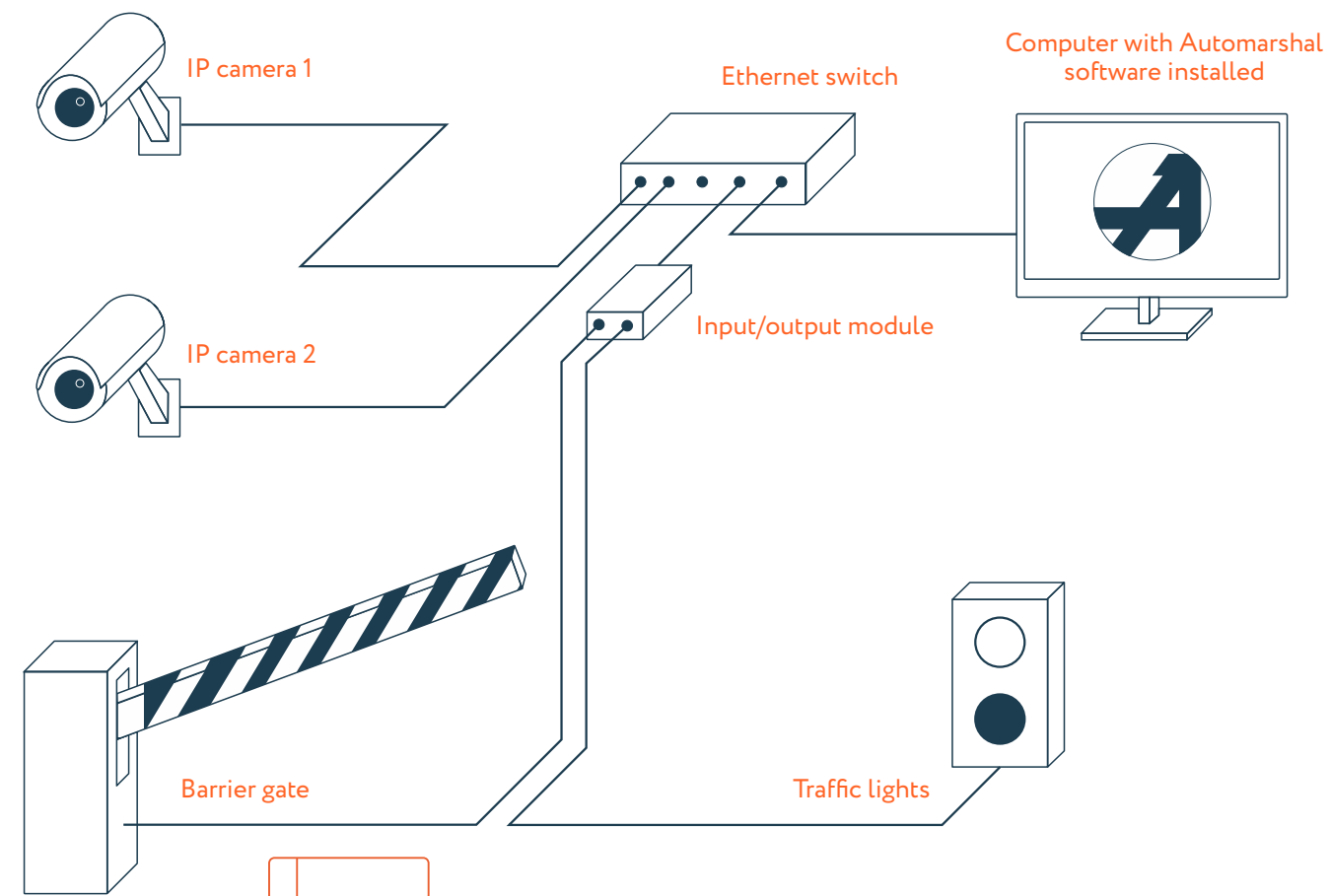
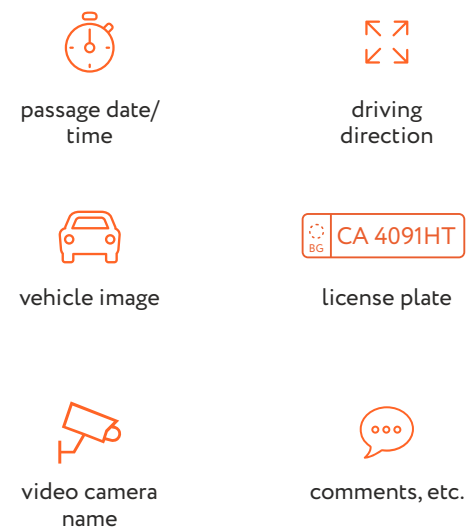
Centralized control

The ability to connect several input and output modules allows to operate the system at facilities with multiple points of entry and exit and simultaneously control multiple devices from a single control center. Centralized control system enables to reduce the expenses associated with control points equipment (hardware and software) and labor costs.

Operation scheme

- 1 Automarshel software is installed on a Windows PC.
- 2 One or more IP video cameras are connected to the computer via Ethernet.

The system recognizes number plates of vehicles in the camera's field of view and saves information about them in the database:



By comparing the recognized number plates with access lists and parameters, the system sends commands to external devices: barriers, gates and traffic lights.

Paid modules

The functionality of the basic Automarshall version can be expanded with additional software modules.

Some of the modules are supplied free as part of Automarshall software, while other modules may be purchased individually.

The modularity of the system enables configuring the solution to suit a specific task and not pay extra money for unnecessary functionality.



Device control

Enables connecting the supported discrete input/output modules to a computer (to connect barrier gates, traffic lights, sensors, etc.) and interfacing with them from Automarshall software.



Speed meter

Designed for integration with radar speed meter. The vehicle's speed is measured upon its license plate recognition. There is an option to display speeding alerts and transmit events to external systems.



Automarshall.Web-client

Enables remote monitoring of the log of passing vehicles, watch the live video from connected cameras, and manage the system from different devices (cell phone, tablet, computer) - all via a web browser. The web-client is useful to owners and directors of companies for discreet monitoring of enterprise operations at any time and in any place.



Video surveillance channel

Designed for connection of surveillance camera (with an option to view the video, but without the recognition function). With this module one can configure to save a screenshot from the surveillance camera at the moment of recognition, for instance, to register cargo in the vehicle hull or for an overall view.



Expandability of the supported countries list

Allows to expand the list of recognizable number plate types. The actual list of supported countries is available at automashal.net.



LED screen

Enables connecting LED screen to display messages for drivers - texts and images. The content of messages is customizable.

Free modules



Tariffication

Allows for efficient control of parking lots of any category. Calculation of time and cost of vehicle's stay helps improve the traffic capacity of the parking lot, the quality of customer service and money flow control.



Report distribution

Generates reports on the recognized license plates for a certain time period and automatically transmits them by email or to an FTP-server.



SMS, Telegram notifications

Sends SMS and Telegram messages to a cell phone after passage of a specific vehicle from the list.



ACS Gate

Transmits recognized number plates and accompanying information to ACS Gate for further processing. In this mode, Automarshal is interpreted by Gate controller as a standard reader of identifiers.



Text file

Automatically saves data about the recognized vehicle in a text file for easy integration with any information systems.



HTTP export

Transmits vehicle data to external systems via a network protocol (TCP/IP, http) in xml format via HTTP POST requests.



