



## COMPANY HISTORY

**IDRAK LTD** was founded in 1990 and was renamed **IDRAK TECHNOLOGY TRANSFER** in 2003. From the first years of its activity, the company successfully cooperates with government agencies in the development of information systems, system integration and technical support. During these years, the company has developed and implemented such state and corporate level systems as:

- *The system of issuing a driver's license*
- *System for issuing a technical passport of the vehicle*
- *System for issuing tags for vehicle maintenance*
- *And others*

Since the beginning of 2000, IDRAK Technology Transfer has successfully consolidated its leadership in the development and implementation of integrated information systems. A distinctive feature of IDRAK Technology Transfer systems is their reliability, innovation and high level of security.

Since the beginning of this century, the list of the company's products has been supplemented with the following own developments:

- System for issuing national identity cards (e-ID)
- The system of issuing electronic passports (e-Passport)
- The system of issuing visas to foreigners
- Border control system
- Security systems - "Safe City", "Safe Region"
- Security system of transportation "Electronic seal"
- Monitoring system of controlled persons "CHANCE"
- And others.

In the past few years, starting in 2014, the company has significantly expanded the range of its activities through the creation of a design department for the design, modeling and prototyping of all kinds of hardware and electronics, and since 2018 it has established its own factory production, the so-called "Smart Things Factory", in which high-quality innovative products are produced using state-of-the-art production technologies and concepts. Thus, the company is able to cover the full cycle of product development or technological solutions - from idea to ready-to-use product.

Today, IDRAK Technology Transfer occupies a leading position in the main branches of the information technology industry and daily strengthens them, thanks to its extensive Know-How in all areas involved, its impeccable reputation and innovative approach to solving problems.

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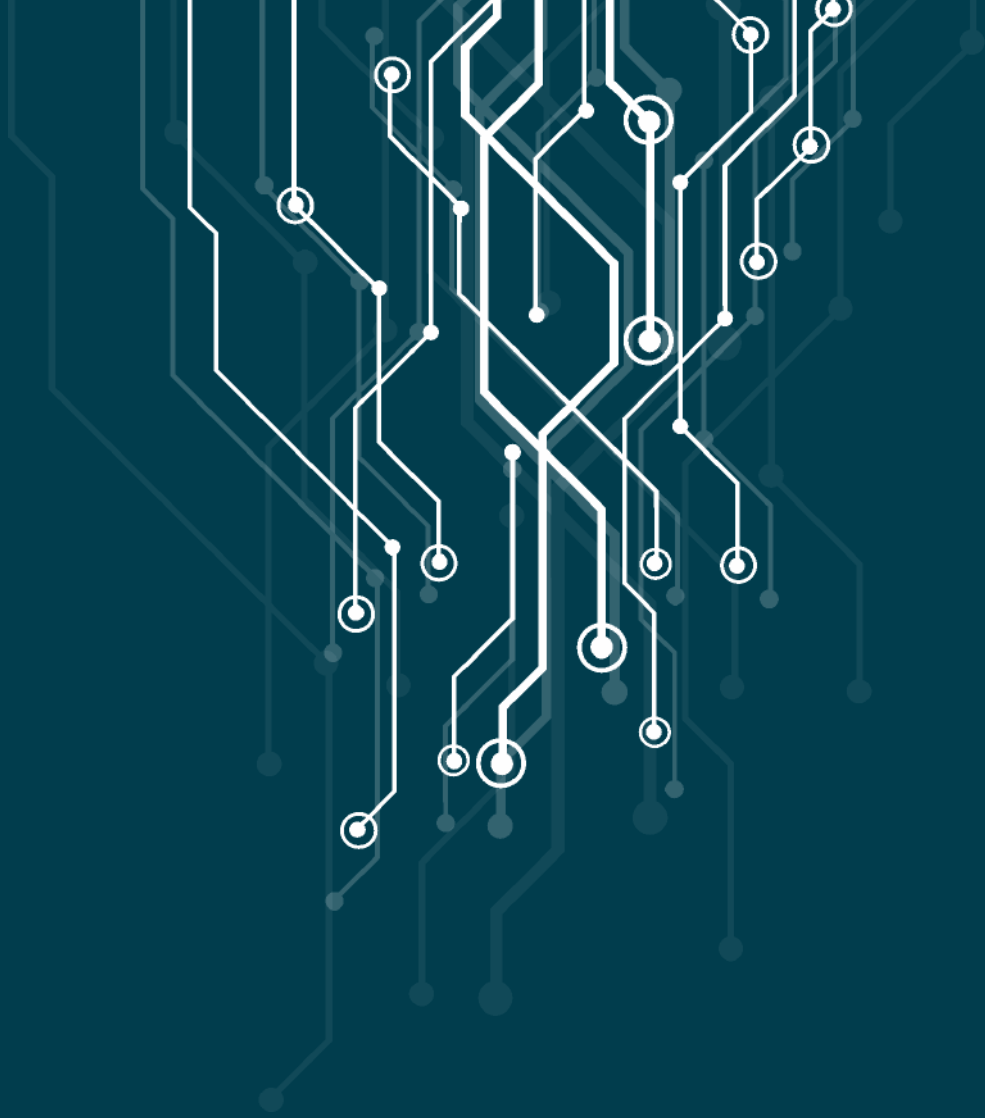
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# SOLUTIONS



## ISSUANCE SYSTEM FOR ELECTRONIC ID CARDS

One of the most important factors in the confirmation of the authenticity of a person's citizenship is the presence of official identification documents. In very many countries (with a few exceptions) those documents are the Identity Card and Passport.

Modern technologies have long found a response both in the production of identification documents and in the processes of data capturing, verification, personalization, issuance and post-issuance management of documents. As modern passports used for international travel, must comply with international standards and requirements, such as those of the International Civil Aviation Organization (ICAO). In case that the issuing State accepts the Identity Card as a Travel Document as well, it must comply with the same international requirements as well. The system of issuing electronic identity cards, developed by IDRAK Technology Transfer, supports the entire cycle of providing the population with identity cards, starting with data collection for personalization, personalization itself and ending with issuing and post-issuance management of the issued documents. The system has the highest level of security, which provides complete security for personal data of citizens and documents. The system of issuing identity cards carries out the entire process in accordance with international norms and standards, including the implementation of laser engraving of polycarbonate cards, electronic personalization of the embedded chip via contact and / or contactless interfaces.

### DATA ENROLMENT AND ENTRY

The data enrolment and data entry module performs the initial processing of data taken from a citizen who is applying for a new identity card. The application is always made only in person and only with the original identification document (old identity card, passport, birth certificate, etc.). This is necessary in order to prevent possible attempts to obtain an identity card in another's name. When identifying the applicant, the system can, using the implemented interfaces, communicate with other state information systems and obtain all sorts of information about the applicant (in accordance with the

These requirements and recommendations are for example:

- Presence of electronic carrier embedded in the document - chip
- Availability of machine-readable zone (MRZ)
- Card body / passport data page made of durable materials (for example polycarbonate)
- Biometric information of the document carrier
- Personalization of personal data of a citizen and his photographs by laser engraving

### USED EQUIPMENT

- A biometric terminal (stationary or mobile) that includes a digital video camera, a fingerprint scanner, an iris scanner and a signature scanner (*for more information, see the section "Products. Devices. Smart things"*)
- Polycarbonate Card Laser Engraving Machine / Other Personalization Equipment
- Full-page document scanner with integrated contact and / or contactless reader for electronic chip
- Laser printer
- Smartcard reader

legislation of the issuing state). In addition to personal data, like first name, last name, date of birth, personal signature, etc., using special equipment, biometric information is collected. It is obligatory to collect a biometric photo of the applicant, fingerprints, a picture of the iris of the eye can be optional. Also, depending on the specification of the identity card, additional citizen data may be collected.

#### VERIFICATION AND PROCESSING

The next step in the process of issuing an identity card is to verify the collected data and process / prepare the data for personalization. The following checks (depending on the legislation of the issuing state) can be performed by this module:

- Verify that the reason for applying for an identity card in the central database is consistent
- Identify and prevent simultaneous applications for identity cards at two or more different data enrolment sites
- Identification of cases of inconsistency of the applicant's biometric data with his biometric data in the state biometric database
- Verification of personal data and applicant's source document with official lists of restrictions
- And others.

The verification module can perform all checks automatically, but also provides the possibility of operator intervention to resolve suspicious cases.

Upon completion of all checks, the system (and / or operator) makes a decision on whether to allow or reject the subsequent personalization of the identity card.

#### PERSONALIZATION

In the case of permission for personalization of an identity card by the verification module, the data in a special format is transmitted to the next module of the system - the personalization module. The main tasks of the personalization module:

- Distribution of tasks to the available personalization equipment
- Personalization of approved IDs
- Implementation of quality control on special equipment
- Transfer of personalized IDs to the next step in the process - issuing IDs

Depending on the specification of the identity card, the legislation of the issuing state and the available equipment, visual personalization can be carried out on the following types of documents:

- Paper (laminated) ID in the ID-1 or ID-2 format by printing
- PVC plastic ID in ID-1 format by printing
- Polycarbonate plastic ID in ID-1 format by laser engraving

In case the identity card has an integrated electronic chip, the personalization module also personalizes it via the contact and / or contactless interface of the chip.



In many countries of the world there is a more or less successful practice of applying a national identity card as a means of electronic authentication and electronic signature. For this purpose, the personalization module has a developed ability to integrate the system with the national CA (Certification Authority) system for obtaining and subsequently personalizing electronic authentication and signature certificates.

After personalization, all or some documents of a personalized batch are subjected to a quality check (Quality Assurance - QA), on which, using special equipment, visual personalization is scanned, information personalized on electronic media is read out and compared with information in the database. Verification of the visual security features of ID cards in UV and IR lighting can also be performed. In case of incorrect personalization or incorrect data, the identity card may be reprinted or rejected.

The personalization module can integrate both centralized and decentralized personalization of identity cards.

After successfully performed Quality Assurance, the ID cards are sent to the last stage of the active process - issuance.

## ISSUANCE

A special module of the system is responsible for the issuance of the personalized eID cards. For special cases a possibility of deactivation of previously issued ID cards is stipulated (e.g. in case of death or renunciation of citizenship). With the help of explanations and comments the systems compose information about refusal of the issuance or deactivation of the ID card.

The system implements updates of the information about issued (activated) and deactivated ID cards. Through the stock management system keeps a record of current stock situation of the blank ID cards. The system implements as well a possibility of generation of real time and statistic reports.

## ELECTRONIC PASSPORTS ISSUANCE SYSTEM

The electronic passport issuance system is a complex of modules that perform various functions designed to prepare, verify data, personalize and issue passports. A passport, which is an official international travel document, must comply with international standards, norms and recommendations, such as those of the International Civil Aviation Organization (ICAO). Modern travel documents are equipped with an electronic carrier - a chip, embedded either in the data page (polycarbonate data page), or in the cover of the passport.



The electronic passports issuance system supports the ICAO PKI (public key infrastructure) infrastructure necessary for the electronic personalization of passports and their cryptographic protection in accordance with international security standards

### USED EQUIPMENT

- Personal Computer
- Biometric photo booth for digitizing face images
- Fingerprint scanner
- Signature digitization scanner
- Camera for digitizing the iris
- Full-page document scanner
- Laser engraving machine
- Laser printer

### ELEKTRON DAŞIYICIDA AŞAĞIDAKILAR YERLƏŞİR:

- Machine-readable zone of the passport
- Biometric photo of the applicant
- Fingerprints (optional)
- Scan of the iris (optional)
- Personal signature of the applicant (optional)

Various cryptographic elements of data protection either generated by the personalization module or received from the ICAO PKI system

## BIOMETRIK FOTOKABINA



### DATA ENROLMENT

This module of the system, as in the case of the system of issuing identity cards, ensures the enrolment of data of the applicant. While in the case of identity cards there is no direct obligation for the documents to comply with the ICAO standards, when capturing data (and of course the next steps in the process) for passports, the mentioned compliance is necessary.