Integration with third party systems

Video surveillance systems:	Devline, IDIS, NxWitness, Milestone XProtect, Revisor VMS.
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ACS:	Gate, Itrium.
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Parking management software:	RPS, ACS Gate, EcoPark.
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Software for carwashes:	Helix, Clean-Control.
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RS-232/485

Transmits recognized number plates and driving direction of vehicles to third party manufacturer controllers via RS-232/485 interface.



Exporting data to disk

Saves information about detected vehicles in the real-time mode. For each vehicle a screenshot and a file containing detailed information about its passage (in xml, csv formats) are saved.

Parking lot Applications

System composition for 1 entry, 1 exit

Software:

Automarshall, vehicle speed up to 30 km/h,
2 recognition channels

Hardware:

PC Core i3 / 4GB/ 256Gb SSD/ Win10Pro	1 piece
Video camera	2 pieces
Spotlight	2 pieces
Power supply unit for video cameras and spotlights	1 piece
Ethernet switch	1 piece
Cables (power and Ethernet)	kit

Optional:

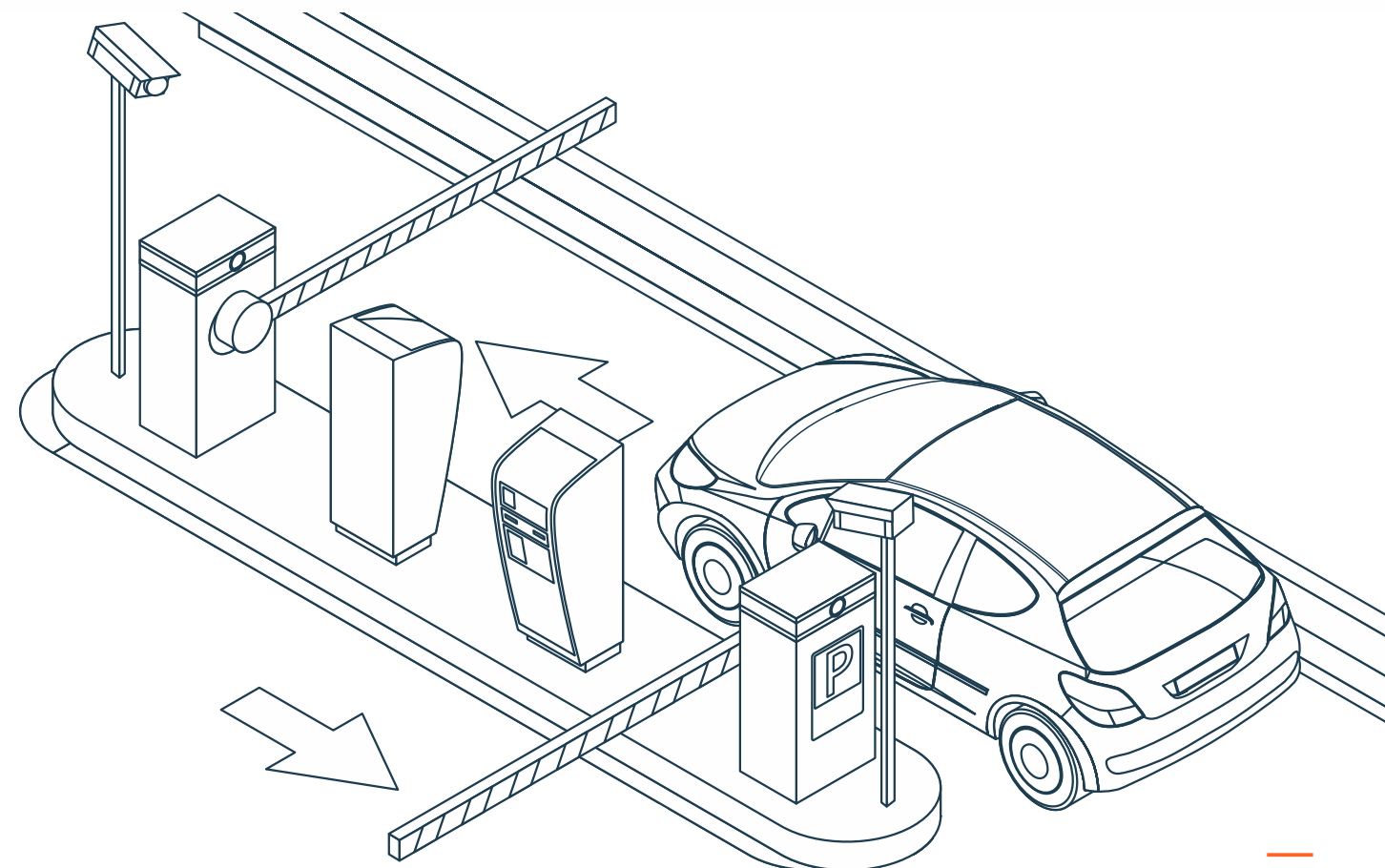
Software module for external device control	1 piece
Web-client	1 piece
Software module for recognition of additional countries	1 piece
Barrier gate	2 pieces
Traffic lights	2 pieces
Input-output module (external device control)	1 piece
Sensors for vehicle detection and automatic barrier gate control	kit

Facilities where the system can also be used:

Business center parking
Trade center parking
Airport parking

Tasks being solved:

- Automation of vehicle access control and registration of vehicles in the parking lot.
- Calculating parking price depending on the duration of stay and the tariff selected.
- An option of automatic and manual control of external devices (barrier gates, traffic lights).
- Restricting access to unauthorized vehicles or blacklisted vehicles.
- Viewing statistics, generating reports.
- Remote control of parking lot operation via the web-client.



Gated communities, apartment buildings

Applications

System composition for 1 entry, 1 exit

Software:

Automarshal, vehicle speed up to 30 km/h,
2 recognition channels

Software module for external device control	1 piece
Web-client	1 piece

Hardware:

PC Core i3 / 4GB/ 256Gb SSD/ Win10Pro	1 piece
Video camera	2 pieces
Spotlight	2 pieces
Power supply unit for video cameras and spotlights	1 piece
Ethernet switch	1 piece
Barrier gate	2 pieces
Input-output module (external device control)	1 piece
Cables (power and Ethernet)	kit

Optional:

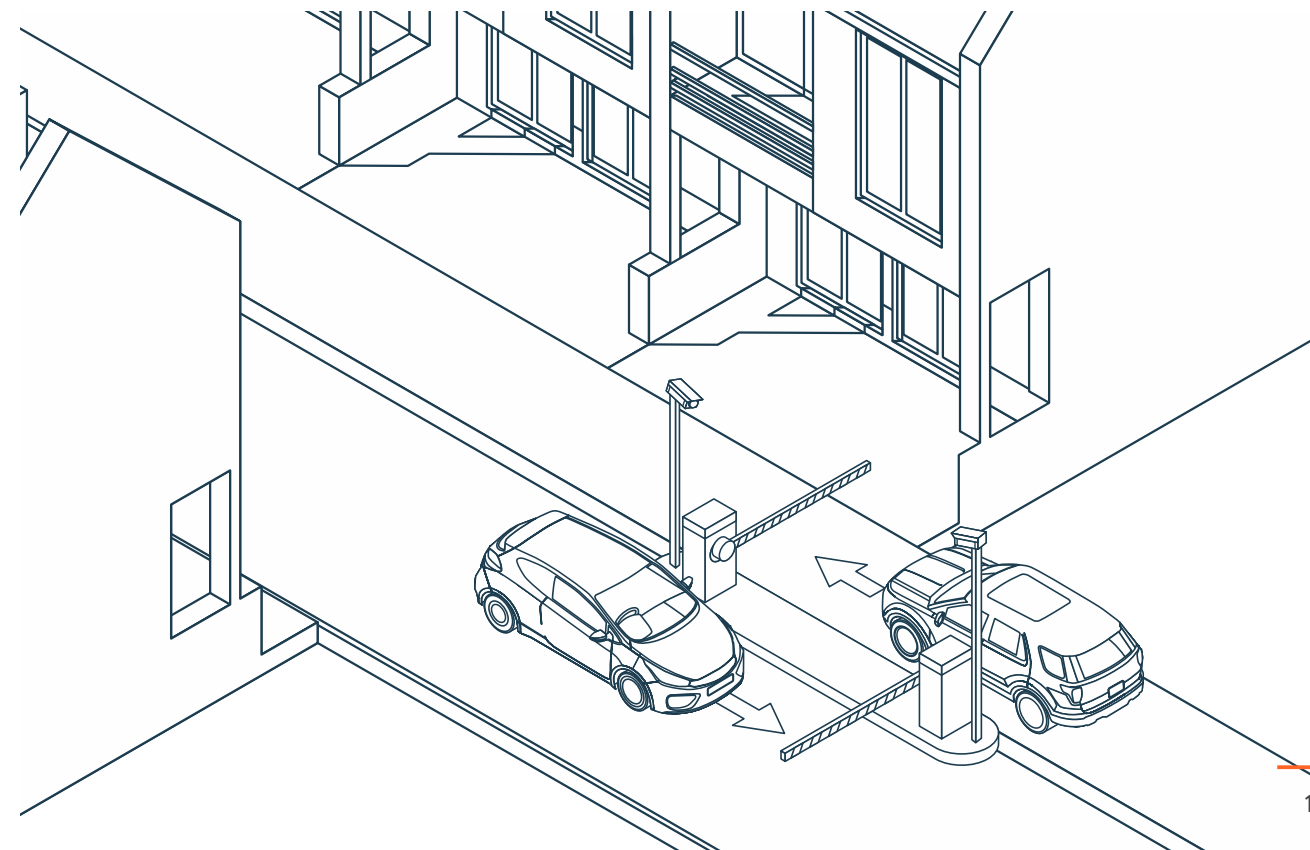
Software module for recognition of additional countries	1 piece
Traffic lights	2 pieces
GSM-module for barrier gate control via a cell phone	2 pieces
Sensors for vehicle detection and automatic barrier gate control	kit

Facilities where the system can also be used:

Hotels
Recreation centers

Tasks being solved:

- Automation of vehicle access to the territory of apartment buildings and gated communities.
- Improved safety by introducing access control when only vehicles from the list or with a valid pass can enter.
- Individual lists for service organizations allow controlling their operations.
- An option of adding guest passes by residents via a web-client.
- Opening a road barrier by a call from a cell phone to 3G GSM module.
- Parking space management.
- Entry ban for debtors of utility bills.
- Passage data can be used for incident analysis.



System composition for 1 entry, 1 exit

Software:

Automarshal, vehicle speed up to 30 km/h,
2 recognition channels

Software module for external device control	1 piece
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Web-client	1 piece
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Hardware:

PC Core i3 / 4GB/ 256Gb SSD/ Win10Pro	1 piece
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Video camera	2 pieces
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Spotlight	2 pieces
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Power supply unit for video cameras and spotlights	1 piece
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Ethernet switch	1 piece
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Barrier gate	2 pieces
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Input-output module (external device control)	1 piece
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Cables (power and Ethernet)	kit
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Optional:

Video surveillance channel for photographic registration of cargo in the vehicle hull	2 piece
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Software module for recognition of additional countries	1 piece
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Overview video camera	2 pieces
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Traffic lights	2 pieces
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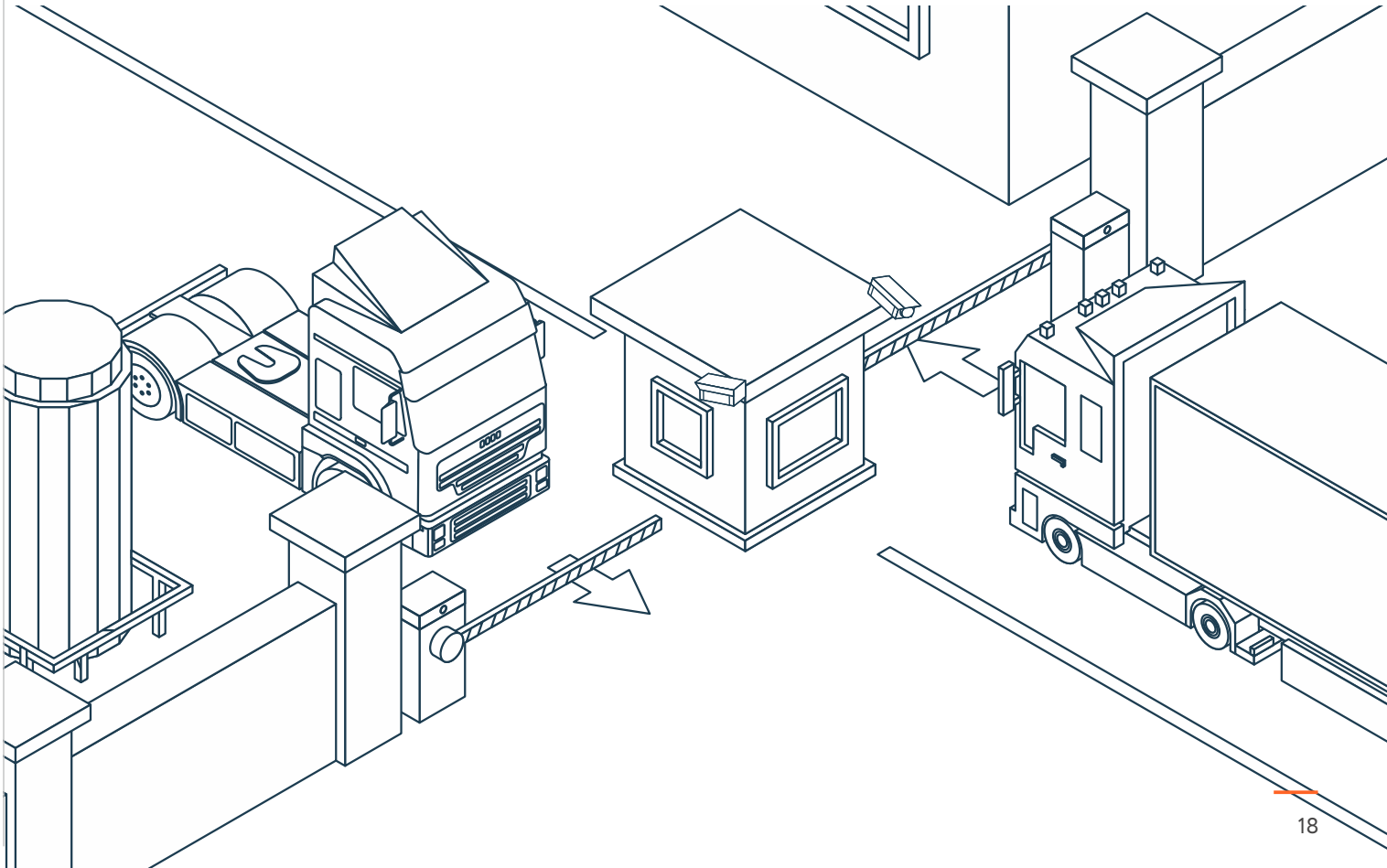
Sensors for vehicle detection and automatic barrier gate control	kit
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Facilities where the system can also be used:

Logistics complexes	Fenced-off restricted areas
Customs terminals	Military bases
Construction sites	State borders

Tasks being solved:

- Control of vehicle access to the restricted area.
 - Fraud prevention due to photographic registration of vehicles and cargo.
 - Automating the operations of security personnel, reducing the time for making a decision on admission of each vehicle to the territory of the enterprise.
 - Storing information about all entering and exiting vehicles, producing statistics and compiling reports.
- Integration with the enterprise information systems enables automating business processes by using vehicle movement data.



System composition for 1 entry, 1 exit

Software:

Automarshel, vehicle speed up to 30 km/h,
2 recognition channels

Hardware:

PC Core i3 / 4GB/ 256Gb SSD/ Win10Pro	1 piece
Video camera	2 pieces
Spotlight	2 pieces
Power supply unit for video cameras and spotlights	1 piece
Ethernet switch	1 piece
Cables (power and Ethernet)	kit

Optional:

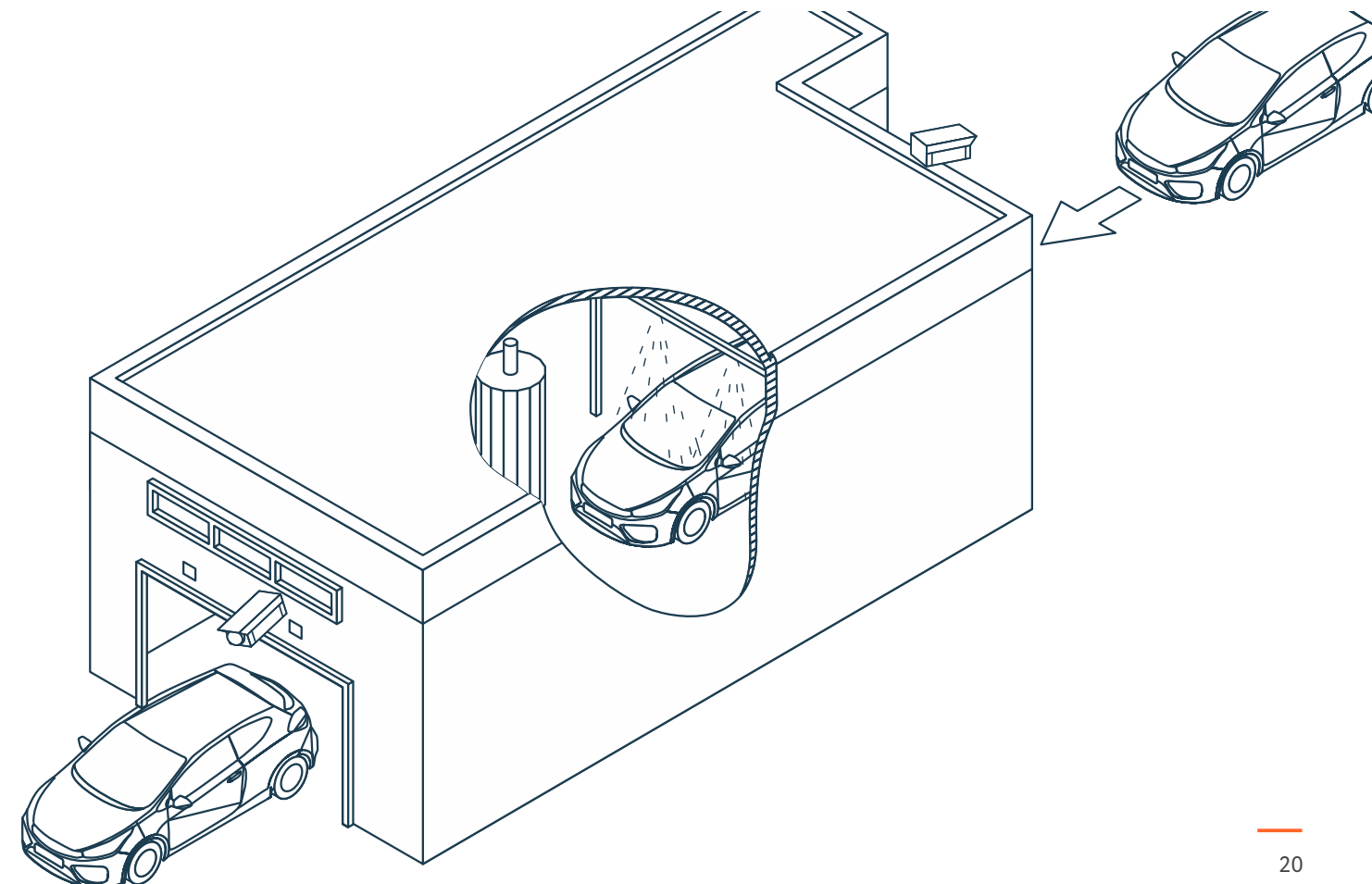
Web-client	1 piece
Video surveillance channel for photographic registration of vehicles	2 pieces
Software module for recognition of additional countries	1 piece
Overview video camera	2 pieces
Sensors for vehicle detection	kit

Facilities where the system can also be used:

Service stations
Automobile dealerships

Tasks being solved:

- The basic Automarshel version registers the duration of service delivery, enables supervising personnel and preventing potential theft on their part.
- Statistics about visitors and customers allows to evaluate the efficiency of carwash operation and identify bottlenecks.
- Integration with carwash software provides additional opportunities, such as automated order processing, maintaining customer database, calculating discounts and cost of services delivered, tracking employee time, occupancy of boxes, consumption of cleaning agents, etc.