Prior to the direct collection of applicant data, this module of the system performs its (automatic or semi-automatic) identification on the basis of an initial document (identity card, old passport, birth certificate, etc.). Personal data can also be obtained from the initial document and / or from the central database. Next is the registration of the applicant's biometric data (biometric photo, fingerprints, a picture of the iris) and their qualitative assessment. Additional data of the applicant may also be collected, which will be personalized in the passport and / or stored in a special secure database. After the completion of these actions data is generated in the so-called "electronic applications" and transferred to the next module - verification and processing.

### VERIFICATION AND PROCESSING

The next module of the system ensures the verification and processing of the generated electronic applications with their subsequent personalization. During the verification, the system performs the following actions:

- Verify that the reasons for applying for a passport in the central database is consistent
- Detecting and preventing simultaneous application for a passport at one or more different data enrolment sites
- Identification of cases of inconsistency of the applicant's biometric data with his biometric data in the database
- Verification of information about personal data and the applicant's initial document with official lists of restrictions
- And others

The checks module can perform the entire verification automatically, but also provides the possibility of operator intervention to resolve suspicious cases.

Upon completion of all checks, the system (and / or operator) makes a decision on whether to allow or reject the subsequent personalization of the passport.

### PERSONALIZATION

In the case of permission for personalization of a passport by the verification module, the data in a special format is transmitted to the next module of the system - the personalization module. The main tasks of the personalization module:

- Distribution of tasks to the available personalization equipment
- Personalization of approved passports
- Implementation of quality control on special equipment
- Passing personalized passports to the next step in the process - issuing

If the passport form has a polycarbonate data page, visual personalization is performed by laser engraving, otherwise (paper data page) by printing.

After personalization, all or some documents of a personalized batch are subjected to a quality assurance check, whereby with the help of special equipment, visual personalization is scanned, information personalized on electronic chip is read out and compared with information in the database. Verifications of passport security visuals in UV and IR illumination can also be performed. In case of incorrect personalization or incorrect data, the passport may be reprinted or rejected.

The personalization module can integrate both centralized and decentralized personalization of passports.

After successfully verifying the quality of the passport, they are sent to the last stage of the active process – issuance.

## ISSUANCE

By the appropriate module of the system, personalized and approved passports are issued to citizens, and the existing passports can be deactivated for various reasons (for example, in the event of death or renunciation of citizenship)

In order to control, the system keeps records (in electronic form) of all passport blanks. Information collected on non-personalized, issued, as well as damaged or corrupted forms are displayed in the system reports.

## BORDER CONTROL SYSTEM

One of the most widely used developments by IDRAK Technology Transfer is the Border Control System. After its installation at all border control points of the Republic of Azerbaijan several years ago, it is constantly being modernized and undergoing various improvements.

The border control system realizes procedures of the control, check and registration of persons and vehicles, crossing the state border at the geographically distributed border checkpoints. Personal and biometric data of persons, information about their travel documents and vehicles is verified and checked with the special database to be able to detect a potential law and/or regulations violation and to take corresponding measures.

The border control system has access to all list of documents, which can be issued to a citizen, foreign citizen or a stateless person (e.g., passports, visas, permissions, ID cards, etc.). These lists are used to enable verification of the travel documents and detection of possible violations. The system as well checks information regarding the documents, personal data, biometric information and information about previous border crossings.

Information about intersections or attempts to cross persons and vehicles, violations and actions taken by employees is stored in a database. This information can be used by other checkpoints, as well as by various government agencies. In addition, the system has implemented a mechanism for notifying the relevant authorities about coincidences with restrictions imposed by their employees. Also implemented a mechanism for notification of situations related to the issued documents.

The verification procedure consists of primary and secondary controls. Primary control is used for operational verification and registration of persons and vehicles crossing the border. Secondary control is intended for detailed verification of persons detained during primary control.





## SYSTEM TASKS

- Primary and secondary control of persons and vehicles crossing the border
- Notification of special events to employees of relevant authorities
- Generation of various reports
- Search for information collected by the system

## USED EQUIPMENT

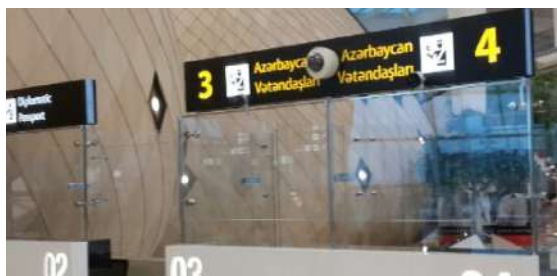
- Personal computer
- Fingerprint scanner
- Digital camera
- Full-page document scanner
- Tablet scanner
- Laser printer

## FUNCTIONAL CAPABILITIES

- Check in the restriction lists on entry and exit to identify the following persons:
  - Carriers of state secrets and sensitive information
  - Persons non grata
  - Wanted persons
  - People who have an administrative entry / exit ban
  - Others

The checks are performed on personal data, documents and biometric data (on photograph and fingerprints).

- Check for the relevance of the document (eg, expired or deactivated)
- Verification of documents and personal data with Interpol and CIS checklists
- Check with lists of wanted vehicles
- Check for completeness of documents
- Check for validity of documents
- Verification of biometric data (photograph and fingerprint images) obtained at checkpoints with data on an electronic passport carrier
- Search and reconcile previous border crossings
- Alert employees of relevant authorities about the situation (coincidence with the list of restrictions)



Data exchange between the border control system and external subsystems is carried out using special software. For each integrated external subsystem, data exchange in the required category is provided.

The border control system interacts with such subsystems as the Passport Issuing System, the Visa Issuing System, the Entry / Exit Restrictions System, the Biometric Database (Criminal), the Migration Service Document Issuing System, the System for issuing return certificates, the system for issuing identification documents to seafarers.

The system is designed to equip checkpoints of all types - air, road, rail, sea, pedestrian. In order to ensure border control in places where the use of stationary workplaces is unacceptable, a "Mobile border guard" device is provided (for more details, see the section "Products. Devices. Smart things").

The border control system improves the quality of control for border services and contributes to the improvement of information exchange between the border services and other relevant government agencies.

## MONITORING SYSTEM FOR PERSONS UNDER CONTROL AND SURVEILLANCE «CHANCE»

The main purpose of the monitoring system of controlled persons "CHANCE" is the implementation of continuous remote monitoring of controlled persons and control of the compliance with stipulated rules related to the restriction of freedom. The "CHANCE" system is used in cases of enforcement, such as house arrest or restriction of freedom of movement in relation to the following persons:

- Suspected and accused persons
- Persons sentenced to probation
- Persons early released

### TECHNICAL EQUIPMENT

- Surveillance Device - Standard Bracelet
- Standalone Surveillance Device - Stand Alone Bracelet
- RF sensor (RF, Radio frequency)
- Mobile device
- Base station

Standard bracelet can work in two modes:

- Home arrest mode - is applied to controlled persons who have a preventive measure in the form of restriction of leaving the permitted place of residence.
- Restricted freedom of movement mode - applies to controlled persons who are allowed to move in established territories in accordance with the schedule.

Standalone bracelet, unlike the standard bracelet contains GSM and GPS modules. In accordance with the applied mode, the autonomous bracelet transmits current data on its status and GPS coordinates to the Central Monitoring System via the mobile Internet via a GSM connection. The controlled person with the autonomous bracelet can move around the established territory at the permitted time (*for more details, see the section "Products. Devices. Smart things"*).



The base station supervises by the bracelet and RF sensors. The device is installed in the zone of authorized staying of the controlled person and ensures the transmission of data on the current state of the bracelet, base station and RF sensors to the Central Monitoring System via the GSM network.

RF Sensor - the main purpose of the device is to expand the coverage area of the wireless network of the base station and generate an alarm when opening and removing the bracelet, as well as in the case of a lack of electrical power.

A mobile device is a smartphone on which special software and hardware is installed. The system supports the ability to install one of two types of software on the smartphone - for the operator and for the controlled person. The mobile device of the operator is used to register controlled persons, collect their biometric data (face images, fingerprints, voice), as well as automatically define a set of surveillance devices.

Mobile surveillance device issued to persons under control. The device is designed to collect and transmit to the Central Monitoring System information about these persons, the status of the bracelet, communicate with the controlled person via audio and video calls (if necessary), send notifications and alerts to the controlled individuals.



#### FUNCTIONAL CAPABILITIES

- Obtaining regular information about the current status of surveillance devices, current geographic coordinates and the status of movement of the controlled person (eg, foot or motor vehicle), alarms (alarm) - the cause of the alarm
- Creation of rules and restrictions (territorial and schedule) for the controlled person
- Verification of a controlled person - audio call and video call from an operator, checking biometric compliance of a person, fingerprints, voice
- Displays the archive of movements of the tracked person on the map
- Using various sources of coordinate data
- Measurement of the distance covered by the person under control
- Visualization of the accuracy of the coordinate data on the map
- Enhanced capabilities to track controlled persons, including when they move within the metro
- Ability to search in archive data

The "CHANCE" system allows to monitor and control persons under surveillance in real time. A user-friendly WEB interface has been developed for the operation of system operators. The monitoring page can also be viewed via mobile phones and laptops with the installation of special software and compliance with safety regulations. The system provides required information from the database by generating various reports. The system provides possibility of preparing and submitting reports of the required form at the client's request



# CONTROL SYSTEM OF THE ELECTRONIC QUEUE

The system is designed to manage the electronic queue of citizens wishing to use various types of services in any organization or institution. The system provides citizens with the ability to register themselves to the queue using special kiosks in the institution itself or in advance through the corresponding Internet page.

## FUNCTIONAL CAPABILITIES

- Registration in a "live" queue using a kiosk - with the ability to select a service from the displayed list of services or organizations
- Registration in an online queue - with the ability to select a service or organization, date and time of visit, with ability to be notified over the mobile phone
- Call and redirect, as well as the completion of service by the operators of the relevant client by the operator's virtual console
- Displaying of additional advertising and informational content using the main display
- Alert customers from the Internet queue by sending SMS messages
- Configuring the system at the administrator's workplace, including specifying the structure of the organization, list of services provided, operating mode (work period, break, working days and non-working days), number of operators
- Obtaining statistical information about the total number of customers served, the number of customers served by services, operators, by time intervals
- Getting information about the quality of service



## TECHNIAL EQUIPMENT

- Kiosk (*for more details see the section "Products. Devices. Smart things"*)
- Main display
- Display of the operator

The electronic queue management system provides high quality service organization. The consequence of the use of the electronic queue management system is an improvement in the overall service climate and a higher rate of operation of the staff in an authority

# SECURITY SYSTEM OF TRANSPORTATION "ELECTRONIC SEAL"

The transportation security system "Electronic Seal" is one of the reliable means of monitoring the integrity of cargo passing through the territory of a country. This system also allows to monitor and track the route of movement of goods during shipping by any kind of transport.



## MAIN COMPONENTS

- Central database
- Workplaces of personification at customs points
- Electronic seals (*for more details, see the section "Products. Devices. Smart things"*)
- Mobile terminals

### *Specially developed software allows:*

- Adjust the frequency of sending data from the electronic seal to the center
- Monitor the status of the seal
- Instantly record violations
- Receive information about the location and route of movement of cargo

### *When developing the system, the following features were taken into account:*

- Functioning throughout the entire country
- Availability of portable and mobile means of access to information resources
- Availability of means of access to information in real time
- Availability of information protection from interception and unauthorized use
- Inspection of transport documents and installed electronic seals
- Easy operation and no special skill requirements for personnel

## FUNCTIONAL CAPABILITIES

### *Installation and commissioning of electronic seals*

- Checking the integrity and authenticity of electronic seals by reading a unique ID number and checking with the Central Database
- Verification of data compliance in transport documents and in the Central Database
- Record keeping and inventory of electronic seals and sealing objects
- Identification of facts of unauthorized access to the cargo, such as attempts to open the seal, tearing the seal from the surface of the cargo, impact on the container of the cargo (eg lifting the container)
- Logging of requests to the central database
- Generation of various reports (detailed reports for the selected period on the specified parameters)



*The process of functioning of the system at the entrance:*

- During the procedure of customs clearance of goods upon entry into the territory of a country, the number of seals required for installation at this Sealing Facility is determined.
- At the workplace of the customs inspector, using a special radio-reading device, unique ID-numbers of electronic seals are read. These seals are installed on the Sealing Facility.
- After installing electronic seals, their unique identifiers are transferred to the Central Database.
- The vehicle and driver data, cargo accompanying information, unique identification numbers of electronic seals are recorded through the mobile terminal with the subsequent transfer of all information to the Central Database.



*The process of functioning of the system at the exit:*

- The customs inspector reads the necessary information from the Central Database through the mobile terminal.
- If violations are detected, the seals are declared as "opened unauthorized". In such cases, the goods are handed over for detailed inspection, and the customs services carry out measures provided by law.



The "Electronic Seal" system significantly simplifies and speeds up customs procedures at checkpoints. This system allows to exclude the possibility of falsification during the passage of customs control points, and also contributes to improving the safety of the freight itself.



# ELECTRONIC EDUCATIONAL SYSTEM "SMART SCHOOL"

The electronic educational system "Smart School" is a system for teaching knowledge and skills using digital technologies. The main purpose of introducing the system in schools is to create a friendly (comfortable) information educational environment based on the use of modern information and communication technologies.

The Smart School system belongs to the category of automated information systems. Technically, the System is implemented as a software and hardware complex, including its information support, which can be functionally divided into the following components:

## e-library

- Registration System
- Electronic catalog system
- Advanced Search System
- Order system
- Book purchase and download system
- System of buying and downloading videos
- Purchase and download system of educational models and other manuals
- Library monitoring system, etc.

## Information Retrieval and Reporting System

- Program review and show lesson schedule
- Retrieving various student data
- Receive various class data and reports
- Obtaining various data on test exams and reports, etc.

## Monitoring system

- Create and control class schedules
- Analytical reporting system
- Student performance
- Grade pupils
- Test Exam System
- View the lesson in real time
- Dispute Resolution System
- Health monitoring
- Services
  - order in school canteen
  - school bus
- Ad system



## Internet portal

- General information about the school
- Classes, graduates, teachers
- Video archives
- lesson schedules
- School and grade indicators
- Announcements
- Events, etc.

## Smart classroom

- e-book program
- e-notebook program
- Programs for solving a thematic problem
- e-diary program
- e-Exam program
- e-Journal program
- lesson management program
- Attendance control
- Homework system
- Interactive whiteboard and learning system
- Test system
- Distance learning system

- School Database
- School servers
- Central switch



The Smart Class combines all modules directly related to the learning process and creates a comfortable environment of equal opportunities for all participants in this process.

- **Teacher’s terminal**
  - “Electronic Journal”
  - “Attendance”
  - “Electronic textbook”
  - “Electronic Notebook”
  - “Electronic lesson”
- **Student Terminal**
  - “Electronic textbook”
  - “Electronic Notebook”
  - “Electronic diary”
  - Interactive blackboard
  - Distance Learning



An **interactive blackboard (e-Board)** is a device consisting of a touch screen, a video projector, a computer, and special software. On the e-Board it is possible to write with a special pen. The system allows you to display any materials from the e-Library (textbooks, manuals, pages from student’s notebooks, videos, 3D animations, images) on an e-Board and work with them. The electronic board keeps all information written on it and allows scrolling

pages in any direction.

The **e-Textbook (e-Book)** allows to download any electronic textbooks and other educational materials from the Electronic Library.

**Main functions:**

- Create your own e-Book shelves with the placement of downloaded materials
- Displaying electronic textbooks with the ability to go directly to any page
- Turning pages of the textbook (with imitation of paging paper book)
- “Mark” of any page, paragraph, word and quick search using these marks, etc.



**e-Notebook** provides the following features:

- Handwriting using a special pen (if necessary, handwritten text can be converted to typed text)
- Completion of all the tasks by the student, including homework, directly in the electronic notebook
- Check by the teacher of electronic notebooks (assessment of the student’s decisions, notes using the “red pen”), etc.



The **e-Journal** performs the following functions:

- Register attendance in lessons
- Registration of homework results
- Record student grades (with item indication mark)
- Automatic registration of lessons learned

The **e-diary** displays a schedule of student’s lessons, teachers in each lesson, attendance in all lessons, homework assignments, and grades received in class. The student attendance records are also supplemented by an assessment of the “level of participation”. “Participation level” has such criteria as: “arrived on time”, “late”, “did not come”, “left early”.





## “ELEKTRON KİTABXANA” SİSTEMİ

The electronic library (e-Library) of an educational organization is an information system that allows for the reliable storage and efficient use of educational, scientific, technical, artistic and literary electronic documents (text, image, multimedia, etc.) localized in the system itself, and also available through telecommunication networks.



The main objectives of creating an electronic library of educational organizations

- Ensuring greater availability of information for students and teachers
- Expanding the ways of storing and enhancing educational and methodological materials
- Improving the comfort and efficiency of the learning process

### FUNCTIONAL CAPABILITIES

- Registration of users for the purpose of providing them with e-Library resources according to their status
- Creation and maintenance of alphabetically and thematically sorted catalogs of the e-Library resources, following the relevant rules and standards
- Electronic video library (multimedia lessons, educational and other programs in accordance with established standards)
- Advanced search for the required material in multiple languages
- Purchase and download of books, videos, visual teaching materials (educational posters, tables) from external and internal sources with the subsequent loading of these materials into the e-Terminal of teachers and students
- Library monitoring

## 3D VIRTUAL MUSEUMS

Modern technologies of virtual reality and 3D visualization are the element base for building new generations of multimodal human-computer interfaces that allow to create simulators, interactive learning virtual environments, virtual prototypes, various advertising and marketing solutions. With the help of these technologies, the company IDRAK Technology Transfer has developed projects with the aim of preserving the country's historical and cultural heritage, popularizing and promoting Azerbaijani culture throughout the world.

- Creation of three-dimensional photo-realistic models of museums, historical and architectural monuments. When creating these models using 3D scanners and stereo photography technology.
- Creating virtual tours of these objects via the Internet. These virtual tours allow you to visit museums sitting at a computer, contemplate exhibits, be a witness to historical events.
- Creating a 3D catalog of museum exhibits (including museum vaults)



## SYSTEM "SAFE CITY"

"Safe City" is a comprehensive system for ensuring prompt and proper response to events, decision support, and human, expert and technical resources management during emergencies and crises. The Safe City system is interconnected with existing security systems and performs the function of coordinating actions between these systems, and provides an integration platform for information exchange.

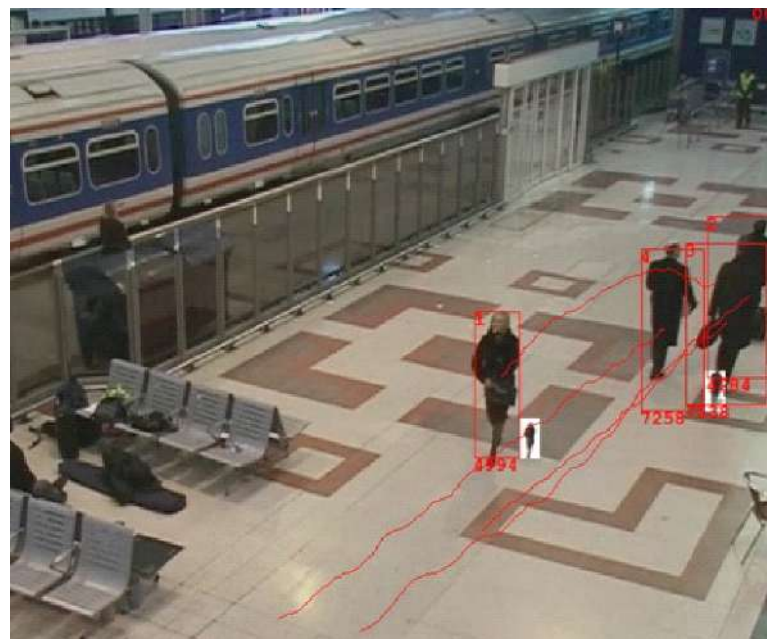
### VIDEO SURVEILLANCE

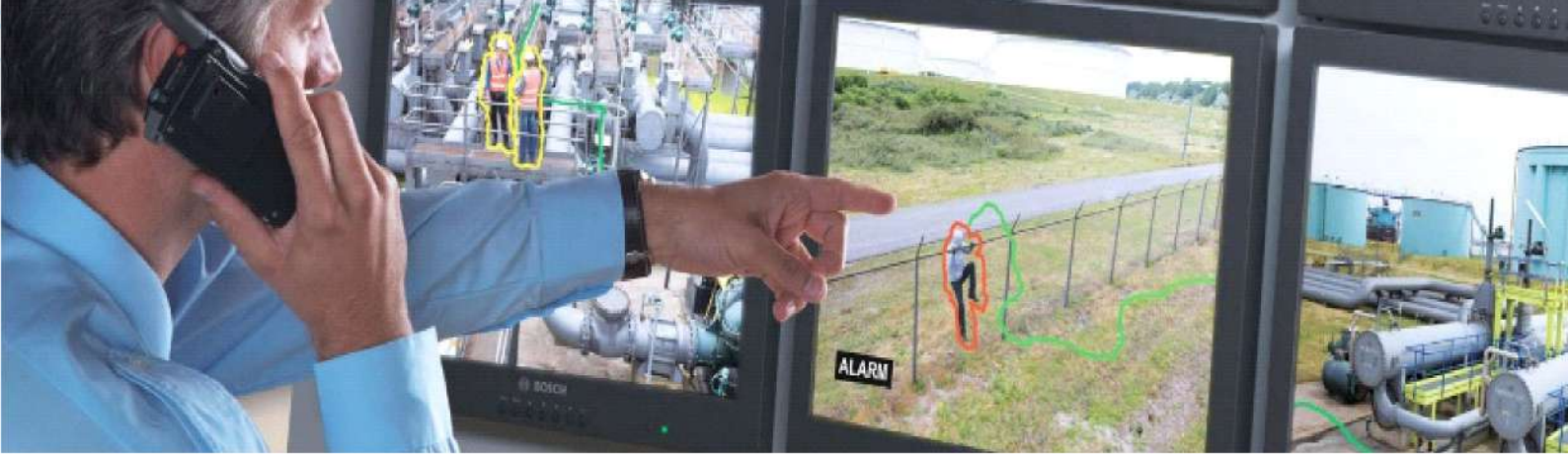
Video surveillance is one of the most effective and basic methods for ensuring security by technical means.