Oil product loading/ unloading stations

Applications

System composition for 1 entry, 1 exit

Software:

Automarshal, vehicle speed up to 30 km/h,
2 recognition channels

Hardware:

PC Core i3 / 4GB/ 256Gb SSD/ Win10Pro	1 piece
Video camera	2 pieces
Spotlight	2 pieces
Power supply unit for video cameras and spotlights	1 piece
Ethernet switch	1 piece
Cables (power and Ethernet)	kit

Optional:

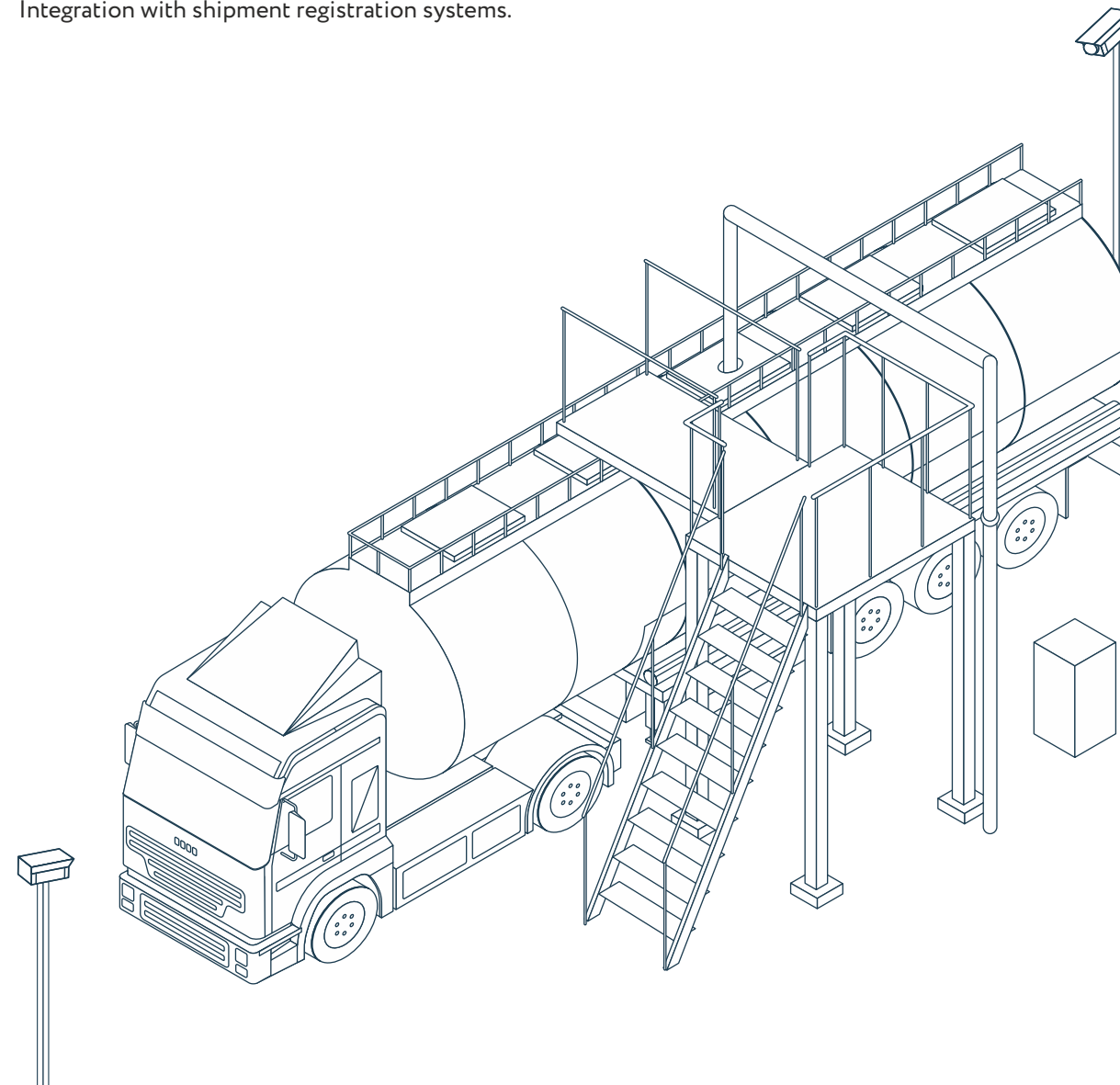
Web-client	1 piece
Video surveillance channel for photographic registration of vehicles	2 pieces
Overview video camera	2 pieces
Sensors for vehicle detection	kit

Facilities where the system can also be used:

Container filling stations
Oil deposits
Quarries

Tasks being solved:

- Controlling the loading/unloading of vehicles.
- Preventing theft by personnel.
- Integration with shipment registration systems.



System composition for 4 filling places

Software:

Automarshall, vehicle speed up to 30 km/h,
4 recognition channels

Hardware:

PC Core i5 / 8GB/ 256Gb SSD/ Win10Pro	1 piece
Video camera	4 pieces
Spotlight	4 pieces
Power supply unit for video cameras and spotlights	2 pieces
Ethernet switch	1 piece
Cables (power and Ethernet)	kit

Optional:

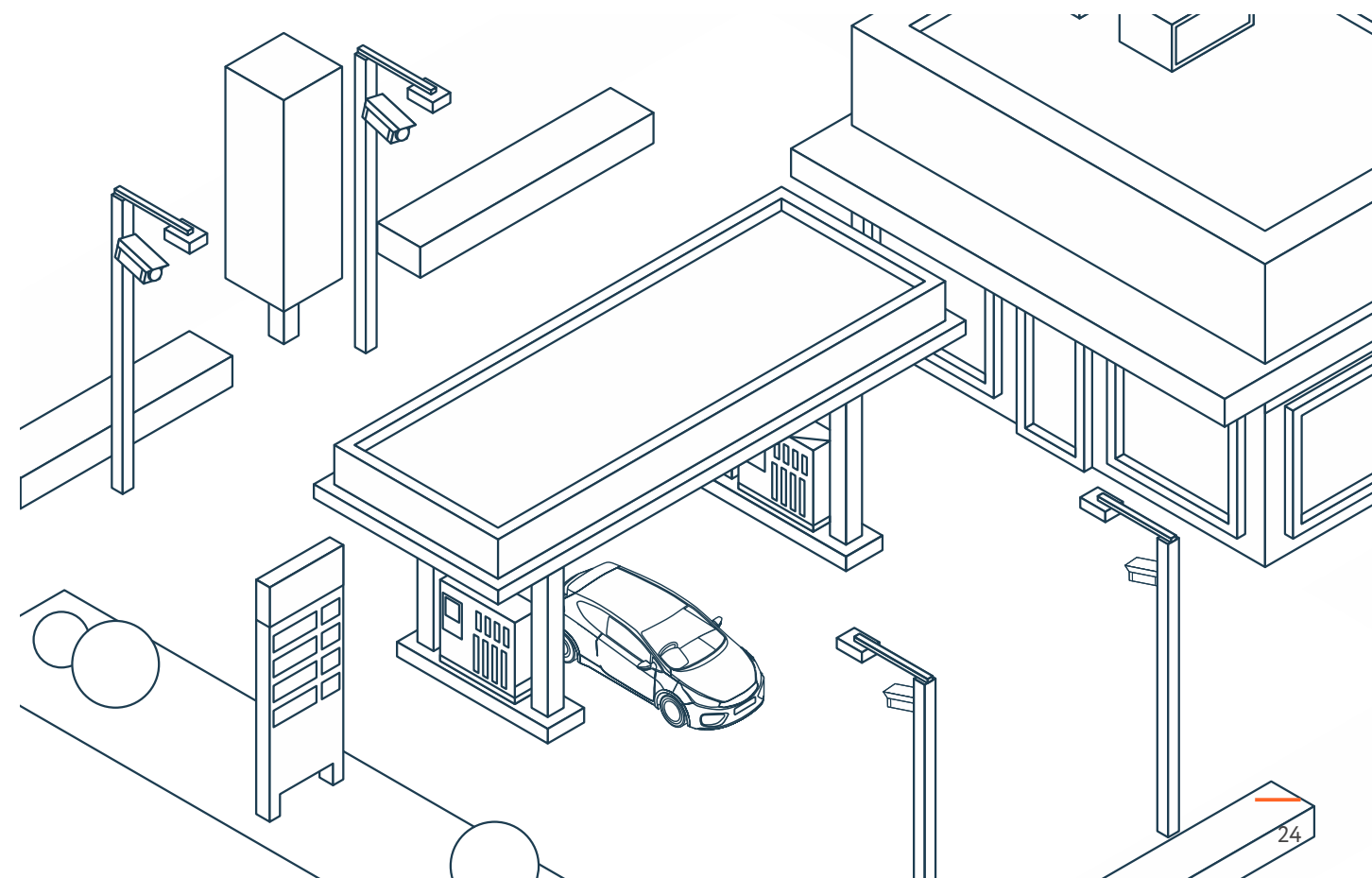
Web-client	1 piece
Software module for external device control	1 piece
Video surveillance channel for photographic registration of general view	4 pieces
Software module for recognition of additional countries	1 piece
Overview video camera	4 pieces
Input-output module (external device control)	1 piece