### FUNCTIONAL CAPABILITIES

- Display on the digital map of the location of surveillance cameras
- Ability to analyze audio and video data by various algorithms
- Providing access to the archive to users within their authority
- Add and install analytic modules
- Connection of the module "Biometric identification"
- The possibility of on-line broadcasting of audio and video data
- Ability to visualize the results of video analytics
- Archiving audio and video streams, indexes and analytical data
- Ensuring viewing of the archive with the ability to search for video segments under certain conditions
- Ability to export archived data in various formats





## VIDEO ANALYTICS

Video analytics - hardware-software or technology for automated data collection based on video analysis of images received from video surveillance cameras in real-time or from archived records of the "Data Center".

The purpose of the video analytics subsystem is:

- Automatic detection and identification of an object (person, group of people, vehicle), alarm events (smoke, fire)
- Motion detection in surveillance areas
- Maintaining audio and video archives
- Archiving of event metadata
- Verification of logged information with the archive
- Ability to search for events in the archive (for example, by date and time, camera number)



## BIOMETRIC IDENTIFICATION

The subsystem "Biometric identification" is designed to recognize citizens by the photograph of a person in real time. Identification of the person occurs by comparing images obtained from surveillance cameras with registered lists (databases of template images) of photographs of citizens.

The subsystem contributes to the following:

- Prompt identification of public order offenders and wanted persons
- Increased crime detection
- Timely adoption of security measures and prevention of possible terrorist acts in public places

## FUNCTIONAL CAPABILITIES

- Simultaneous capture of images of all persons in the field of view of a video camera
- Image identification using biometric lists
- Registration of captured face images in relevant databases
- Automatic capture of images of the faces of all people passing through the video control zones for the purpose of subsequent analytics of the trajectories of a person's movement along one or more objects of observation
- The possibility of achieving a subsystem response time of not more than one second
- Connect and use an unlimited number of image capture sources

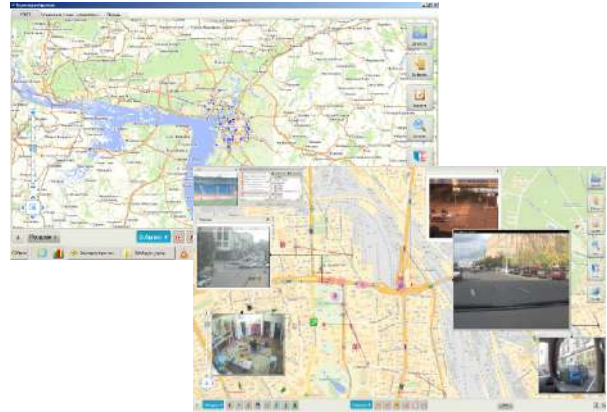


## SYSTEM "SAFE REGION"

The "Safe Region" software and hardware complex is designed to create multi-level security systems, monitoring and management for various ministries and departments on the basis of a geographic information system (GIS) in order to increase the efficiency of managing the forces and facilities of a city or region, as in emergency situations (terrorist, criminal or man-made), and in everyday life conditions. Regional dispatch centers of the system, Situational centers of state authorities, Crisis Management Centers of the regions, departmental specialized dispatch centers (Ministry of Internal Affairs, Ministry of Emergency Situations, etc.) can be created on the basis of the "Safe Region" software and hardware complex.

### EVENT REGISTRATION

The "Events registration" subsystem makes registration of events based on data from such sources as the "Call Center", "Alarm", "Video Surveillance" subsystems and an on-call control panel.



### FUNCTIONAL CAPABILITIES

- Registration of all calls received in the "Call Center" subsystem
- Registration of signals received from video surveillance cameras, sensors of the subsystem "Signaling" and the operational communication console
- Detailed account of events (date, time, address, type of incident, etc.)
- Determination of the type of event - explosions, fires, gas accidents, invasion of apartments or theft, kidnapping, traffic accident, fire of objects and premises, terror, rape, etc.

### VISUALIZATION OF EVENTS

The event visualization subsystem provides:

- Positioning on a digital city map the location of the subscriber or other device from which the call was made or received a signal
- Display of the operational situation of a registered event on a digital city map
- Obtaining information about the incident area and all objects located in the area
- Ability to build a travel route between specified objects
- Display of the results of modeling of complex situations (for example, the estimated areas of flooding or spread of fires)



## CONTROL OF THE IMPLEMENTATION OF THE DECISIONS

The "Monitoring the implementation of decisions" subsystem monitors the progress of processes for the elimination of recorded events and the elimination of their consequences. Information is exchanged with the relevant authorities on the results of the response. All event data is processed and transmitted to the "Data Center" for safekeeping.

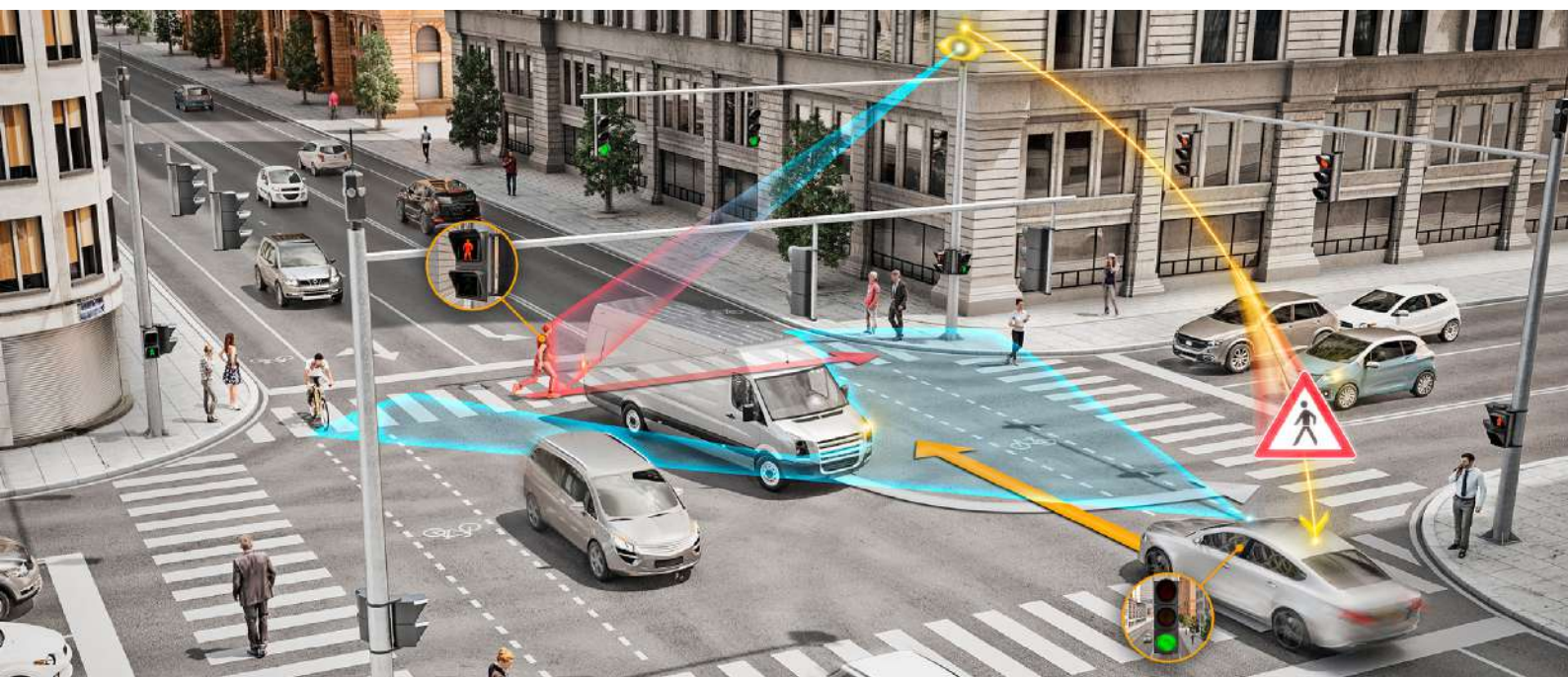
Due to the capabilities of these subsystems, no event is left without proper attention. There is a maximum automation of the work of operators, event registration cards are automatically compiled and filled out. Also, statistical reports are automatically generated based on current and historical data on incoming requests, signals, false events, methods used and typical response scenarios.

## PROTOCOLATION OF ROAD ACCIDENTS

The subsystem "Protocolation of road accidents" is designed to automate and speed up the process of drawing up protocols for road accidents. The subsystem facilitates the work of the traffic police by quickly and efficiently registering the places and participants in the accident.

## FUNCTIONAL CAPABILITIES

- Designation of the location of the event on the map or its description by selecting the address
- Adding information about the date, time and place of the incident, vehicles and accident participants
- Representation of the moment of a crash in an animation view
- Adding photos from the scene by using cameras
- Recording of the "Situation Center" data to the protocol on the specified event
- Recording of witnesses and accident participants in the protocol
- Adding protocol data to the "Data Center"
- Print a copy of the protocol in place using a portable printer
- Voice support with the Situation Center and other employees
- Representation of road accidents as an event in the "Event registration" subsystem
- Notification of the subsystem "Event monitoring, processing and decision-making" after eliminating the consequences of road accidents



# MONITORING SYSTEM FOR PURE WASTE "CLEAN CITY"

The main goal of the "Clean City" system is to ensure comprehensive monitoring of the cleanliness and environmental condition of a city.

## FUNCTIONAL CAPABILITIES

- Optimal placement of urns
- Optimization of routes and schedules for collection and removal of household waste
- Monitoring of collection and removal of household waste in real time
- Operational control of waste disposal
- Preparation of daily, monthly, quarterly and annual reports

## TECHNICAL SUPPORT

The creation of this system is based on the use of digital maps, a central database, geographic information systems (GIS), GPS (Global Positioning System) tracking and other advanced technologies. The Clean City system consists of the following components:

- Waste bins
- System and technical equipment for household waste collection
- Digital monitoring system

### Waste bins

#### Requirements

- Small and medium size
- Attractive and aesthetic design
- Simple and quick waste disposal process
- No noise, unpleasant smell and pollution of the area when removing waste from the urn
- Using waste bins to promote cleanliness
- Təmizliyin təbliği məqsədi ilə qablardan istifadə olunması

### Types of urns

- Simple, one-piece or two-piece bins
- Ballot boxes on which advertisements and billboards are placed
- Urns on which the monitor is located
- Electronic and / or automatic waste bin



### Machines

Due to the narrow streets of the city, as well as the importance of ecological purity of the habitat, three types of machines are used:

- Electric powered two container scooters - for municipal level
- Electric powered six container mini trucks - for municipal level
- Trucks for the transport of large containers - for the urban level