Facilities where the system can also be used:

Gas filling stations

Tasks being solved:

- Monitoring vehicles that visit the filling station. Blacklisting license plates of vehicles whose owners did not pay for fuel or damaged the property of the filling station.
- Notifying the operator when vehicles from the black list arrive.
- An option of using a single database of offenders for the entire network of filling stations.
- Integration with information systems used at the filling station enables checking fuel card number against the vehicle number.



System composition for 2 lanes

Software:

Automarshel, vehicle speed up to 270 km/h,
2 recognition channels

Hardware:

PC Core i7 / 16GB/ 256Gb SSD/ Win10Pro	1 piece
Video camera	2 pieces
Spotlight	2 pieces
Power supply unit for video cameras and spotlights	1 piece
Ethernet switch	1 piece
Cables (power and Ethernet)	kit

Optional:

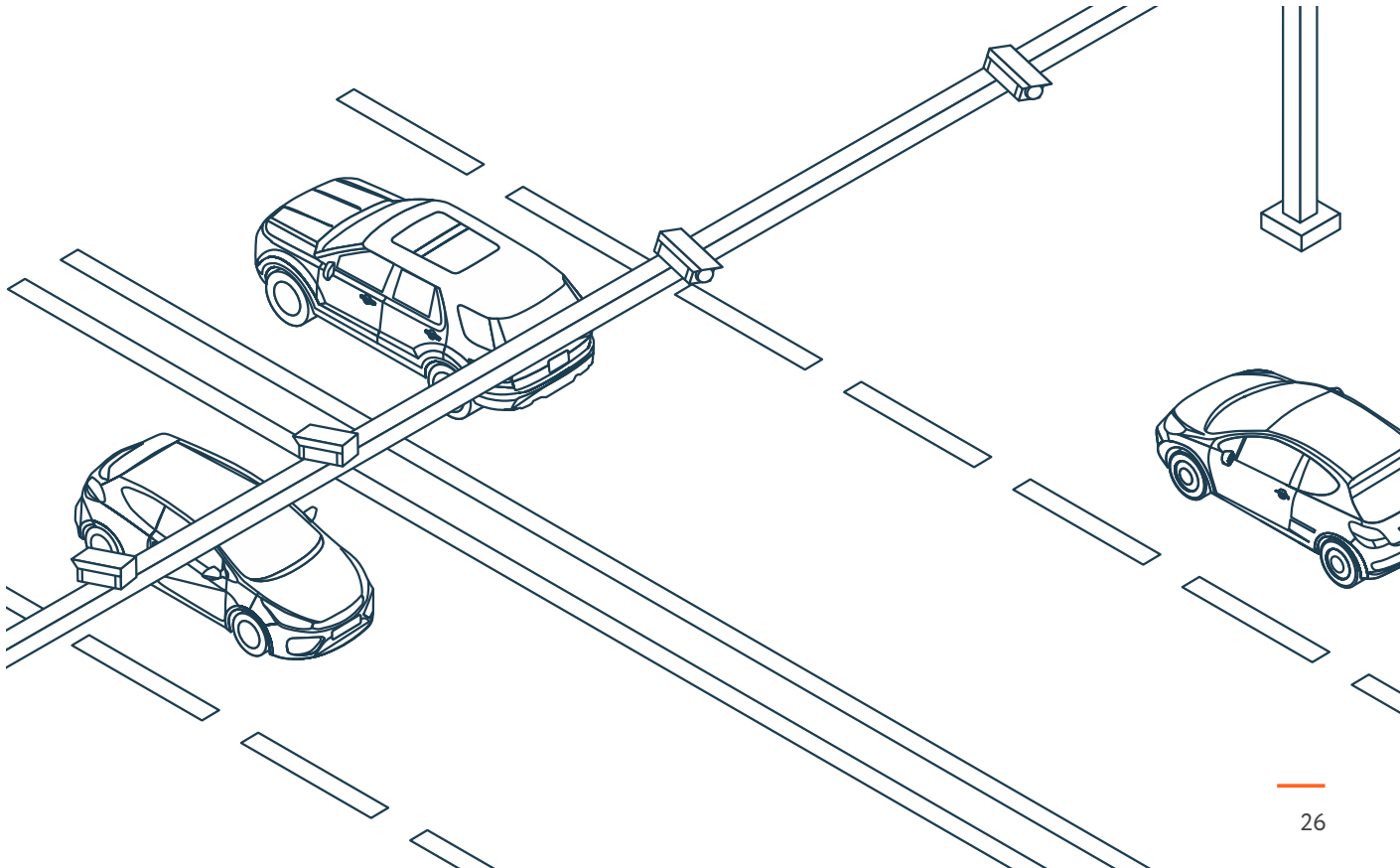
Video surveillance channel for photographic registration of general view	2 pieces
Software module for recognition of additional countries	1 piece
Software module for radar connection	2 pieces
Radar	2 pieces
Radar connection converter	1 piece
Overview video camera	2 pices

Facilities where the system can also be used:

"Safe city"
Traffic police posts
Enterprise facilities
Weigh stations
Strategically important infrastructure facilities: bridges, tunnels, gas pipelines

Tasks being solved:

- Round-the-clock monitoring of transport.
- Joint use of Automarshel with the radar system allows to control speeding and notifying the operator about it.
- Generating statistics on vehicle passage based on user-defined criteria.
- Notifying the operator when the system identifies in the traffic flow the vehicles, which are registered as stolen, have registration problems, etc.
- Conducting vehicle search in the interests of law enforcement authorities.
- Preventing terrorist threats by identifying suspicious vehicles that pass the control area too often.