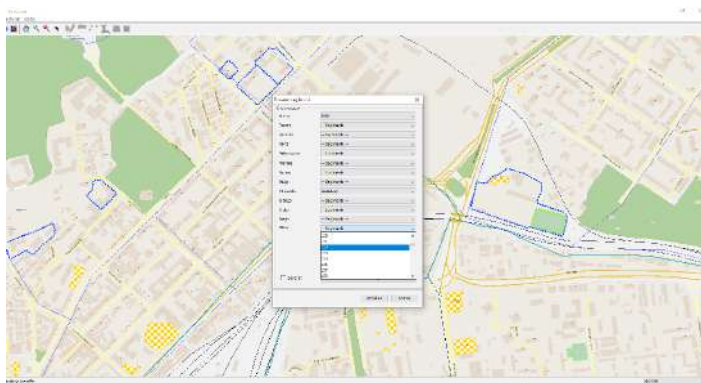
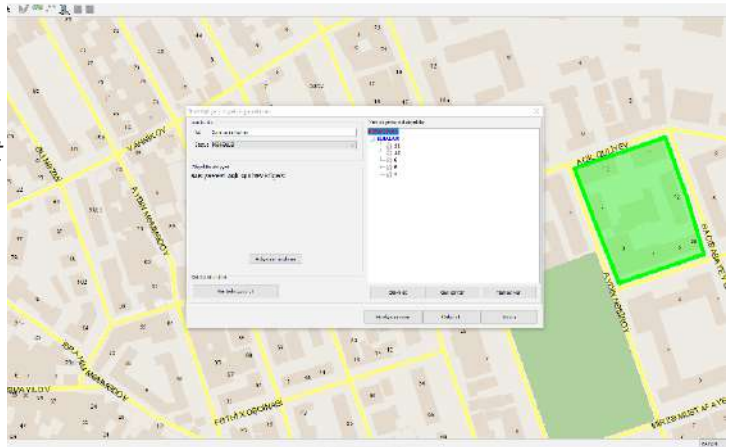
# ADDRESS REGISTER

The "Address Register" system is a structured electronic registry system containing information about existing addresses. The system is designed to uniquely identify all address objects in a single system. Each address object, when entered into the system, is assigned a unique identifier, which does not change when performing various operations on this object (for example, changing the name or ownership of an object). In the system, you can search for the mailing address by address identifier, or vice versa - search for the address identifier by mailing address.

Address is a structured description that uniquely identifies the address object and shows its location in accordance with the established form. The objects of the address registry are such objects as the region, city, village, district, block, street, lane, building, apartment.

## FUNCTIONAL CAPABILITIES

- Ensuring that new address objects are entered correctly - check for the presence of other similar objects in the same geographical area when adding a new address object
- Change information about an existing address object:
  - Modify the naming of address objects
  - Change of ownership of a building or other address objects to a specific element of the street network
  - Combining multiple address objects
  - Splitting an address object into several parts
  - Changing geometric parameters of objects
  - Maintain history of changes in address registry objects, the ability to restore previous addresses
- Ability to use universal queries, etc.



The "Address Register" system helps to simplify the process of address search by citizens, central and local executive authorities. This, in turn, creates the conditions necessary to ensure efficiency in the operation of various systems such as ambulance, mail, utilities, as well as in the event of an emergency.

An abstract graphic of a circuit board pattern in white lines on a dark teal background. The pattern consists of various lines, nodes, and circular components, resembling a complex network or data flow. The lines are of varying thicknesses and some nodes are highlighted with larger circles.

PRODUCTS  
DEVICES  
SMART THINGS



## COMPUTERS “ALL IN ONE” – MONOBLOCK

All-in-one computer is a multifunctional device in an ergonomic package. It combines a system unit and a touch screen. This device frees the user from unnecessary wires and finding free space for bulky system blocks.

### FEATURES

- Full set of standard connector ports
- Availability of various touch screen modifications
- Selection of various system unit configurations
- WiFi / Bluetooth
- Compactness and convenience

The functionality of the monoblock can be expanded by connecting the following additional equipment:

- External display
- Contact and contactless card readers
- Barcode Readers
- Fingerprint scanners, etc.

The presence of various modifications ensures the use of this solution in completely different operating conditions. Monoblock can be used as a point for online promotions, in retail, hotel and restaurant business, etc.



## BIOMETRIC TERMINAL

The biometric terminal is an innovative solution characterized by mobility, versatility and data security. The device is designed to collect biometric and personal data in compliance with all information security requirements. The biometric terminal collects the necessary information (personal data, digital images of the face, iris, fingerprints and signatures, etc.) during one session.

### FUNCTIONAL CAPABILITIES

- Receiving high-quality and clear face image in accordance with international standards
- Camera position adjustment based on client growth
- Obtaining a detailed image of the iris
- Reliable fingerprint scanning
- Capturing of customer signature image
- Ensuring registration of personal and biometric data in case of need for rapid deployment (for example, in case of impossibility of citizens visiting stationary centers)
- Ability to work both from stationary power sources and autonomously

### TECHNICAL SOLUTION

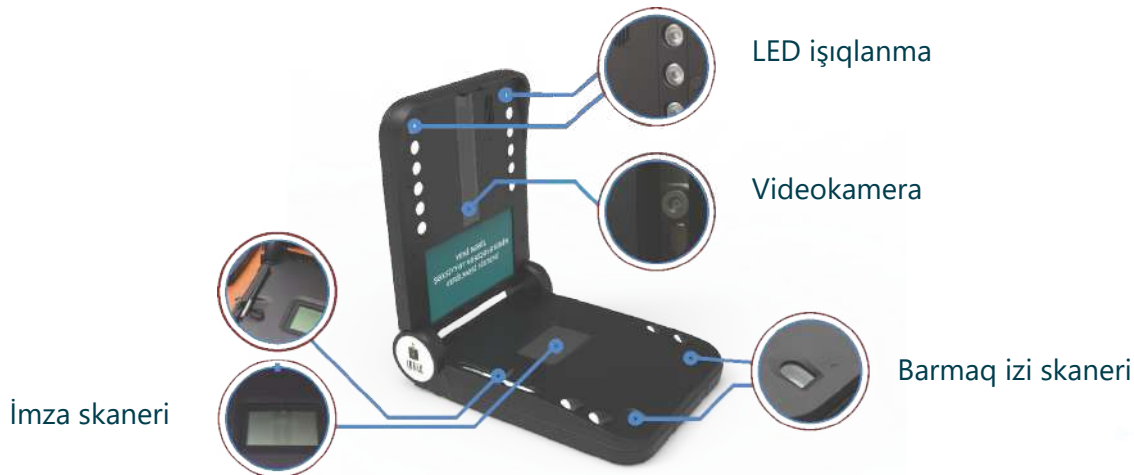
- Industrial computer
- Touchscreen display
- High resolution camera
- Mechanism of vertical camera movement
- LED backlight
- Iris scanner
- Fingerprint scanner
- Signature scanner

### FEATURES

- Convenience and ease of use
- Easy maintenance
- Modular and modern design
- On-site replacement of components
- Simple equipment upgrade and replacement
- Installation of optional components

Expansion of the terminal's capabilities is provided by connecting various equipment, for example, a keyboard, a manipulator, a full-page scanner of machine-readable documents, contact and contactless smart card readers, a laser printer, etc. With the help of special software, a qualitative assessment of the captured images can be performed.

The combination of weight and low center of gravity allows the device to maintain a stable position on the surface of the table. The biometric terminal provides opportunities for processing applications for biometric passports, identity cards, driving licenses and other documents.



# BIOMETRIC KIOSK

Biometric kiosk is designed for self-registration of personal data and individual biometric characteristics of the user. The kiosk allows collection and registration of identification data in the self-service mode in compliance with all information security and confidentiality requirements.

## FUNCTIONAL CAPABILITIES

- Taking a biometric photo of a face
- Capture images of persons of different height
- Obtaining a quality image of the iris
- Fingerprint scanning
- Creating a handwritten signature as a digital image
- Full-page document reading
- Cashless / cash payment options
- Barcode reading
- Printout of check, barcode



## TECHNICAL SOLUTION

- Industrial computer
- Touch Screen Monitor
- Built-in high resolution camera
- The mechanism for adjusting the vertical movement of the camera
- High resolution iris scanner (IRIS)
- Fingerprint scanner
- Signature scanner
- Full-page document reader
- Bank card reader with pin-pad device
- Thermal printer
- Keyboard
- mouse
- Cash-in devices (bill acceptor)
- Barcode scanner

## FEATURES

- Ergonomic
- Modern design
- Convenience and ease of use
- Intuitive and multilingual user interface

The kiosk configuration can be adjusted depending on customer requirements or scope of application. A biometric kiosk is used to process applications for documents such as biometric passports, electronic ID cards, and driver's licenses.

## MOBILE BORDER GUARD

The "Mobile Border Guard" is intended to carry out border control in conditions that require a border service officer mobility and ease of movement (for example, for use on board of a ship, in train cars, at airports when making freight and transit flights).

The "Mobile Border Guard" is a mobile workplace for a passport control officer based on a portable device. The device is designed to carry out procedures for monitoring and registering persons and vehicles crossing the state border. Mobile Border Guard provides checkpoint personnel with the ability to read and recognize text, biometric and graphic information from passports and other identification documents.



### FUNCTIONAL CAPABILITIES

- Scanning and recognition of machine readable zones (MRZ)
  - Reading data from electronic contactless carrier (RFID)
  - Verification of compliance of data from machine readable zones and electronic carrier
  - Capture high-quality face images, simultaneous fingerprint capturing
  - Ensuring compliance with border control procedures, for example;
- *Control of the relevance of travel documents, checking their completeness*
  - *Transfer of read information to a central server*
  - *Verification of installation data on entry / exit restrictions and checklists of international organizations*
  - *Notification of the relevant authorities in case of coincidence with the above lists*

In normal mode, mobile workplaces operate online, exchanging information with the server components of the border control system. In cases of lack of communication channels or in exceptional cases of failure of the central part of the system, the Mobile Border Guard switches to offline mode. In such cases, only data collection and basic validation of the entered data (eg, validation of the validity of documents) is carried out.

### TECHNICAL SOLUTION

- Full-page document reader
- High resolution video camera
- Scanner for simultaneous capturing of two fingerprints
- 10" touch screen

### FEATURES

- Compact and light weight
- High stability and tightness of the case
- Wide operating temperature range

The software and hardware of the Mobile Border Guard provide long-term autonomous operation, which makes this device indispensable in case of need for on-site passport control. All equipment and software is developed in full compliance with international standards.



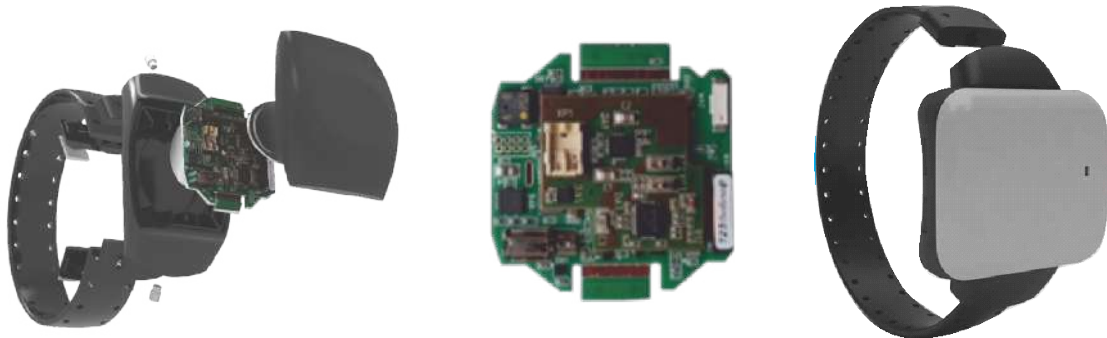
# ELECTRONIC BRACELET

The electronic bracelet is used for the implementation of continuous remote monitoring of controlled persons. The electronic bracelet is a special mobile (wearable) device that is attached to the leg of the person under control. The bracelet is designed for continuous wear.

There are two types of electronic bracelets - standard and stand-alone bracelets. Depending on the mode of operation, the standard bracelet is connected to the base station and the RF sensors (home arrest mode) or to the mobile surveillance device, the base station and the RF sensors (restraint mode). The stand-alone bracelet contains built-in GSM and GPS modules for data exchange with the Central Monitoring System, which thereby makes it possible to carry out surveillance and tracking without using an additional mobile surveillance device. Electronic bracelets of both types are made in accordance with the degree of protection IP68 (Ingress Protection Rating - the degree of protection against penetration).

## FUNCTIONAL CAPABILITES

- Transmission of current data on the status of the bracelet and its belt
- Determination of the location zone and the trajectory of movement of the controlled person in real time (stand-alone bracelet)
- Data exchange with the Central Monitoring System via secure communication channels (stand alone bracelet)
- The possibility of wireless charging and others



## INTEGRATED COMPONENTS

- Sensors for monitoring the integrity of the bracelet and belt removal
- Sensor of unauthorized interference with the work process
- Bluetooth transceiver
- Accelerometer, gyroscope, vibrator
- GSM and GNSS modules (stand-alone bracelet)

## ÖZƏLLİKLƏRİ

- Water resistant
- High impact construction
- Hypoallergenic belt
- Wearing comfort
- Easy to fasten / remove

# ELECTRONIC SEAL

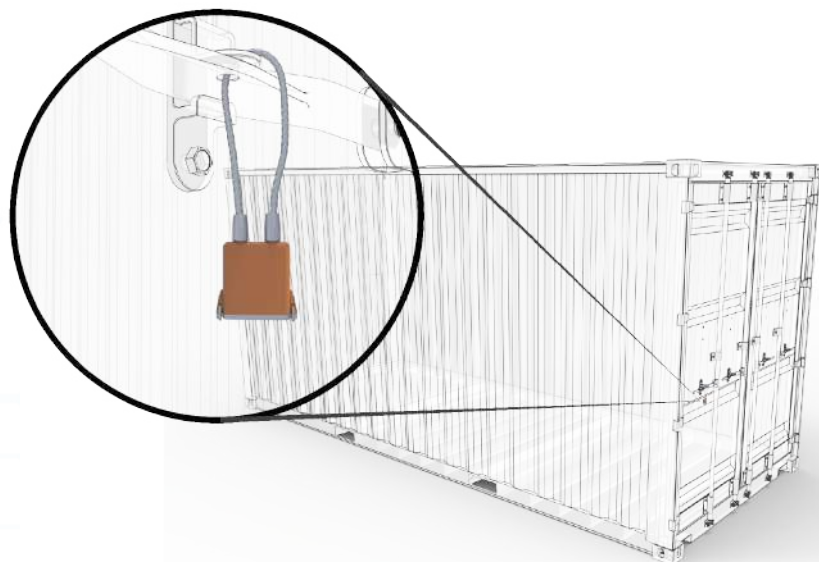
An electronic seal is a small device in which are embedded:

- Radio readable chip (RFID chip)
- Bluetooth transceiver
- GPS / Glonass positioning module for positioning
- Communication module (GSM / GPRS) for communication, etc.

Each seal has a unique identification number (ID number) and a locking cable, which is an optical fiber encased in a protective sheath. Electronic seals have a high degree of protection against fraud and a reliable system for detecting an opening.

To detect unauthorized impacts on a cargo container without opening electronic seals (for example, lifting a container), special sensors (gyroscope and accelerometer) are provided.

Electronic seals provide the ability to record and read cargo data, as well as other information necessary for customs clearance and control.



## FEATURES

- Shockproof and hermetic case
- Opto-electronic locking cable
- Operating mode -  $-40^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$

## KIOSK FOR QUEUE REGISTRATION

The queue registration kiosk is the equipment designed to record citizens in the "live" queue. Installed in institutions providing services to the public, for example, in banks, clinics, post offices. The citizen selects the desired service from the displayed list of services or organizations. Services may be displayed as a drop-down list. The kiosk has a vandal-proof case.

Specialized kiosk software provides a convenient and user-friendly interface. If authentication is required, the kiosk monitor displays information on the need to verify an identity card or other machine-readable document. The monitor displays pictures or video showing the registration procedure. The citizen applies his document to the reader in the specified order. If there is no need for authentication, the citizen is enrolled in a queue for the chosen service without presenting a document. The screen displays the following information, which is printed as a ticket:

- Institution name
- Service name
- Queue number
- Date and time of printing

### TECHNICAL SOLUTION

- Embedded computer (Intel® Atom processor, Celeron)
- 17" touchscreen monitor
- Document reader (MRZ OCR)
- Thermal printer
- Card reader (DUAL Interface, optional)
- Barcode scanner (optional)
- Ethernet
- GPRS / 3G modem
- WiFi

The electronic queue check-in kiosk helps to create a sequence in the queue and prevents the loss of time.



## SMART TRAFFIC LIGHT AND SIGNS

Smart traffic lights and road signs provide centralization and automation of the entire network of traffic lights and road signs in the city — independently collects up-to-date information on traffic congestion, car stop time at intersections, and traffic statistics at certain times of the day or days of the week. Information coming from smart traffic lights is accumulated in the controller of traffic lights groups and the system, connecting to the center, sends information about incidents, the status of the situation and the video image to the "Data Processing Center". Then information is exchanged between the Intelligent Transport System and the Situation Center, which are integrated with the Safe City system. With the help of a built-in camera, each traffic light sends information to the Intelligent Transport System about the density of the traffic flow, the average speed on the road.

Smart traffic signs are installed like traffic lights and can change their functions depending on the destination. Simple road signs consist only of LED panels and perform the function of displaying information from the Intelligent Transport System. Multifunctional traffic signs, as well as traffic lights, are additionally equipped with cameras.

### FUNCTIONAL CAPABILITIES

- Using a traffic light as an information panel (displaying additional information - for example, digital time indicator, etc.)
- Changing the status of road signs (displaying non-standard information - for example, automatic speed control depending on weather conditions)
- Management of traffic lights or a group of traffic lights
- Automatically detecting of an advantage at crossroads ("Smart Crossing")
- Enforcement of traffic rules, etc.



### TECHNICAL SOLUTION

- Compact mini computer
- LED (LED) flash
- RFID reader
- Security Camera
- Modem for connecting to your infrastructure
- Controller

Smart traffic lights and road signs play an important role in the regulation of the road network and road users. Through the capabilities of the system, pedestrians, cyclists, cars and other road users will be able to move comfortably and safely.



# SMART HALT

Smart halt is designed to create maximum comfort and safety of travel on public transport. This complex contributes to a wider use of public transport by the population and reduces travel by personal transport, provides passengers with a range of quality services at the bus stop.

## FUNCTIONAL CAPABILITIES

- Display on the map of the current location of the vehicle on the route
- Display on the map of the general route of buses and all the stops through which they must pass
- Informing about routes and bus schedules
- Real-time vehicle arrival time reporting
- Information about the numbers of public vehicles passing through the stops
- Informing on changes in itineraries and travel fares, on emergency situations
- Identification of the optimal route on the map to the destination for residents and guests of the city
- Map of the city or areas made on the basis of the description of public transport stops, metro stations and socially important objects and organizations
- Address and telephone number of socially important objects and organizations of the city



## TECHNICAL SOLUTION

- Interactive touch dashboard
- Security Camera
- Emergency call button
- IP telephony (for emergency services)
- Payment terminal
- Taxi order panel
- Medical kiosk

# SMART NAVIGATOR

Smart Navigator is designed to facilitate route orientation (especially in unfamiliar terrain) by entering the final destination. This ensures that the optimal route to the selected object is automatically displayed on the map. The task of the navigator is to lay out and maintain the optimal route to the selected object, taking into account traffic rules, to provide a convenient choice and the ability to search for the address of the desired object, as well as a quick search for objects such as POIs, pharmacies, cinemas, parks, recreation areas, etc. .

## FUNCTIONAL CAPABILITIES

- Choosing a route to the address of the end point (street name or house number, POI, etc.)
- Touch and voice control
- User selection of a route from several options
- Voice support of the route
- Use basic set of embedded road maps
- Using 2D / 2.5D / 3D maps
- New route calculation on exit from current
- Display warnings using information on road signs and road restrictions
- Accurate positioning data from satellite signals in difficult environmental conditions (high-rise buildings, leafy trees)
- Selection of the closest object among other objects of the same type
- Transmission of information about the coordinates, speed and direction of movement to the monitoring center (as a tracker)
- Request and receive new versions of maps and programs via communication channels (Internet)
- Interactivity - obtaining information from various sources (eg, from online maps)
- Receiving and periodically updating information on the state of traffic, accidents, repair and restoration work
- Traffic sign recognition and driver warning about violation of their requirements
- Calculation of coordinates using software, an electronic accelerometer and a compass in places where signals from satellites do not come in or are weak



The smart navigator provides convenient planning and obtaining detailed information about the route on the map to the desired object, fast laying of the optimal path, selection of an alternative route, detour traffic jams and obstacles along the route.

## TWO-SCREEN TABLET COMPUTER WITH PEN

A key feature of the design of this device is the presence of two displays, which are interconnected in the form of a two-page book. Each part of the device is equipped with a touch screen with a protective glass and can function as an independent tablet.

This tablet combines the capabilities of both traditional typing on a keyboard and handwritten letters (or drawings) using a special pen (stylus). Convenient virtual keyboard (in combination with the function of auto-complete and correct) provides maximum efficiency when typing.

If necessary or at the request of the client, one part of the device can be equipped with a display created using e-ink technology (information display technology designed to simulate conventional printing on paper). The display is based on electronic ink provides the comfort of reading the text, as well as low consumption of electrical energy.

The double-page tablet also has additional features such as:

- Combining two device displays into a single screen
- Dynamic separation of a screen into several parts (picture-in-picture function)
- Output on each screen separately the results of different (independent) applications, etc.

### TECHNICAL SOLUTION

- Qualcomm Snapdragon 625 / ARM Cortex-A53 64-bit processor (Octa-Core) / 4 Gb RAM
- Built-in 32 Gb + microSD memory
- 2 multitouch touch capacitive screens
- Wireless 3G / LTE / WiFi / Bluetooth
- Satellite GPS / Glonass positioning
- USB Type C (for charging and connecting peripheral devices)
- SIM card slot
- Built-in speaker and microphone, camera (optional)
- O / S Android



### FEATURES

- Ergonomic
- Ultra-compact (slim and lightweight design)
- Stylish and modern body
- Support fast charging
- Long-term battery life

This portable device is provided for use:

- As a universal student terminal - use of program modules of e-textbook, e-notebook, e-diary (for more details, see the description of the "Smart School" system)
- As a universal teacher terminal - the preparation of educational materials, maintaining e-journals (for more details, see the description of the "Smart School" system)
- For a student - taking notes, reading books, magazines, etc.
- For office work - as a diary, reading books, documentation, etc.
- For multimedia entertainment - watching movies, listening to the radio, etc.