Technical characteristics of Automarshall software

General information

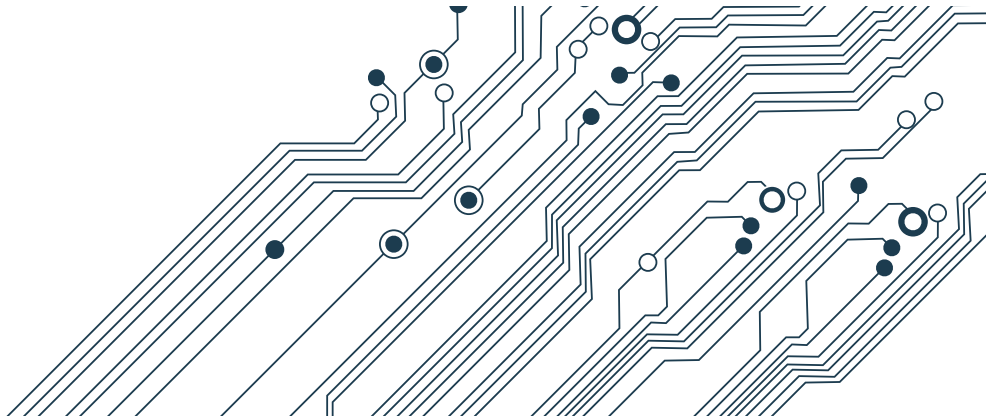
Supported plate types	Recognition of license plates of the European Union and other countries. The up-to-date list of supported countries is available at automarshall.net
Supported languages	User interface is available in English and Russian
Number of video channels	Determined by PC performance
Licensing	The software is protected by a special hardware key and cannot be used without it. Licensing with a USB-key or a software key is possible (software license).

Terms of use

Vehicle speed	Up to 30 km/h (parking lots, checkpoints, carwashes, etc.) Up to 270 km/h (highways)
Recognition distance	From 5 to 30 meters (depends on the video camera lens)
Width of control/recognition area	Up to 3 m for video camera resolution 640 x 480 and higher Up to 7 m for video camera resolution 1280 x 720 and higher
Camera pan/tilt angle	Up to 30°

Technical parameters

Supported operating systems	Windows 7SP1/8.1/10* (64 bit) Windows Server 2012R2/2016/2019 (64 bit) * Windows 10 version 1809 or a later version
Recommended computer parameters to control vehicles moving up to 30 km/h	Core i3-8XXX, 2.7 GHz, RAM 4 Gb (for processing up to 2 channels) Core i5-8XXX, 2.7 GHz, RAM 8 Gb (for processing up to 4 channels) Core i7-8XXX, 2.7 GHz, RAM 16 ГGb (for processing up to 8 channels)
Recommended computer parameters to control vehicles moving up to 150 km/h	Core i3-8XXX, 3.0 GHz, RAM 4 Gb (for processing 1 channel) Core i5-8XXX, 3.0 GHz, RAM 4 Gb (for processing up to 2 channels) Core i7-8XXX, 3.0 GHz, RAM 8 Gb (for processing up to 4 channels) Core i9-10900K 3.0 Ghz, RAM 16 Gb (for processing up to 8 channels)
Recommended computer parameters to control vehicles moving up to 270 km/h	Core i5-8XXX, 3.5 GHz, RAM 4 Gb (for processing 1 channel) Core i7-8XXX, 3.5 GHz, RAM 8 Gb (for processing up to 2 channels) Core i9-10900K 3.5 Ghz, RAM 16 Gb (for processing up to 4 channels)
Supported video cameras	All IP video cameras with an option to set a fixed exposition value (1/500 sec for speed up to 30 km/h, 1/4000 – up to 270 km/h) and auto iris lens
Vehicle log capacity (per 10 Gb of disk space)	200,000 entries (640x480 screenshot resolution) 100,000 entries (1280x960 screenshot resolution) 70,000 entries (1920x1080 screenshot resolution)



Technical characteristics of Automarshall software

Integration

Data transfer	Ethernet, RS-232, RS-485, Wiegand, FTP, e-mail, SMS, Telegram
Integration options	Importing/exporting access lists in *.CSV, *.XLS, *.XML formats
FTP	Storing data and images on an external FTP-server
E-mail	Automatic report generating and emailing. The type of report and frequency of e-mail notifications are customizable
SMS	Sending SMS notifications to one or several phone numbers after passage of specific vehicles
TCP/IP	Transferring data and images to a remote server via TCP/IP sockets. The composition of messages is customizable
Telegram	Sending Telegram notifications to all subscribers after passage of specific vehicles
RS-232/485	Transferring the recognized number, video camera number and driving direction to the COM port specified in the settings

Integration with third party software

Software for carwashes	Helix, Clean-Control
Parking management software	RPS, ACS Gate, EcoPark
ACS	Gate (Gate-8000-Auto controller is required), Itrium
Video surveillance systems	Devline, Revisor VMS, Milestone XProtect, IDIS, NxWitness
Weight and dimension control systems	Camea

Automarshall.Gate

Automarshall.Gate is a specialized lower tier version of Automarshall software designed for joint use with access control systems (ACS), parking management systems and software for carwashes.

The functionality of Automarshall.Gate is restricted to reading the license plates of passing vehicles and transmitting the recognition event to an external system, where all further logic is implemented. The restricted functionality determines the low price of the solution.

Integration

Data transfer	Ethernet, RS-232, RS-485, Wiegand
TCP/IP	Transferring data and images to a remote server via TCP/IP sockets. The composition of messages is customizable
RS-232/485	Transferring the recognized plate, video camera number and driving direction to a COM port specified in the settings

Integration with third party software

Parking management software	ACS Gate, EcoPark
ACS	Gate (Gate-8000-Auto controller is required)
Video surveillance systems	Devline, Revisor VMS, Milestone XProtect, IDIS, NxWitness

Automarshal.SDK

Automarshal.SDK (Software Development Kit) is a development kit that enables to add number plate recognition into the software for vehicle access control systems that one develops.



Automarshal.SDK includes:

- Recognition core (a collection of dll-files written in C# language)
- Documents for core integration with third party software
- Samples of core integration with third party software for most common languages
- Hardware key and the license file that allow the use of a certain number of channels (video cameras) for license plate recognition



Applications

- Complexes of photo and video registration of traffic violations
- Truck weigh stations
- Video surveillance systems
- Automated parking systems
- Enterprise information systems



Integration

- Integration is possible only with the software compatible with Microsoft Windows operating system.

Technical parameters

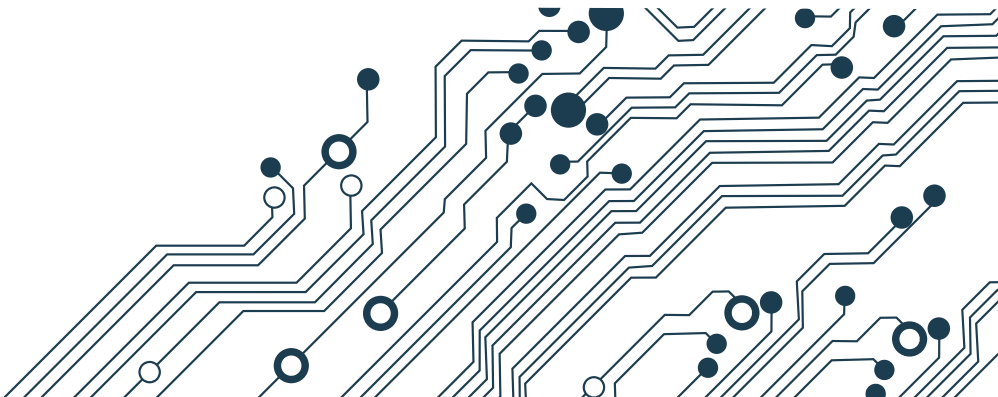
Supported transmission protocols of IP cameras	HTTP, RTSP
Supported video compression formats	H.264, MPEG-4, MJPEG

Integration

Technologies applied	Microsoft .NET is applied for integration with software written in .NET-language for MS .NET Framework 4.5 or later (C#, VB .NET, etc.) COM/OLE is applied for integration with the software, which programming language supports COM-objects and interfaces (C++, Object Pascal/Delphi, VBA, 1C, etc.)
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Services and support

Training	Free support for integration with third-party systems
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Comparison of functional characteristics of Automarshal products

Feature	Automarshal	Automarshal.Gate	Automarshal.SDK
Vehicle speed up to 30 km/h	+	+	+
Vehicle speed up to 270 km/h	+	-	+
Database of passing vehicles	+	-	-
Access lists for automatic barrier gate control	+	-	-
Reports, statistics	+	-	-
Integration with ACS Gate	+	+	-
Support of additional software modules (including device control)	+	-	-



Automarshall is implemented by

Automarshall



Rosneft — registering freight vehicles at an oil deposit.