# INDUSTRIAL COMPUTER

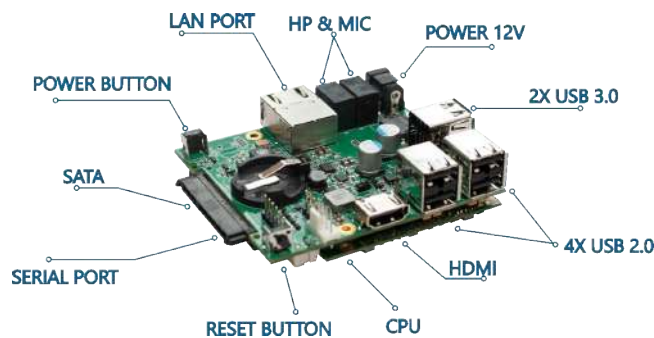
Industrial computer has a higher reliability compared to its office counterpart and can be used to solve the most important tasks that require round the clock work. High reliability along with maintainability and unpretentiousness allow reducing downtime, undesirable for any field of activity. At the same time, the rather long terms of the mean time between failures are embedded in this industrial computer. Recovery time, determined by its architecture, is significantly lower compared to conventional computers and is less than 30 minutes. This, in turn, also reduces the downtime of the information system in the event of equipment breakdowns and significantly reduces financial costs.

IDRAK Technology Transfer offers solutions developed on the basis of two industrial computer models.

## TECHNICAL SPECIFICATION

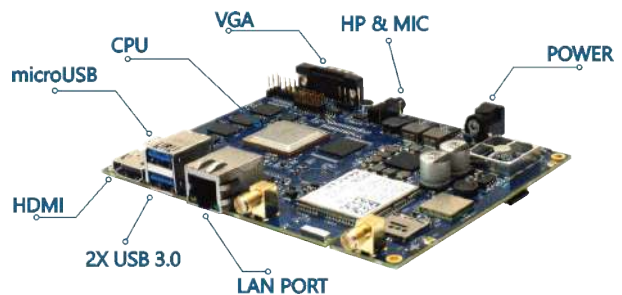
### Model 1

- Intel® Atom, Celeron processor
- Built-in DDR3L memory up to 8GB
- SPI, I2C, UART, USART interfaces
- 4xUSB 2.0, 2xUSB 3.0
- HDMI and AUX media ports
- Ethernet Port 1 Gb / s
- Smart Battery Support



### Model 2

- ARM processor
- Built-in DDR3L memory up to 4GB
- SPI, I2C, UART, USART interfaces
- 2xUSB 3.0, microUSB
- HDMI and AUX media ports
- Ethernet Port 1 Gb / s
- SIM slot (GSM)
- GPS
- microSD
- Smart Battery Support
- O / S Android



## FEATURES

- Resistance to temperature conditions - from -40 ° C to + 85 ° C
- High performance
- Low power consumption

The unique functionality of these industrial computers, developed by leading specialists of our Company, is successfully used in areas very far from production and not characterized by difficult operating conditions.

An abstract graphic of a circuit board with white lines and nodes on a dark teal background, located in the upper half of the page.

Start UP

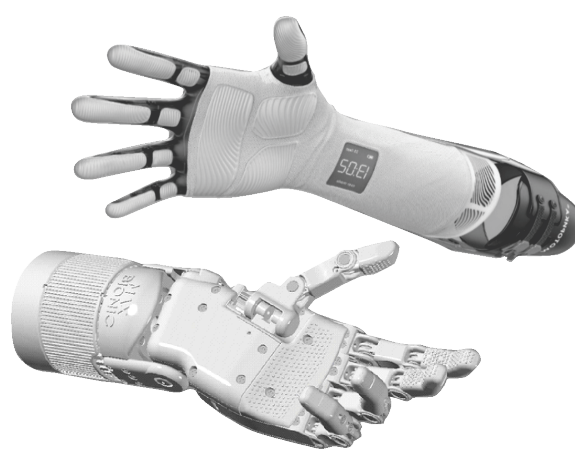
## BIONIC ARMS

The essence of the project is to simulate the musculoskeletal system of the human body and the neural processes that govern it. A special system registers the signals of the nervous system of patients, recognizes them and sets in motion the corresponding parts of the prosthesis.

The owner of the bionic arm can move his artificial arm and hand, move each individual finger. Fingers open and produce prehensile movements. The control of the hand is carried out with the help of electrical impulses received from the remaining parts of the amputated limb.

The prostheses themselves are modular, which provides a disabled person with many additional functions — for example, the user can quickly replace the “fingers” depending on what tasks he needs. Special nozzles can be used that turn a hand into working tools.

- Bionic hands can also be embedded:
- Compact torch for lighting in the dark
  - Emergency system (ambulance, police, MES, etc.)
  - GPS / Glonass positioning system sensors, etc.



Bionic arms, controlled by artificial intelligence, perform their functions in full accordance with the desires and needs of the person. Bionic limbs greatly simplify the patient’s life by transforming him from a person “with disabilities” into a person with “enhanced capabilities”



## BIONIC LEGS

Bionic prosthetic legs recognize the signals of the patients' nervous system and transform them into appropriate movements. Bionic legs contribute to the partial "restoration" of lost limb functions and allow disabled people to return to full-fledged life. Bionic legs have enough functionality to perform various household actions. With the help of this bionic prosthesis, the rotation of the extremities is carried out, the leg moves along a certain trajectory. The owner of a bionic leg can easily change the position of his body: sit, stand, walk, climb and descend the stairs, even dance.

Bionic legs can be embedded:

- Compact torch for lighting in the dark
- Emergency system (ambulance, police, MES, etc.)
- GPS / Glonass positioning system sensors, etc.



Bionic legs, controlled by artificial intelligence, perform their functions in full accordance with the desires and needs of the person. Bionic limbs greatly simplify the patient's life, transforming him from a person "with disabilities" into a person with "enhanced capabilities".

In our models of bionic prosthetic arms and legs, modern materials and 3D printing technology will be used, which allow us to very accurately customize the device to the needs of the user in size, design, color and other parameters.



## WHEELCHAIRS

The project for the development of wheelchairs is another area related to the development of medicine. Wheelchairs make the lives of people with diseases of the musculoskeletal system more comfortable.

The wheelchairs developed by IDRAK Technology Transfer are controlled by a joystick and voice commands, they have a built-in mini-computer that turns them into a Smart Thing. The proposed strollers provide the user the ability to move on steep climbs without the help of unauthorized persons. In order to avoid possible overturning of the stroller, the technology used in gyroscooters is applied.



The wheelchairs have many additional features:

- Illumination by means of integrated headlights, incl. side lights
- Built-in emergency system (ambulance, police, MES, etc.)
- Heated seats
- Movement on stairs
- Positioning with integrated GPS / Glonass and others.



Due to its design, these wheelchair models provide a high level of safety for the user, and give him wide freedom of movement.



## SMART GLASSES

Smart glasses are designed to improve the quality of life for blind people through the introduction of advanced IT technologies.

The glasses consist of 2 video cameras mounted on a frame, a miniature computer processing unit, a GPS receiver, a mobile communication module, a microphone, a speaker, an inertial device, and software. Glasses are endowed with artificial intelligence based on neural network technology. Due to this, glasses provide the following features:



- Read any printed text and voice this text through the built-in speakers.
- Do the same with handwriting, recognizing and translating into printed/spoken text.
- To be able to read texts in any (ideally) language.
- Recognize all the details of the apartment and all the things that the owner of these glasses uses.
- Learn and recognize all elements of urban (and not only) life, houses, cars, traffic lights, telephone booths, bus routes, etc.
- At the owner's command, record everything seen in memory, with the possibility of further demonstration.
- Transfer audio / video stream to emergency center and / or family in real time, in order to receive effective help.

## SMART HEARING AID

This hearing aid is designed to compensate different degrees of hearing loss. The design uses advanced engineering solutions that provide optimal capture and amplification of sound.

New technological capabilities contribute to improving speech intelligibility, especially in the so-called "difficult acoustic situations." The comfort when using and naturalness of sound increases.

The hearing aid has the following features:

- Ensuring superior sound quality
- Bluetooth connection with a smartphone, allowing to talk on a mobile phone, as well as launch any software
- Using the device as a "notebook", etc.



Our hearing aid is also an automatic voice translator in real time and is connected to a smartphone running a special application.

# SMART BUS

A smart bus is a ground passenger vehicle complete with modern and technological equipment. A smart bus makes it easier for the driver to handle the process of transport management, allowing him to monitor passengers and processes (occurring in and around the bus). It monitors the movement of cars on the roads, provides passengers with an effective pastime, increases the ease of use of transport.

Devices are connected to the on-board computer that performs the bulk of operations using wired and wireless communication networks. Video and metadata are stored in the onboard computer for a certain period of time. In turn, the Smart Bus via communication channels is in continuous communication with the Situation Center and the corresponding system for managing passenger transport.

## FUNCTIONAL CAPABILITIES

The following modules ensure the operation of the Smart Bus.

- GPS tracking module
- GPS navigation module
- Voice control module
- Sensor Module
- Smart DVR Module
- Video analytics module
- Information module
- Fare module
- Traffic Violation Registration Module
- Collision and Accident Protection Module
- Driver control module
- Vehicle Assistance Module
- Security Module



## TECHNICAL SOLUTION

- On-board computer
- Security cameras
- Keys
- Board ticker
- Payment terminals
- GPS receiver
- Various sensors and monitors installed in the bus

Thanks to the capabilities of the Smart Bus, traffic safety on the roads is ensured, violations of the rules on the roads are automatically recorded, driving is facilitated, and comfortable conditions are created for drivers and passengers.

## SMART CAR

A smart car provides safe traffic on the roads, automatically records violations of traffic rules, facilitates driving and provides comfort for both drivers and passengers. The on-board computer of the car provides opportunities for convenient driving, creates favorable conditions for passengers, controls processes (occurring in and around the car), passengers and the movement of cars on the road.

### FUNCTIONAL CAPABILITIES

The following modules ensure the operation of the Smart Car.

- GPS navigation module
- Voice control module
- GPS tracking module
- Smart DVR Module
- Sensor Module
- Video analytics module
- Module "Electronic Protocol Traffic Police"
- Emergency Call Module
- Traffic Violation Registration Module
- Collision and Accident Protection Module
- Driver control module
- Vehicle Assistance Module
- Security Module



### TECHNICAL SOLUTION

- On-board computer
- Various sensors
- Security cameras
- Keys
- GPS receiver
- Scoreboard
- Screen

Peripherals are connected to the on-board computer using wired and wireless communication networks. The built-in equipment is controlled by the on-board computer, which also stores video and metadata, information about the path of vehicle tracking.

Smart car creates a comfortable environment for the driver and his companions in the performance of their daily or official duties.

# HEALTH KIOSK

The quality of medical care, laboratory and pharmaceutical services to the population depends largely on the use of information and communication technologies. The health kiosk provides the convenience and ease of registering patients and making an appointment with a doctor. The device also allows for initial diagnostics. The use of kiosks to prevent the emergence of queues in front of the doctor's reception.

The health kiosk provides for a process of examining a patient:

- Identification of the patient with the possibility of photographing
- Patient Health Measurement
- Evaluation of print results

The entire survey process is accompanied by video recording. The kiosk allows you to accumulate measurement data to track the dynamics of changes in the health indicators of an individual patient.

## FUNCTIONAL CAPABILITIES

- Registration of the patient's primary application
- Receive patient biometric data
- Make an appointment with a doctor
- Checkup record
- Delivery of laboratory tests
- Radiological examination
- Administrative functions
- Statistical data analysis



## TECHNICAL SOLUTION

- Sensors for measuring pressure, pulse, weight, body temperature, etc.
- Card readers (contactless and contact)
- Video camera
- Touch screen
- Printer
- UPS



## AUTOMATED TURNSTILE e-GATE

E-Gate automated turnstiles are specially equipped points that are intended for use in automated border crossing systems based on biometric technologies. This device performs automatic identification and verification of travel documents of persons crossing the border.