Fazer — automation of vehicle access at the company facilities in Moscow and Saint Petersburg. Registering drivers and passengers. A unified centralized database.



VMG Industry — automatic control of entry/exit of vehicles to the company facilities (for the commercial department).



Vnukovo Airport — automatic control of entry/exit of vehicles and registration of vehicles on a paid parking lot. Calculating the cost of parking depending on the duration of stay and the tariff selected.



PRIME LOGISTIC Group — automatic control of entry/exit of vehicles to the territory of the logistics center. Granting access to vehicles with consideration of free parking spaces allocated for each tenant.



Argosy — a system for registering oil discharge at a container filling station of the enterprise. Automarshall transfers vehicle data to "NEFTEBAZA" automated working station (Argosy Analytics).

Automarshall.SDK



Severstal — Automarshall.SDK is integrated with information systems of the enterprise: security system to organize vehicle access at the company checkpoints, and product unloading system for vehicle registration on vehicle weigh stations.



Seenboom (China) — Automarshall.SDK is integrated with vehicle undercarriage inspection systems installed at Luzhniki Olympic complex to ensure perimeter safety during 2018 FIFA World Cup.



Integrated Security Systems — integration of Automarshall.SDK in a system designed to control access of vehicles to territory of St. Petersburg International Economic Forum in 2016 and 2017.

Automarshall.Gate



APS-SPb — transferring vehicle license plates to EcoPark (an automated parking system) to organize access of vehicles to the customer parking lot. The system is installed at parking lots of a network of hypermarkets.



Itrium — transferring vehicle license plates to ITRIUM system to organize access control at the facilities with vehicle safety requirements.

About us

Mallenom Systems is one of the leading Russian developers and manufacturers of machine vision and modeling systems based on machine learning.



Today, the company's products are available in most regions of Russia, as well as in the CIS and EU countries. Since 2012, Mallenom Systems has been an official partner-integrator in Russia and the CIS of Cognex - the leading American manufacturer of machine vision systems.

Among the largest clients of the company are: Magna, Gillette, ALROSA, Lukoil, Gazprom Neft, Bashneft, Severstal, Pharmstandard, and many others.

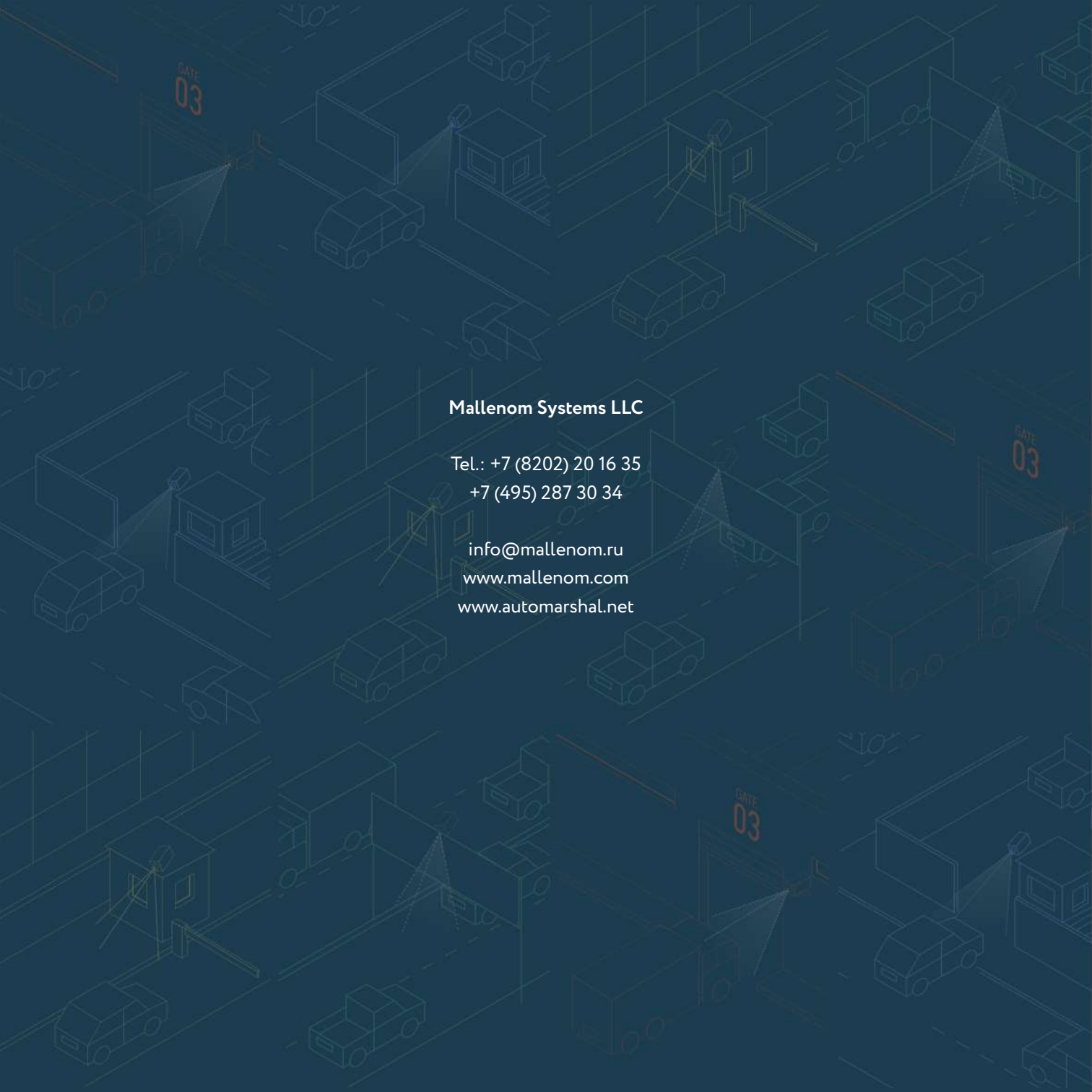
Partnership

The Automarshal partner program incorporates a lot of benefits that include high-tech solutions, financial privileges and support in implementing projects of any scope and complexity in compliance with market trends and customer tasks.



With a status of an authorized, silver or gold partner you receive all products at partner prices, an option of mutual participation in marketing initiatives, prompt notification about novel solutions, fully featured Automarshal number plate recognition system for demonstration purposes at an exclusive price, and other benefits.





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