### FUNCTIONAL CAPABILITIES

- Automatic authentication of travel document
- Automatic reading, recognition and verification of information read from various parts of a travel document (eg, from a machine-readable zone and electronic media)
- Automatic verification of passenger's identity and document data
- Automatic identification of the identity of the passenger on the image of the face and fingerprints
- Identification by previously registered biometric indicators
- Automatic generation of decisions about the possibility of crossing the border
- Automatic recording of the fact of border crossing
- Blocking a passenger if any violations are detected
- Display on the screen of explanatory information about the rules and sequence of actions performed
- Ensuring video surveillance of a passenger's actions during an automatic checkout procedure

### TECHNICAL SOLUTION

- Document reader
- Fingerprint scanner
- High resolution video camera
- Security camera, etc.

### FEATURES

- Touch strip to protect passengers
- Providing a single pass
- Recognition of baggage and items left unattended
- Protection against unauthorized bypass



## PRECISIONAL FARMING DEVELOPMENT AND APPLICATION OF AGROBOTS

Traditional farming methods are a thing of the past, innovative technologies are being introduced in various sectors of agriculture to increase efficiency. Robotization changes the agrosphere. Agrobots help save time, energy and labor, as well as solving problems with labor shortages in agriculture.

The main areas of application of robots are soil-cultivating robotics, unmanned tractors, unmanned aerial vehicles, agrobots for the introduction of plant protection products, fertilizers and irrigation, crop cleaning robots, and others.



Pilotsuz traktor



Pilotsuz gübrələmə



Ziyanvericilərin deteksiyası



Üzümlüyün alağ otlarından təmizlənməsi



Tarla gözetçisi



Azota nəzarət

## PRECISIONAL FARMING DIGITAL GREENHOUSES

Digital greenhouses independently take care of the crop without human intervention. Smart sensors independently analyze soil, lighting, provide automatic watering, heating, watering and fertilizing. The influence of weather and negative environmental factors (protection from heavy rains and strong wind) is excluded, optimum energy consumption is ensured, which ultimately leads to an increase in the amount of harvest many times (depending on the crop grown).



3 koordinatlı universal CNC



Budağ kəsən robot



Məhsulun yetişdiyini qiymətləndirən robot



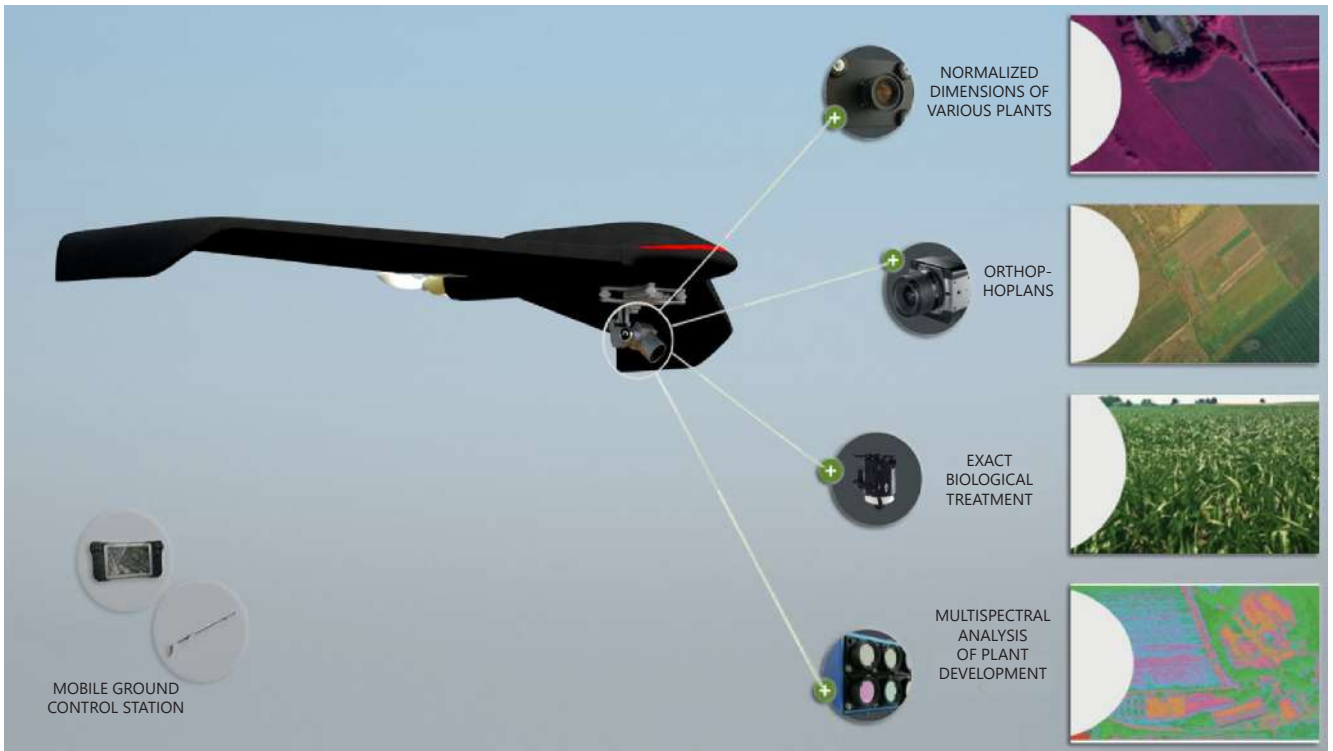
Məhsul yığan robot



# PRECISIONAL FARMING DEVELOPMENT AND APPLICATION OF UNMANNED AERIAL

## VEHICLES

Unmanned aerial vehicles (UAVs) are used in agriculture for inventory of agricultural land, monitoring the uniformity of sowing and the quality of work performed in the fields. UAVs are monitoring farmlands for the presence of flooding of the territory. The use of UAVs in agriculture provides high performance and reliability. Regular multispectral surveys allow you to monitor the growth of crops, identify areas of oppressed vegetation and violations of the sowing process, assess the condition and productivity of vegetation.



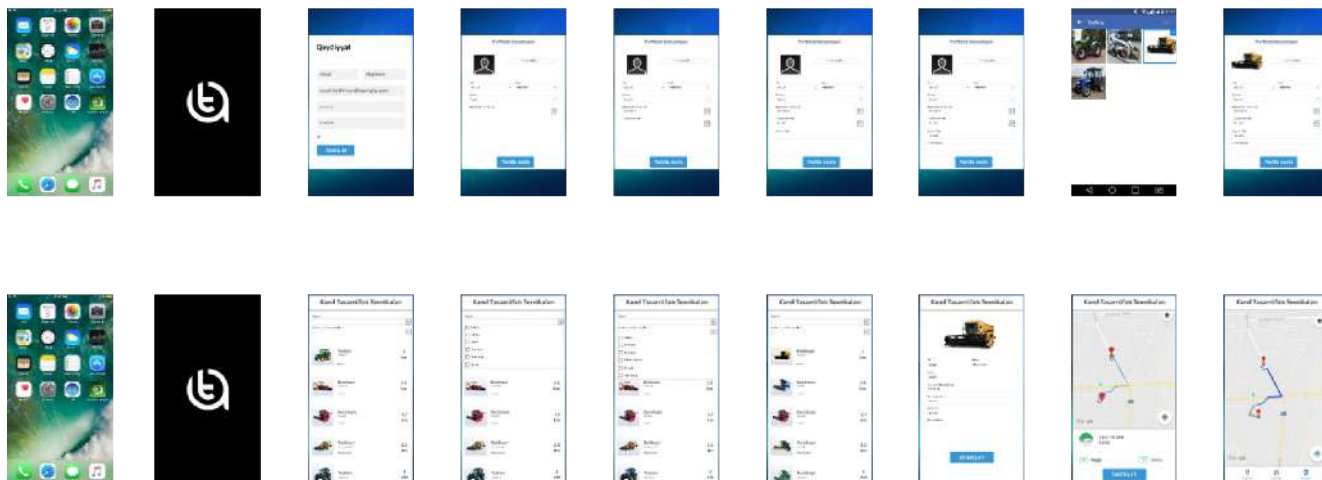
## PERFUSION WITH HIGH ACCURACY

Unmanned aerial vehicles can be effectively used to control crop pests based on collected planting data sufficient for accurate pesticide and herbicide use. The use of chemicals in the necessary areas allows farmers to save on the use of chemistry, and also saves the environment.



# AGRICULTURAL TECHNICS ON DEMAND (or UBER-ization)

As one of the most promising, a project is proposed to create a kind of aggregator like the Uber application (taxi), providing services for the provision of agricultural machinery.



## DIGITAL FARM

A digital farm is a farm that provides monitoring of animal conditions and timely implementation of necessary measures. Comprises:

- Automatic feeding systems
- Automatic watering systems
- Automatic cleaning systems
- Automatic Animal Washing Systems
- Automatic milking systems
- Temperature, humidity, air purity control systems
- Animal Health Monitoring Systems



Digital Farm also includes:

- Farm Cooling System
- Meat production workshop
- Dairy production workshop
- System of organization of food supply

In sheep farming, GPS trackers are supposed to be used to monitor herds. Work is underway to create a robot - watchman (shepherd).



## REGISTRIES OF AGRICULTURE

One of the most fundamental tasks of agricultural modernization is the creation of a registry. Moreover, ideally, registries are needed for the entire economy - for land, for animals, for equipment, etc.

Only by creating these integrated registries, assigning PIN to all agricultural objects, high-quality systems for monitoring agricultural objects and agriculture as an industry can be developed. To automate the registration and monitoring of facilities it is proposed to use radio frequency (RFID) tags and GPS / Glonass collars.

The use of RFID tags in animal husbandry, for example, will allow monitoring (vaccination, selection, etc.) from the moment of birth to death (slaughter) of an animal, which ultimately will provide the population with only quality products.

And the use of GPS collars, for example, will allow for accurate monitoring of all animals. And this, in turn, will be a serious barrier to theft and fraud. It will be impossible to "write off" animals with the words "fell into the gorge" or "bite the wolf."



## "OWN PRODUCT"

The population of cities is seriously concerned about the quality of food. And this concern is absolutely justified. More than once it is possible to hear regrets from completely different people that "... it would be very good if it were possible in the village to have a small farm, which would provide all the food once a week. It would probably be somewhat more expensive than on the market, but people would know that the products are clean - from their own yard! "

Why not turn the dreams of these people into reality. After all, tens of millions of people live in cities.

Why not let people keep their animals at Digital Farms?

Why not take on the obligation to provide high quality care for their animals?

Why not let them monitor their animals over the Internet?

Why not bring them weekly fresh "own products" straight from the farm?

## SMART THINGS FACTORY

Analysis of current trends in the information technology market and the experience gained provided the transition of IDRAK TECHNOLOGY TRANSFER to a new level of development. "Factory of Smart Things" is a dynamically developing enterprise, which began its activity in 2018. The introduction of innovative technologies allows the production of high-quality products that meet modern requirements - various devices and equipment. With the beginning of the operation of this factory, the process of forming a research and production association is completed.



### List of products

- Industrial computers
- Monoblocks
- Electronic queue kiosks
- Payment terminals
- Information kiosks
- Electronic bracelet
- Electronic filling
- Smart traffic lights and road signs
- Biometric kiosks and terminals
- Smart HD camera
- Smart HD projectors, etc.



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